

Work-Related Risk Factors and Employee Substance Use: Insights From a Sample of Israeli Blue-Collar Workers

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Although studies have found evidence that certain workplace conditions in North American enterprises may serve as risk factors for alcohol and illicit drug use, little is known regarding the generalizability of these findings to enterprises in other countries. To address this gap, we collected data from a random sample of 569 blue-collar workers employed in nine different facilities of one of Israel's largest manufacturing firms. The results of zero-inflated Poisson and ordered probit regressions partly confirmed earlier findings reported in North America, with a heightened rate of a substance use among those perceiving (a) more permissive drinking norms, (b) lower supervisor ability to handle substance use problems, (c) greater exposure to job hazards, and (d) lower levels of coworker interactions. Permissive drinking norms were also found to moderate the associations between the other risk factors and substance use.

Keywords: alcohol consumption, illicit drug use, substance use, drinking norms, work-related risk factors

Substance use—in particular, heavy drinking (i.e., the consumption of five or more servings of alcohol at a time; Substance Abuse and Mental Health Services Administration, 2005)—and illicit drug use (i.e., the use of drugs that are illegal to possess and/or the use of prescription drugs either without a prescription or, if prescribed, in a nonprescribed manner, such as higher frequency and/or dosage; Frone, 2009) is a worldwide problem. Despite millions of dollars annually spent on prevention efforts, heavy drinking and illicit drug use are no less prevalent today than in the past, reaching into almost every area of daily life,

including the workplace (Campbell & Langford, 1995; Frone, 2006). Employee substance use has received growing attention in recent years, both in the United States and Europe (e.g., Sonnenstuhl, 1996; Evans, 2004). This is not surprising, given the high percentage of working adults (ages 18 and up) reporting alcohol or illicit drug use. Based on a national probability sample of the U.S. workforce, Frone (2008b) reports that 73.6% of the workforce (92.5 million workers) used alcohol, 30.6% (38.4 million workers) drank enough to become intoxicated, and 22.6% (28.4 million workers) experienced a hangover during the preceding 12 months. The prevalence rates for illicit drug use indicate that 14.1% (17.7 million workers) used at least one illicit drug during the preceding 12 months (Frone, 2008b). Data from other countries also highlight the scope of the problem. For example, using a regional probability sample, Smith, Wadsworth, Moss, and Simpson (2004) reported that 13% of the U.K. workforce used an illicit drug during the preceding 12 months.

Heavy drinking and illicit drug use can be associated with poor physical and mental health as well as reduced job productivity, although, in some cases, these associations may be contingent on such factors as the nature and timing of use as well as the occupational context. For example, Bacharach, Bamberger, and Biron (2010) found that the frequency of

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heavy drinking over the previous month was positively associated with the number of days of absence recorded in the subsequent 12-month period, whereas a measure capturing the typical amount of alcohol consumed in the past month was not. This finding is consistent with Frone's (2008b) observation that "being absent is likely the outcome of impairment (intoxication or hangover) due to heavy alcohol use and not the mere use of alcohol on a given day" (p. 530). Heavy drinking and illicit drug use may also contribute to work-related accidents by impairing employees' psychomotor function and increasing risk-taking behavior (e.g., Heather, 1994), although, as noted by Ramchand, Pomeroy, and Arkes (2009, p. 47), "the proportion of occupational injuries attributed to acute substance use is relatively small" and likely to be a more significant concern in safety-sensitive jobs where the potential for workplace injuries is generally higher (e.g., transport, punch-press operator, welding, assembly; Quest Diagnostics Incorporated, 2007). Finally, there is substantial evidence that heavy drinking and illicit drug use promote the risk of a variety of non-work-related problems, from family disruption (Anderson & Baumberg, 2006) to various diseases such as hypertension and liver cirrhosis (e.g., Corrao, Bagnardi, Zambon, & La Vecchia, 2004), and should therefore be seen as public health problems deserving of research attention.

Recognizing that the workplace may serve not only as an important venue for prevention but also as a possible "breeding ground" for the emergence and exacerbation of substance-related problems, since the 1970s, researchers (e.g., Ames & Janes, 1987; Cosper, 1979; Trice & Roman, 1972) have examined the work-based etiology of substance use, focusing on the identification of occupational risk factors that may be associated with problematic substance use patterns (e.g., heavy drinking). More recently, drawing from these earlier studies, Bacharach, Bamberger, and Sonnenstuhl (2002) proposed and tested the relations between four groups of risk factors that may contribute to employee substance use, namely, drinking norms, substance-related policy enforcement, job stress, and work alienation. However, despite the increasing evidence that work-related risk factors play a role in explaining the prevalence and severity of employee substance use, little is known about the generalizability of U.S.-based findings to work contexts outside of North America.

