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Does a Permissive Workplace Substance Use Climate Affect Employees Who Do Not Use Alcohol and Drugs at Work? A U.S. National Study

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Abstract

The goal of this study was to begin exploring the relations of multiple dimensions of workplace substance use climate (substance availability, workplace descriptive norms, and workplace injunctive norms) to perceived workplace safety, work strain, and employee morale among employees who do not use alcohol or drugs at work. Data were collected from a probability sample of employed adults in the U.S. ($N = 2051$) who do not engage in workplace alcohol or drug use. The results showed that all three dimensions of workplace substance use climate were negatively related to workplace safety, positively related to work strain, and negatively related to employee morale. These results suggest that a permissive substance use climate at work may have broader relevance for the majority of employees who do not use alcohol and drugs at work.

Keywords

workplace substance use climate; norms; substance use; safety climate; workplace aggression; work strain; job satisfaction; organizational commitment; intention to stay

Alcohol and drug use in the workplace have captured the interest of researchers, managers and policymakers (Frone, 2008). U.S. national data (Frone, 2006a) reveal that over a 12 month period workplace alcohol use and impairment was reported by an estimated 15.3% of the U.S. workforce (19.2 million workers). Turning to illicit drug use, U.S. national data (Frone 2006b) reveal that over a 12 month period workplace illicit drug use was reported by 3.1% of the workforce (3.9 million workers) and working under the influence of illicit drugs was reported by 2.9% (3.6 million workers) of the workforce. Furthermore, the 12 month prevalence of workplace illicit drug use and impairment is much higher in specific vulnerable subgroups. In particular, among young women in high risk occupations, 10.6% reported workplace illicit drug use and 11.4% reported workplace drug impairment. Among young men in high risk occupations, 28.0% reported workplace illicit drug use and 26.3% reported workplace drug impairment (Frone, 2006b).

It is not surprising, therefore, that researchers have explored the workplace causes and organizational consequences of employee substance use at work (for reviews, see Frone

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2004, 2008; Normand, Lempert, & O'Brien, 1994). However, the primary focus of past research has been to understand better why certain individuals are more likely to engage in substance use and the work-related outcomes associated with their own use of alcohol or illicit drugs at work. Despite the importance of this research, a broader issue exists that has received little research attention. Specifically, little research has explored the relation of a permissive workplace substance use climate to key work outcomes among the majority of employees who do not engage in workplace substance use. Using a national probability sample of the U.S. workforce, the goal of this study is to begin exploring the relation of multiple dimensions of workplace substance use climate to perceived workplace safety, work strain, and employee morale among employees who do not use alcohol or drugs at work.

Defining Workplace Substance Use Climate

Workplace substance use climate can be defined broadly as employees' perceptions of the extent to which their work environment is supportive of alcohol and drug use at work. Ames and colleagues suggest that workplace substance use climate is comprised of three dimensions (e.g., Ames & Grube, 1999; Ames & Janes, 1992). The first dimension is the perceived physical availability of alcohol and drugs at work. This dimension represents the ease of obtaining alcohol or other drugs at work and the ease of using them during work hours and during breaks. The second dimension represents descriptive norms or the extent to which members of an individual's workplace social network use or work while impaired by alcohol or drugs at work. The third dimension represents injunctive norms or the extent to which members of an individual's workplace social network approve of using or working under the influence of alcohol or drugs at work.

Workplace Substance Use Climate and Workplace Safety

There is some evidence that a permissive workplace substance use climate is positively related to substance use at work among a significant minority of workers (e.g., Ames & Grube, 1999; Frone, 2003). This workplace substance use may jeopardize the safety of employees using substances at work and employees not using substances at work (Frone, 1998). In addition, those employees who use substances at work are more likely to report being involved in arguments and fights at work (Ames, Grube, & Moore, 1997). Thus, a permissive workplace substance use climate may expose workers who do not use alcohol and drugs at work to an unsafe work environment. Based on these findings, the following general hypothesis is explored:

Hypothesis 1: Workplace substance use culture will be negatively related to perceptions of workplace safety.