Because substance-related regulations, norms, and practices vary from country to country, findings from studies conducted in one country may be difficult to generalize to others (e.g., Grant, 1998; Kuntsche,

Rhem, & Gmel, 2004). Indeed, sociologists have suggested that ethnic norms may serve as a powerful boundary condition moderating the association between a common set of etiological agents and individuals' substance use (Bamberger & Barhom-Kidron, 1998). For example, in both Jewish and Chinese cultures, alcohol consumption has long played an important role in the celebration of special occasions and festivities, but as a predominantly social act and one typically associated with a meal. Drinking in isolation or at a bar as a means by which to cope with stress or dysphoric experiences is less common than in other cultures (Snyder, 1958; Glassner & Berg, 1980; Jiafang, Jiachun, Lu, Xiaoxia, & Ya, 2004; Hao, 1995; Liu, Wang, Zhan & Shi, 2009). Accordingly, in countries in which such cultural norms are dominant (e.g., Israel, China), there may be reason to question the relative salience of certain sets of work-related risk factors, particularly those grounded on assumptions of substance use as a form of tension reduction or self-medication, as determinants of employee substance use. In contrast, in cultures characterized by a more ambivalent attitude toward alcohol, these same risk factors may play a more significant role in the etiology of substance use (e.g., Vaillant, 1983; Zinberg, 1981).

In this context, the current study represents what we believe to be the first attempt to assess the external validity and cross-cultural applicability of an existing model (Bacharach et al., 2002) of work-based risk factors and employee substance use. It does so by examining the degree to which this model is supported on the basis of data collected from a set of blue-collar workers employed outside of North America, namely, in Israel.

Israel provides an interesting lens through which to explore the cross-cultural generalizability of extant theories regarding the association between workplace conditions and substance use. Israel has traditionally had one of the lowest rates of alcohol consumption and alcohol problems in the world (Bamberger & Barhom-Kidron, 1998; Rahav, Hasin, & Paykin, 1999). While this is not surprising, given the Jewish norms toward alcohol consumption noted above, consistent with the convergence perspective noted above, alcohol and drug consumption have increased over the past decade. A 2009 national survey of substance use in Israel indicated that 21% of Israeli adults (aged 18–40), the bulk of whom were employed at the time, reported heavy drinking, and 11.4% reported using at least one type of illicit drug (Bar-Hamburger, Ezrachi, Roziner, & Nire, 2009). Both alcohol and illicit drug use have increased (by

3% and 0.9%, respectively) from the previous 2005 national survey (Bar-Hamburger, Ezrachi, Roziner, & Steinberg, 2005; Bar-Hamburger et al., 2009). At least part of this increase in substance use is likely attributable to the massive influx of Jewish immigrants from the former Union of Soviet Socialist Republics (USSR) during the 1990s, with data gathered by the Israeli Anti-Drug Authority indicating that immigrants' use of alcohol and illicit drugs is significantly greater than that of individuals born in Israel (Bar-Hamburger et al., 2005, 2009).

However, beyond exploring the cross-cultural applicability of Bacharach et al.'s (2002) model, we extend that model in two ways. First, we focus strictly on substance use regardless of the degree to which this use may in fact be problematic. This is important in that even moderate use, as we described above, has been associated with both work and non-work/ health-related problems (e.g., Mangione et al., 1999). Second, we examine both alcohol consumption and illicit drug use. This is important in that while work-related risk factors associated with drinking have been the focus of several studies, work-related risk factors associated with illicit drug use have been far less investigated.

Work-Based Risk Factors and Employee Substance Use

Over the past two decades, research into work-related risk factors and substance use has largely been based on four perspectives, with each identifying particular work-based risks likely to be associated with employee substance use (Bacharach et al., 2002; Frone, 2008a; Trice & Sonnenstuhl, 1988). These four perspectives reflect the role of perceived workplace drinking norms, policy enforcement, stress, and alienation.

Perceived Normative Climate

Workplace climate refers to the formal and informal characteristics of an employment setting affecting employees' experience and effectiveness. According to Schein (1992, p. 9), it is "the feeling that is conveyed in a group by the physical layout and the way in which members of the organization interact with each other." Workplace climate may have differential effects on encouraging or discouraging alcohol and illicit drug use (e.g., Martin, Roman, & Blum, 1996). More specifically, organizations may develop distinct "substance use climate," broadly de-

fining as "employees' perceptions of the extent to which their work environment is supportive of alcohol and drug use at work" (Frone, 2009, p. 386). Underlying these perceptions are employees' expectations about the appropriateness and acceptance of substance use, expectations to which they often adapt their behavior.

Workplace substance use climate is comprised of three dimensions (Ames, Grube, & Moore, 2000). The first dimension is the perceived physical availability, or, the ease of obtaining and consuming alcohol or drugs during work hours. The second dimension represents descriptive norms, or, the extent to which an individual's workplace peers use, or work while impaired by, alcohol or drugs at work. The third dimension represents injunctive norms, or, the extent to which an individual's coworkers approve of using or working under the influence of alcohol or drugs at work. Previous studies confirm that employees' consumption patterns are malleable to substance use norms. For example, Ames et al. (2000) found a positive association between the degree to which individuals reported that their colleagues were tolerant of drinking and the degree to which those individuals experienced drinking problems themselves. Furthermore, while prior research tends to focus on norms related to alcohol consumption only ("drinking norms"), empirical evidence suggests that workplace drinking climate/norms have an impact on both employee alcohol and illicit drug use. For example, Ames, Cunradi, and Moore (2002) found that normative beliefs concerning the drinking of an individual's best friend were highly predictive of both heavy drinking and drug use on the part of the individual. Evidence also suggests that work-related drinking norms have a broader impact on *overall* employee alcohol and illicit drug use and exerts an influence on substance-related behaviors outside the workplace (Midford, 2005; Trice & Sonnenstuhl, 1990). Accordingly, we propose,

Hypothesis 1: Employee substance use is positively associated with the degree to which co-worker drinking norms are perceived as being more permissive.

Substance-Related Policy Enforcement

Rational-bureaucratic control strategies are grounded on the assumption that counterproductive behavior results from a lack of rational and consistently enforced rules and policies (i.e., employees lack a clear understanding of what is expected from

them; Edwards, 1979). The absence of organizational policy regarding substance use and/or irregular enforcement of such policy may contribute to the development or increase of substance use problems (Martin et al., 1996). For example, Ames et al. (2000) found that most managers in one large manufacturing plant were under constant pressure to keep production moving and were motivated to discipline employees for drinking only when it was compromising production or jeopardizing safety. These researchers concluded that workers' knowledge that substance-related regulations were rarely enforced seemed to encourage drinking.

Trice and Roman (1972) suggest that supervisors play a key role in policy enforcement but that simple employee-supervisor contact is insufficient for effective policy enforcement. Rather, they argue that effective policy enforcement requires a high quality of supervision, with supervisors being (a) willing to confront employees with substance use problems, and (b) able to effectively manage such problems. Studies (e.g., Ames et al., 2000) suggest that when supervisors are unwilling to get involved in situations where substance-related regulations are disobeyed, or are unable to handle such cases, employees get signals that such regulations are merely lip service. In other words, when supervisors do not enforce regulations against inappropriate substance use, they remove any deterrent effect these regulations might have had, and the frequency with which others disobey the rules is likely to increase. Accordingly, we propose,

Hypothesis 2: Employee substance use is negatively associated with the degree to which supervisors are perceived as being more willing and able to confront employee substance use problems.

However, a number of ethnographic studies (e.g., Mannello & Seaman, 1979) suggest that the effect of substance-related policy may vary as a function of the norms associated with drinking. More specifically, these studies suggest that in firms or units characterized by less permissive drinking norms, policy enforcement may decrease substance use, whereas in firms or units characterized by a more permissive drinking norms, supervisory policy enforcement may create a conflict between management and workers, attenuating any constraining effect that policy enforcement may have on substance use and perhaps even motivating employees to increase their substance use. For example, Sonnenstuhl (1996)

found that when heavy alcohol consumption was perceived to be legitimate, drinking problems were actually exacerbated as a result of management's efforts to introduce and enforce strict regulations. Cosper (1979) provides a possible explanation for such a "boomerang" effect. He suggests that, in certain contexts, drinking is not viewed as a pathological phenomenon but as a communicative behavior symbolizing social solidarity or superiority of the group. Other research on employee resistance to managerial control (e.g., Blackard, 2000; Bamberger & Bacharach, 2006) also suggests that managerial efforts to limit employee drinking behavior may be seen by workers as an effort to undermine group solidarity and strengthen management's control over workers. These studies suggest that workers may respond to such managerial action by increasing their involvement or engagement in such activities—both at work as well as away from it—as a means by which to enhance their solidarity and communicate their collective resistance to management. Accordingly, we propose,

Hypothesis 2a: The negative association between supervisory willingness/ability to confront employee substance use problems and employee substance use is attenuated as a function of perceived permissive drinking norms.

Job Stress

Previous research on work stress and substance use has typically drawn from the conceptual framework of tension reduction, which was first introduced by Conger (1956). Although the notion of tension reduction is predominant in the literature on alcohol use, it can be directly applied to illicit drug use as well (Frone, 2008a). Embedded in tension-reduction notions are two general propositions. The first proposition is that substance use will reduce tension or strain resulting from exposure to stressors. Referred to as stress-response dampening (e.g., Sayette, 1999), this proposition suggests that stressful situations often elicit a wide range of behaviors (e.g., escape or avoidance behaviors) as well as stress-related biological responses, such as changes in skin conductance (e.g., from sweating) and muscle tension. In this context, alcohol and drugs may help reduce the magnitude of behavioral and biological responses. The second proposition is that exposure to stressors will induce substance use as a means of mitigating experienced tension and strain. Referred to as stress-induced substance use (e.g., Frone, 1999; Sayette,

1999), this proposition suggests that people use alcohol and/or drugs as a mode of relief and self-medication, or, in other words, as a means by which to cope with the tension and strain that often occur in stressful situations.

At work, the tension reduction hypothesis refers to substance use associated with aversive work conditions, which are labeled “work stressors”; that is, employees use alcohol and illicit drugs as a means of coping with negative aspects of their job. While somewhat limited, empirical support exists for the stress-substance use association. For example, Frone (2008a) found that work overload and job insecurity were associated with frequency and quantity measures of substance use during the workday. Crum, Muntaner, Eaton, and Anthony (1995) found that employees in jobs high in psychological or physical demands and low on job control had a higher risk to develop alcohol-use dependence. In a similar fashion, Roxburgh (1998) found that job noxiousness was significantly associated with alcohol consumption. We therefore suggest,

Hypothesis 3: Employee substance use is positively associated with work-related stressors.