Workplace Substance Use Climate, Work Strain, and Morale

To understand the possible relation of workplace substance use climate to work strain and morale among employees who do not engage in substance use at work, the perspective of psychological contract breach is used. A psychological contract is an employee's perception of the reciprocal obligations that exist with their employer (e.g., Rousseau, 1989; Shore & Tetrick, 1994). In other words, in exchange for loyalty and hard work, employees believe that an organization has certain obligations to them. One such organizational obligation shared by most employees is the expectation that an employer will provide a work environment that ensures employee safety (Tallman & Bruning, 2008; Walker & Hutton, 2006). Therefore, any dimension of climate at work that undermines employees' perceived safety at work should be related to higher levels of work strain and lower levels of morale to the extent that it breaches employees' psychological contract with their employer (e.g., Coyle-Shapiro & Parzefall, 2008; Gakovic & Tetrick, 2003). Based on the expectation that

exposure to a permissive substance use climate at work may be viewed by employees who do not use substances at work as a breach of their psychological contract regarding safety, the following general hypotheses are explored:

Hypothesis 2: Workplace substance use climate will be positively related to work strain.

Hypothesis 3: Workplace substance use climate will be negatively related to employee morale.

Method

Sample and Study Design

The 2829 study participants took part in the National Survey of Workplace Health and Safety. The population from which the study participants were sampled was all noninstitutionalized adults aged 18 to 65 who were employed in the civilian labor force and residing in households in the 48 contiguous United States and the District of Columbia. Data were collected by 19 extensively trained interviewers using computer-assisted telephone interviewing (CATI) stations from January 2002 to June 2003. Of all selected eligible individuals, 57% participated in the study. On average, the interview lasted 45 minutes and participants were paid \$25.00 for their time. For more detail on the study design, see Frone (2006a, 2006b) and Schat, Frone, and Kelloway (2006).

Of the 2829 study participants, the present analyses on workplace substance use climate were restricted to the 2051 workers who met two sets of selection criteria. The first set of selection criteria was that respondents (1) were wage and salary workers (i.e., owner/operators were excluded), (2) did not engage in workplace alcohol or drug use, and (3) had to have at least one coworker at their work location and had to interact with other employees. This first set of selection criteria reduced the sample from 2829 to 2180. The second set of selection criteria was that the remaining respondents had to have data on each of the variables used in this report. This further reduced the sample from 2180 to 2051. Thus, of the 2180 eligible respondents, only 129 were dropped because they were missing data on at least one study variable.

Sample Characteristics

Forty-three percent of the participants were male. Regarding race, 78.5% were White, 11.5% were Black, 5.4% were Hispanic, and 4.6% were of other racial/ethnic makeup. The average age of participants was 40 years. Turning to education, 3.7% did not graduate from high school; 23.0% graduated from high school or obtained a GED; 4.3% attended trade, technical, or vocational training beyond high school; 22.9% attended some college; 10.1% received an Associate's degree; 19.8% received a Bachelor's degree; 3.0% attended some graduate school; 11.1% received a Master's degree; and 2.0% received a doctoral level degree. The participants worked on average 42 hours (range = 5 hours to 60 or more hours) per week and held their present job for an average of 5 years (range = 1 month to 37 years). In terms of work patterns, 31.4% worked weekends (Saturday or Sunday) and 4.5% held seasonal jobs.

Measures

Workplace Substance Use Climate

Based on the conceptual work of Ames and colleagues (Ames & Janes, 1992; Ames & Grube, 1999), items were developed for this study to assess the three dimensions of workplace substance use climate—availability, descriptive norms, and injunctive norms.

Workplace substance availability was assessed with 12 items. Specifically, respondents were asked how easy or difficult it would be to (a) bring [substance] into work, (b) use [substance] while working, (c) use [substance] during lunch or other work breaks, and (4) get or buy [substance] from someone at work. These four questions were asked separately for alcohol, marijuana, and other drugs. The response anchors ranged from (1) very difficult to (4) very easy. Internal consistency reliability was .93.