However, Frone and colleagues (e.g., Cooper, Russell, & Frone, 1990; Frone, 1999, 2008a) argue that the empirical evidence regarding the direct association between work stressors and substance use is inconsistent. Moreover, in those studies that have reported a significant, positive association, results are of relatively small magnitude (e.g., Cooper et al., 1990). One reason for this inconclusive and weak evidence may be that work stressors are not related to substance use among all employees and that situational factors may affect this association (e.g., Frone, 1999; Sayette, 1999). Accordingly, researchers have attempted to identify those situations in which alcohol and drugs are most likely to reduce or relieve stress. In this respect, work stress/substance use models have been suggested to include vulnerability factors, that is, factors that place the individual employee at increased risk for developing substance use problems (Frone, 1999). For example, Frone, Russell, and Cooper (1997) demonstrated that work stressors (job demands and role ambiguity) were positively related to heavy drinking only among employees who reported that their work role was psychologically important for self-definition.

The perceived permissiveness of drinking norms may serve as an additional vulnerability factor. Such a moderation effect would exist if drinking norms

combine with employee perceptions of stress as a legitimate justification for substance use (Trice & Sonnenstuhl, 1988; Bacharach et al., 2002). In other words, the ultimate impact of work-related stressors on substance use may be contingent upon the degree to which employees perceive workplace norms as approving such behavior. Accordingly, we suggest,

Hypothesis 3a: The positive association between work-related stressors and employee substance use is amplified as a function of perceived permissive drinking norms.

Work Alienation

Work alienation has been conceptualized as a psychological construct that captures a generalized, indifferent outlook toward work, indicating an absence of enthusiasm and involvement (Kobasa, Maddi, & Kahn, 1982). Erikson (1986) proposes that alienation has three key dimensions. People are said to be alienated when they (a) can exercise no, or limited, influence over the work they do (i.e., powerlessness or lack of decision involvement), (b) lose contact with the product of their own labor or no longer experience work as a meaningful act of creation (i.e., self-estrangement), and (c) become estranged from their fellow workers (i.e., social isolation). This three-part model of alienation has received substantial empirical support (see, e.g., Seeman, 1975; Sarros, Tanewski, Winter, & Santora, 2002).

Previous research suggests that workplace alienation has considerable implications for the private lives of employees. O’Toole (1974) suggests that alienation causes a continuous decline in mental and physical health, participation in community life, and family stability, and, on the other hand, an increase in alcohol and drug addiction. Seeman and Anderson (1983) argue that alcohol may serve as a mode of self-medication for alienated workers, much as it does for those experiencing stress at work. Consistent with this notion, these researchers and others (e.g., Greenberg & Grunberg, 1995) found a significant relationship between powerlessness and drinking problems. Similarly, Greenberg and Grunberg (1995) as well as Yang, Yang, and Kawachi (2001) found that workers reporting high levels of self-estrangement were more likely to become problem drinkers. Accordingly, we propose,

Hypothesis 4: Employee substance use is positively associated with work alienation.

However, as with stress, it was suggested that the association between alienation and substance use is likely to be contextually contingent (Bacharach et al., 2002; Greenberg & Grunberg, 1995). Recognizing the similarities between the alienation and stress paradigms (e.g., Frone, 1999, 2008a), it seems logical to assume that, to the degree that alienation is psychologically aversive, it is likely that tension- or aversion-reduction models apply here as well. As such, a culture-based moderation effect may also exist with regard to work alienation, with alienation associated with heightened substance use particularly when such use is perceived as being more normatively legitimate or justified. Accordingly, we propose,

Hypothesis 4a: The positive association between work alienation and employee substance use is amplified as a function of perceived permissive drinking norms.

Method

Context, Sample, and Procedure

The hypotheses generated for this research were tested using a sample of workers employed by one of Israel's largest manufacturing firms. Eight hundred eighty workers employed in facilities with over 80 workers (9 of the firm's 12 facilities) were randomly selected for participation in the study. The number of potential participants in each facility was contingent upon the number of employees in the facility (facilities employed between 80 and 400 employees each). Six hundred eight employees agreed to participate. Of these, 39 participants were ultimately dropped from the study due to excessive missing data (e.g., 33% or more uncompleted items). In addition, 208 observations were excluded from our analysis due to participants' failure to provide data on one or more of the substance-related variables or risk factors. Of the remaining 361 participants, 46% were females and the mean age was 37.8 ($SD = 11.1$). Of the 361 respondents, 21.2% had some schooling, 32.9% graduated high school, 30.4% had some type of higher education (technical courses, partial studies in college), and the remaining 15.5% received a BA or MA degree. Thirty-six percent of the respondents were born in the former USSR. Given the size of the target sample ($N = 880$), the overall response rate for the study was 41%. Working with both the union and management, data were collected using a self-report questionnaire. To ensure confidentiality of the data, we used an anonymous survey. All scales were trans-

lated from English to Hebrew and Russian, and back-translated to English to ensure the quality of the translation. Questionnaires were distributed over a 6-month period, and workers were allowed to complete them during work hours.

Measures

Substance use. *Alcohol use* was measured with two items: respondents were asked to indicate how frequently they consumed alcohol during the preceding month on a 5-point scale ranging from 0 = "never" to 4 = "on more than 3 days per week" (drinking frequency). And while drinking frequency may not be the same across the weeks in a given month, research suggests that the patterns of consumption are relatively consistent over time (e.g., Maisto, Connors, & Allen, 1995; Marlatt, Baer, Donovan, & Kivlahan, 1988). In addition, respondents were asked to report the number of servings of alcohol they typically consumed on each drinking occasion (drinking quantity). *Illicit drug use* was measured using a closed-ended question in which respondents were asked to indicate how frequently they used any type of drugs (e.g., marijuana, hashish) during the preceding month, on the same 5-point scale used for measuring alcohol use.

Drinking norms. Consistent with Ames et al. (2000), we used a measure tapping injunctive norms. Accordingly, participants were asked to indicate the average amount of alcohol (number of servings) they perceive each of their three closest coworkers as considering appropriate to consume in four contexts, including at "lunchtime" and "after work." The scale was created using the average of the 12 items (four items \times three coworkers). Higher values indicated more permissive drinking norms. Because this measure might contain two subfactors—one relating to work-related drinking (e.g., lunchtime) and the other relating to drinking away from work (e.g., after work), a set of confirmatory factor analyses (one for each of the three referent peers) was conducted. In all three cases, the two-factor solution was not significantly better than the one-factor solution ($\Delta\chi^2 df = 1 = 1.54, 0.96, \text{ and } 1.27; ps > .05$). Consequently, we retained a single measure of drinking norms. Cronbach's alpha across the three referent peers was 0.72.

Substance-related policy enforcement. To capture not only managerial actions directed at workplace impairment but also, more broadly, actions directed at employees that seem to have substance use problems, we used two scales (three items each)

developed by Bacharach et al. (2002) and based on the work of Ames et al. (2000, p. 207). Participants were asked to indicate (a) the willingness of their supervisors to confront substance use issues (e.g., "My supervisor is not afraid to confront an employee who appears to be working under the influence of alcohol or drugs"), and (b) the ability of their supervisors to handle such issues (e.g., "My supervisor is very skilled at helping employees with alcohol or drug problems who decide to seek help"). Participants responded using a 7-point response scale (1 = not true at all, 7 = very true). Due to insufficient reliability level of the "willingness" scale ($\alpha = .58$), we dropped this variable from our analyses. Cronbach's alpha for the "ability" scale was .89.

Workplace stressors were assessed on the basis of three variables, namely, role overload, job insecurity, and job hazards. While role overload is among the most common sources of workplace stress reported by employees in general (Frone, 2008a), job insecurity and job hazards are key stressors for blue-collar workers (de Witte, 1999; Marshall, Barnett, & Sayer, 1997), whose links to substance use remain relatively underexplored (Leigh, 1996; Frone, 2008a). *Role overload* was measured with a 4-item scale adopted from Newton and Keenan (1987). A sample item is, "I have to work under continuous time pressures." Response scale ranged from 1 = "not true at all" to 5 = "very true" ($\alpha = .70$). *Job insecurity* was measured with two items from the 10-item scale developed by Ashford, Lee, and Bobko (1989). These items focused on respondents' perceptions regarding the likelihood that they will be discharged or forced to take an unpaid leave in the coming year ("You may be laid off for a short while" and "You may be fired"). The response scale ranged from 1 = "very unlikely" to 5 = "very likely" ($\alpha = .95$). *Job hazards* were assessed with a 13-item scale adopted from Staines and Quinn (1979), measuring employees' perceived exposure to health risks, such as air pollution, heavy loads, and extreme temperatures. Response scale ranged from 1 = "not at all exposed" to 5 = "very much exposed" ($\alpha = .81$).

Alienation was measured on the basis of three scales, each tapping one of the three key dimensions of alienation reflected in the literature (as described above; Erikson, 1986; Sarros et al., 2002), namely: (a) *Decision involvement*, based on Bacharach, Bamberger, and Conley's (1990) instrument, participants were asked to indicate how much influence they have with respect to 7 main decision areas of their work, for example, "I have a say on the amount of work to

get done in a period of time." The response scale ranged from 1 = "little or no influence" to 7 = "a great deal of influence" ($\alpha = .81$); (b) *Self-estrangement*, a 5-item scale adopted from Vallas (1988). A sample item is, "When working, I often feel that I am just another screw in a machine." The response scale ranged from 1 = "completely disagree" to 7 = "completely agree" ($\alpha = .68$); and (c) *Social interactions*, based on Bacharach, Bamberger, and Vashdi (2005), each participant was asked to identify those individuals with whom they felt closest at work and, for each one, to indicate the frequency of his interactions with that person (on a scale from 1 = "less than once a week" to 5 = "several times a day"), how comfortable he feels talking with that person about personal matters, how comfortable he feels talking with that person about problems at work, and the degree to which he believes his coworker feels comfortable talking with him about problems at work. The last three items were responded to using a 5-point scale (1 = "very uncomfortable" to 5 = "very comfortable"). For each of the individuals identified by a target as serving as a close friend (i.e., referents), we calculated the mean score across these four items ($\alpha = .87$). Given the high level of consistency in reports (mean r_{WG} across peer "groups" was .81), we aggregated the mean scores of all referents and assigned the group-aggregated score (mean) to the target employee.