Workplace substance use descriptive norms were assessed with six items. Respondents were asked how often during the past 12 months the coworkers they typically interact or work with each day did each of the following: (a) used alcohol before starting their work shift; (b) used marijuana or other drugs before starting their work shift; (c) used alcohol during the workday, including lunch and other break; (d) used marijuana or other drugs during the workday, including lunch and other break; (e) been at work high on or under the influence of alcohol, and (f) been at work high on or under the influence of marijuana or other drugs. The response anchors ranged from (0) never to (5) 6 to 7 days a week. Internal consistency reliability was .88.

Workplace substance use injunctive norms were assessed with eight items. Respondents were asked the extent to which their closest friend at work approved or disapproved of (a) drinking alcohol during the workday, (b) using marijuana or other drugs during the workday, (c) coming to work high on or under the influence of alcohol, and (d) coming to work high on or under the influence of marijuana or other drugs. Respondents also were asked the extent to which their other coworkers approved or disapproved of these same four behaviors. The response anchors ranged from (1) strongly disapprove to (4) strongly approve. Internal consistency reliability was .89.

Workplace Safety

An overall assessment of workplace safety was obtained by averaging scores on three measures. Safety climate was assessed with three items developed by Griffin and Neal (2000) that tapped employee perceptions of management concern for workplace safety. The response anchors ranged from (1) strongly disagree to (4) strongly agree. Internal consistency reliability was .91. Frequency of exposure to psychological and physical workplace aggression during the past 12 months were assessed with four items for physical aggression and five items for psychological aggression. The items are reported in (Schat et al., 2006). The response anchors ranged from (0) never to (5) 6 to 7 days a week. Internal consistency reliability was .78 for exposure to physical aggression and .79 for exposure to psychological aggression. The two aggression measures were reverse scored so that high scores reflected a safer work environment. The internal consistency reliability of the overall workplace safety measure was .86.

Work Strain

Work strain was assessed with two items taken from the National Survey of Midlife Development in the United States (Brim et al., 1995). Respondents rated the effect their job had on their mental and physical health. The response options ranged from (1) very positive to (5) very negative. Internal consistency reliability was .75.

Employee Morale

An overall assessment of employee moral was obtained by averaging scores on three measures. Job satisfaction was assessed using the five-item facet free scale developed for the 1977 Quality of Employment Survey (Quinn & Staines, 1979). Each satisfaction item used a different set of response anchors. Internal consistency reliability was .80. Organizational commitment was assessed with three items developed by Meyer and Allen (1997). The

response anchors ranged from (1) strongly disagree to (4) strongly agree. Internal consistency reliability was .87. Intention to stay with one's employer was assessed with three items adapted from Spector, Dwyer, and Jex (1988) and Cammann, Fichman, Jenkins, and Klesh (1983). The response anchors ranged from (1) strongly disagree to (4) strongly agree. Internal consistency reliability was .84. The internal consistency reliability of the overall morale measure was .93.

Covariates

Several demographic covariates were included in the analyses because past research has found them to be related collectively to alcohol or illicit drug use and many of the outcomes used in the study: *gender* (0 = men, 1 = women), *Race/ethnicity* (0 = White, 1 = minority), *age* (in years), *years of formal education* (10 ordinal response options), *number of weekly work hours*, *seasonal work* (0 = nonseasonal, 1 = seasonal), and *weekend work* (0 = do not work on Saturdays or Sundays, 1 = work on weekend days). Also, two personality traits were used as covariates to control for individuals who might (a) self-select into jobs that might have a permissive substance use culture and (b) be more likely to hold negative perceptions of the work environment. *Tolerance of deviance* was assessed with seven items (internal consistency reliability = .62) developed by Jessor, Donovan, and Costa (1991). Hostility toward rules was assessed with five items (internal consistency reliability = .82) developed by Hong and Faedda (1996).

Results

Descriptive Statistics

The means, standard deviations, and correlations for the study variables are presented in Table 1.