Control variables. Given its potential relationship with substance use (e.g., Greenberg & Grunberg, 1995), we controlled for gender, education, and ethnic background. The latter was measured using two dummy variables: one dummy was set to "1" for Jews who were born in the former USSR and "0" otherwise, and the second dummy was set to "1" for Israeli Jews (Jews that were born in Israel) and "0" otherwise. We also controlled for trait negative affect, using the Negative Affect Scale (Negative Affectivity; Watson, Clark, & Tellegen, 1988). Participants indicated the extent to which they "generally" feel each mood (e.g., distressed, upset) on a scale ranging from 1 = "very slightly or not at all" to 5 = "extremely" ($\alpha = .82$). Finally, we controlled for social desirability using the 10-item self-enhancement subscale adopted from Paulhus's (1991) BIRD instrument. A sample item was, "It would be hard for me to break my bad habits." The response scale ranged from 1 = "not true at all" to 7 = "very true" ($\alpha = .71$). Edwards (2008, p. 477) notes that the primary advantage of directly measuring factors thought to induce common method variance, such as

social desirability and negative affect, is that “it allows for the avoidance of identification and estimation problems that occur when method factors do not have their own measures.”

Results

We applied a zero-inflated Poisson regression model to test the association between work-related risk factors and the quantity of alcohol consumption. A zero-inflated Poisson model was selected in that this variable captures a count of the number of drinks usually consumed (see Elhai, Calhoun, & Ford, 2008, for more details on this technique). In contrast, we used ordinal probit regression in our analyses of the frequency of alcohol and illicit drug use, as these outcomes had five discrete ordinal values.

Means, standard deviations, and intercorrelations (Pearson) among the study variables are displayed in Table 1. The results reported in this table are based on the listwise deletion of observations with missing data on any of the study variables. The results reported in Tables 2, 3, and 4 are based on “partial” listwise deletion, where the respondents had to have data for the outcome and all predictors used for the analysis testing the specific outcome but did not have to have data on the other two outcomes. *T* test analyses comparing risk factors and substance use among those dropped from the analyses and those remaining indicated that in no case were the differences between these groups significant ($p > .10$). The bivariate results indicate a positive relationship between permissive drinking norms and all three measures of substance use (for alcohol quantity, $r = .35, p < .01$; for alcohol frequency, $r = .42, p < .01$; for drug frequency, $r = .38, p < .01$). Substance use is also positively related to job hazards (.29, .41, and .33, respectively; $ps < .01$). The table also indicates a negative relationship between substance use and both policy enforcement (−.29, −.33, and −.27, respectively; $ps < .01$) and social interactions (−.23, −.38, and −.19, respectively; $ps < .01$). Finally, alcohol frequency is positively related to both role overload and self-estrangement ($r = .10, p < .05$ for both correlations).

Main Effect Analyses

The results of our multivariate analyses testing Hypotheses 1, 2, 3, and 4, which specified, respectively, that substance use is (a) positively associated with drinking norms, (b) negatively associated with policy enforcement, (c) positively associated with job

stress, and (d) positively associated with work alienation, are presented in Model 2 of Tables 2–4 (one table for each outcome variable). The results support Hypothesis 1 for alcohol frequency and drug use frequency ($B = 0.082$ and $B = 0.104$, respectively; $ps < .01$) but not for alcohol quantity ($B = 0.004, p > .05$). The results also support Hypothesis 2 for all three outcomes, namely, alcohol quantity, alcohol frequency, and drug use frequency ($B = -0.161, B = -0.332$, and $B = -0.430$, respectively; $ps < .01$). Partial support was found for Hypotheses 3. Specifically, of the three job stressors examined in this study—that is, role overload, job insecurity, and job hazards—only the latter was significantly associated with substance use ($B = 0.249, B = 0.357$, and $B = 0.464$, respectively, for alcohol quantity and frequency and drug use frequency; $ps < .01$). Finally, with respect to alienation (Hypothesis 4), the social interactions measure was negatively associated with alcohol use (for alcohol quantity, $B = -0.147, p < .05$; for alcohol frequency, $B = -0.431, p < .01$) but not with drug use ($B = -0.195, p > .05$). Decision involvement was negatively associated with alcohol quantity ($B = -0.111, p < .10$), and self-estrangement was positively associated with alcohol frequency ($B = 0.153, p < .10$). As indicated in the tables, contrast analyses indicate that the addition of the risk factors significantly adds to the predictive utility of the models relative to the control models.

Moderator Effect Analyses

In order to test hypotheses 2a (positing that the negative association between policy enforcement and substance use would be attenuated as a function of more permissive drinking norms), 3a (positing that the positive association between job stress and substance use would be amplified as a function of permissive drinking norms), and 4a (positing that the positive association between work alienation and substance use would be amplified as a function of drinking norms), we first centered the individual predictors and then multiplied these centered values to compute the interaction terms (Aiken & West, 1991). These terms were then incorporated into the main effect models described previously. The results provide partial support for these hypotheses. As Model 3 of Table 2 indicates, the generally positive association between job hazards and alcohol quantity was amplified as a function of drinking norms (B for the interaction = $0.032, p < .10$). In addition, the generally negative association between social interactions and alcohol quantity was attenuated as a func-

Table 1
Means, Standard Deviations, and Intercorrelation (Pearson) of the Measured Variables (N = 361)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Gender (1 = Females)	.46	.50	—																
2. Age	37.8	11.1	-.08	—															
3. Education	3.8	1.9	.06	.09*	—														
4. Ethnicity 1 (1 = Jews born in former USSR)	.36	.47	.10*	.14**	.39**	—													
5. Ethnicity 2 (1 = Israeli Jews)	.44	.49	.01	.00	-.26**	-.60**	—												
6. Negative affectivity	1.9	.74	.01	.01	.07	.04	-.02	—											
7. Social desirability	4.3	1.4	.09*	-.04	.12**	.05	.03	-.00	—										
8. Drinking norms	1.5	3.7	-.16**	.00	.02	.02	-.02	.09*	-.05	—									
9. Policy enforcement	3.9	1.4	-.04	.01	.16**	.02	-.03	.05	.17**	-.17**	—								
10. Role overload	3.1	1.2	.00	-.06	.10*	.08	.00	.12**	.05	.11**	.00	—							
11. Job insecurity	2.3	1.1	-.01	-.04	-.03	.10*	-.12**	.10*	-.03	.02	-.04	.07	—						
12. Job hazards	2.6	.85	.11**	-.03	.03	.04	-.04	.10*	-.06	.24**	-.21**	.29**	.11**	—					
13. Decision involvement	3.5	1.5	-.15**	-.10**	-.04	-.11**	.02	-.04	.06	.04	.05	.06	.01	-.00	—				
14. Self-estrangement	4.2	1.4	.08	-.05	.12**	.15**	-.07	.02	.01	.04	-.08	.09*	.13**	.15**	-.32**	—			
15. Social interactions	3.8	.84	.16**	-.02	-.05	-.11**	.13**	-.05	.05	-.12**	.12**	-.11**	-.05	-.17**	-.03	-.12**	—		
16. Quantity of alcohol consumption	.86	2.1	-.15**	.05	-.06	.08	.04	.03	-.05	.35**	-.29**	.05	.04	.29**	.03	.09	-.23**	—	
17. Frequency of alcohol consumption	.33	1.0	-.14**	.02	-.02	.10*	.09	.09	-.10*	.42**	-.33**	.10*	.06	.41**	.02	.10*	-.38**	.59**	—
18. Frequency of illicit drug use	.16	.72	-.15**	.00	-.11**	.04	.03	.02	-.02	.38**	-.27**	.07	.03	.33**	.02	.06	-.19**	.52**	.45**

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

Table 2

Zero-Inflated Poisson Regression Testing the Association Between Risk Factors and the Quantity of Alcohol Consumption (N = 375)

Model variable	(1) Control model	(2) Main effect model	(3) Interaction model
		B	
Gender (1 = Females)	-0.486**	-0.270	0.161
Age	-0.005	0.002	0.004
Education	-0.040	0.015	0.055
Ethnicity A (1 = Jews born in the former USSR)	0.095	0.092	-0.081
Ethnicity B (1 = Israeli Jews)	0.033	0.032	-0.014
Negative affectivity	0.088	-0.022	-0.019
Social desirability	-0.050	0.021	0.016
Drinking norms		0.004	0.048*
Policy enforcement		-0.161***	-0.237***
Drinking norms × Policy enforcement			-0.010
Role overload		0.088	0.071
Job insecurity		-0.059	-0.081
Job hazards		0.249***	0.261***
Drinking norms × Role overload			0.001
Drinking norms × Job insecurity			-0.014
Drinking norms × Job hazards			0.032*
Decision involvement		-0.111*	-0.153**
Self-estrangement		0.003	0.007
Social interactions		-0.147**	-0.207**
Drinking norms × Decision involvement			-0.001
Drinking norms × Self-estrangement			0.009
Drinking norms × Social interactions			-0.026*
Model summary	$R^2 = .046$	$R^2 = .293$ $\Delta R^2 = .247^{a,***}$	$R^2 = .361$ $\Delta R^2 = .068^{b,***}$

^a Relative to Model 1. ^b Relative to Model 2.