Dimensionality of Workplace Substance Use Climate

To assess the dimensionality of the workplace substance use climate measure, a three-factor confirmatory factor analysis was conducted. The three factors were workplace availability, workplace descriptive norms, and workplace injunctive norms. The confirmatory factor analysis was estimated using Mplus software where the ordinal nature of the items was taken into account using a robust weighted least squares estimator (Muthén & Muthén, 2007). The three-factor model showed a reasonably good fit to the data: Chi-square ($df=47$, $N = 2051$) = 1744.97, $p < .001$; comparative fit index (CFI) = .94; and Tucker-Lewis index (TLI) = .97. The three-factor model fit better than a single factor model ($\Delta\chi^2 = 870.02$; $df=2$; $N = 2051$; $p < .001$) and a two-factor model, where both the descriptive and injunctive norms items loaded on a single factor ($\Delta\chi^2 = 181.43$; $df=2$; $N = 2051$; $p < .001$). The standardized factor loadings for the three-factor model were all statistically significant ($p < .001$) and ranged from .66 to .95 (avg. loading = .88) for workplace availability; .80 to .97 (avg. loading = .91) for workplace descriptive norms; and .84 to .96 (avg. loading = .91) for workplace injunctive norms. The correlations among the three latent variables were .39 ($p < .001$) for availability and descriptive norms, .38 ($p < .001$) for availability and injunctive norms, and .62 ($p < .001$) for descriptive and injunctive norms. These results suggest that although workplace substance availability, permissive descriptive norms, and permissive injunctive norms tend to co-occur, they represent relatively independent dimensions of workplace substance use climate.

Regression Analyses

Table 2 presents the hierarchical regression analyses simultaneously relating workplace substance use climate to workplace safety, work strain, and employee morale after

controlling for the covariates. The increments in R^2 at Step 2 show that workplace substance use climate had an overall significant relation to each of the three outcomes. Taking the square root of these increments in R^2 at Step 2 provides the semi-partial correlation between the overall substance use climate and each of the outcomes, which provides information similar to a standardized regression coefficient. The semi-partial correlations for the overall substance use climate were .20 for workplace safety, .14 for work strain, and .20 for employee morale. Moreover, the standardized regression coefficients at Step 2 indicate that each the three dimensions workplace substance climate were significantly related to all three outcomes in the hypothesized direction. Thus, Hypotheses 1, 2, and 3 were each supported.

Discussion

The goal of this study was to explore the relation of the substance use climate at work to key work outcomes among the majority of employees who do not use alcohol and drugs at work. Prior research suggests that a permissive workplace substance use climate may encourage workplace substance use in a significant minority of employees (e.g., Ames & Grube, 1999; Frone, 2003). The present study extends this research by suggesting that a permissive workplace substance use climate may be more broadly related to outcomes among the majority of employees who do not use alcohol and illicit drugs at work. Specifically, all three dimensions of a permissive workplace substance use climate were related to lower perceptions of workplace safety, higher levels of work strain, and lower levels of employee morale.

These results should be interpreted within the context of the strengths and limitations of the present study. In terms of strengths, this study used a large probability sample of employed adults in the U.S. Also, relative to small samples, the large sample used in this study provides (a) adequate statistical power to detect the hypothesized effects and (b) more accurate estimates of population effects (e.g., Schmidt, 1992). Finally, the relations of the three dimensions of workplace substance use climate to the various outcome variables were tested controlling for the interrelations among the climate dimensions as well as their relations to a number of potential confounding variables. These strengths notwithstanding, the present study has several limitations. First, the data were collected from a single source. Nonetheless, the measures used a variety of response formats and asked questions regarding the respondents own work outcomes and attitudes as well as their reports of the behaviors and attitudes of their coworkers. These features should minimize any effect of common method bias. Also, single source data did not allow for a comparison of the measures of perceived norms and availability used in this study with measures of actual norms and availability. Second, the data were cross-sectional. Thus, it was not possible to assess test-retest reliability for the three dimensions of substance use climate. Moreover, these cross-sectional data do not lend themselves to strong causal inference. However, some longitudinal research exploring general substance use norms suggests that the relation between the perceived workplace substance use climate and employee substance use may be reciprocal (e.g., Bullers, Cooper, & Russell, 2001; Neighbor, Dillard, Lewis, Bergstrom, & Neil, 2006). Finally, the 57% response rate may be viewed as a limitation to generalizability. However, for response bias to exist with a response rate under 100%, the reason for nonresponse has to be related to the substantive variables under examination. There is little reason to expect that this is the case in this study (see Frone 2006b, pp. 864-866, for a detailed discussion).

Future research efforts should attempt to replicate the present findings using other methods, such as longitudinal designs and assessment of workplace substance availability and norms within intact work groups. Also, future research should explore the organizational characteristics and policies that may foster or discourage permissive workplace substance

use cultures. The present results suggest that future research on and management attention toward workplace substance use may have broader organizational relevance than merely the productivity of those employee employees who engage in substance use at work. It also may have a relation to the work environment, health, and morale of the majority of employees who do not use alcohol and illicit drugs at work. The climate dimensions of physical availability of substances at work and descriptive norms, or the use of alcohol and drugs at work by employees, are the most directly manageable through workplace policy, supervision, and education. The dimension of injunctive norms, or employee approval of workplace substance use, is more difficult to alter directly. However, the use of organizational policy, supervision, and education to target directly workplace substance availability and descriptive norms may ultimately have an indirect impact of reducing approval for workplace substance use.

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Table 1

Descriptive Statistics and Correlations for Study Variables

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Workplace substance availability	2.01	0.89	----														
2. Workplace substance use descriptive norms	0.28	0.71	.27	----													
3. Workplace substance use injunctive norms	1.09	0.28	.24	.43	----												
4. Workplace safety	4.25	0.57	-.16	-.19	-.17	----											
5. Work strain	2.59	0.89	.11	.11	.13	-.24	----										
6. Employee morale	2.98	0.66	-.17	-.18	-.21	.26	-.42	----									
7. Gender (male)	0.43	0.49	.12	.04	.08	-.01	.03	-.02	----								
8. Age	39.79	11.64	.06	-.06	-.17	.08	-.07	.20	-.02	----							
9. Education	5.52	2.12	.01	-.14	-.12	.05	.05	.06	.01	.11	----						
10. Race (minority)	0.21	0.41	-.04	.05	.01	-.04	-.07	-.10	-.03	-.11	-.08	----					
11. No. of weekly work hours	41.97	10.38	.05	.02	-.02	-.06	.06	.12	.25	.15	.14	-.07	----				
12. Seasonal work (yes)	0.04	0.21	.03	.02	.04	.00	-.02	-.05	.03	-.04	-.09	.01	-.05	----			
13. Weekend work (yes)	0.31	0.46	.01	.12	.11	-.16	.06	-.07	.03	-.14	-.11	.04	.10	.00	----		
14. Tolerance of deviance	1.27	0.28	.12	.07	.21	-.07	.10	-.15	.11	-.27	.11	-.07	-.03	.01	.02	----	
15. Intolerance or rules	1.41	0.55	.15	.05	.11	-.11	.15	-.24	.13	-.09	.17	-.04	-.03	.04	.01	.29	----

Note: N = 2051. Correlations with absolute values greater than .05 are significant at $p \leq .05$.

Table 2**Regression Results**

Predictors	Workplace Safety	Work Strain	Employee Morale
Step 1			
Gender (male)	.03	-.01	-.01
Race (minority)	-.04	-.07**	-.08***
Age	.05*	-.06**	.13***
Education	.06**	.02	.06**
Work hours	-.08***	.07**	.08***
Seasonal work	.01	-.02	-.03
Weekend work	-.13***	.05*	-.05*
Tolerance of Deviance	-.04	.03	-.06**
Hostility toward rules	-.11***	.14***	-.22***
ΔR^2	.05***	.04***	.11***
Step 2			
Workplace substance availability	-.10***	.06**	-.11***
Workplace substance use descriptive norms	-.10***	.06*	-.09***
Workplace substance use injunctive norms	-.07**	.07**	-.08***
ΔR^2	.04***	.02***	.04***
Total R^2	.09***	.06***	.15***

Note: $N = 2051$. All coefficients are standardized and are taken from the step in which the predictor entered the equation.

* $p \leq .05$,

** $p \leq .01$,

*** $p \leq .001$.