* $p < .10$. ** $p < .05$. *** $p < .01$.

tion of drinking norms (B for the interaction = -0.026, $p < .10$). As shown in Model 3 of Table 3, the generally negative association between policy enforcement and alcohol frequency was attenuated as a function of drinking norms (B for the interaction = -0.028, $p < .05$). In addition, the generally positive association between job hazards and alcohol frequency was amplified as a function of drinking norms (B for the interaction = 0.059, $p < .05$). With respect to drug frequency, Model 3 in Table 4 indicates that the generally negative association between social interactions and drug frequency was attenuated as a function of drinking norms (B for the interaction = -0.045, $p < .10$). As indicated in tables 2, 3, and 4, the inclusion of the interaction terms resulted in a further increase in the total effect size relative to the main effect models.

To graphically illustrate the interactions, we utilized a procedure similar to the one recommended by Stone and Hollenbeck (1989). Specifically, we plotted three slopes of drinking norms: one at one stan-

dard deviation below the mean, one at the mean, and one at one standard deviation above the mean. In the interests of space, we present only one figure here.¹ As Figure 1 illustrates, while under conditions of average and less permissive (-1 *SD* below the mean) drinking norms, there is the expected negative association between policy enforcement and alcohol frequency; under conditions of more permissive (+1 *SD* above the mean) drinking norms, the link between policy enforcement and alcohol frequency is less steep.

Simple slopes analyses were conducted on the policy enforcement/alcohol frequency relationship under three levels of drinking norms (i.e., -1 *SD* below the mean, mean, and +1 *SD* above the mean). In support of Hypothesis 2a, the association between policy enforcement and the frequency of alcohol con-

¹ For the other figures, please contact the corresponding author.

Table 3
Ordered Probit Regression Testing the Association Between Risk Factors and the Frequency of Alcohol Consumption (N = 403)

Model variable	(1) Control model	(2) Main effect model	(3) Interaction model
	B		
Gender (1 = Females)	-0.525**	-0.263	0.260
Age	-0.008	-0.008	-0.011
Education	-0.088	-0.126	-0.129
Ethnicity A (1 = Jews born in the former USSR)	0.846**	0.290	0.198
Ethnicity B (1 = Israeli Jews)	0.539**	0.407*	0.384
Negative affectivity	0.207**	0.154	0.168
Social desirability	-0.164	-0.097	-0.113
Drinking norms		0.082***	0.056**
Policy enforcement		-0.332***	-0.403***
Drinking norms × Policy enforcement			-0.028**
Role overload		0.016	0.009
Job insecurity		-0.051	-0.019
Job hazards		0.357***	0.330**
Drinking norms × Role overload			0.017
Drinking norms × Job insecurity			-0.001
Drinking norms × Job hazards			0.059**
Decision involvement		-0.032	-0.046
Self-estrangement		0.153*	0.191**
Social interactions		-0.431***	-0.382***
Drinking norms × Decision involvement			-0.008
Drinking norms × Self-estrangement			0.013
Drinking norms × Social interactions			-0.025
Model summary	$R^2 = .143$	$R^2 = .311$ $\Delta R^2 = .168^{***,a}$	$R^2 = .382$ $\Delta R^2 = .071^{***,b}$

^a Relative to Model 1. ^b Relative to Model 2.

* $p < .10$. ** $p < .05$. *** $p < .01$.

sumption is negative (estimates = -0.44 and -0.56) and significant ($ps < .001$) under conditions of less permissive (i.e., mean and -1 *SD* below the mean, respectively) drinking norms. However, assuming more permissive (+1 *SD*) drinking norms, the association between policy enforcement and alcohol frequency is significant but of lower magnitude (estimate = -0.32) and at a significance level of $p < .05$.

Discussion

An increasing awareness of employee substance-related problems around the world (e.g., Sonnenstuhl, 1996; Evans, 2004) has heightened the need for an enhanced understanding of the role that the workplace may play in the initiation and exacerbation of such problems (Bacharach et al., 2002; Frone, 2008b). While a substantial literature has emerged on the work-based etiology of employee substance use in the United States, similar research conducted outside of North America is rare (Grant, 1998; Kuntsche

et al., 2004; Liu et al., 2009). The current study was motivated by a desire to try to bridge this gap by testing the generalizability of Bacharach et al.'s (2002) multiperspective work-based etiological model to blue-collar workers employed outside of North America, namely, in a large Israeli enterprise. Further, the current study extends the Bacharach et al. (2002) model by (a) focusing on scale-based quantity and frequency measures of substance use, and (b) examining illicit drug use in addition to alcohol consumption.

The findings presented above partly support the original model. First, permissive drinking norms were found to be directly associated with employee substance use. Previous studies suggest that a firm's failure to become a "collective of shared norms" (Barley & Kunda, 1992, p. 384) may enhance counterproductive behaviors, as individuals internalize subculture norms that are inconsistent with those held by management (e.g., Sanders, 2004). Indeed, the impact of normative influences stemming from those

Table 4
Ordered Probit Regression Testing the Association Between Risk Factors and the Frequency of Drug Use
 (N = 367)

Model variable	(1) Control model	(2) Main effect model	(3) Interaction model
	B		
Gender (1 = Females)	-0.861***	-0.849***	-0.845***
Age	-0.002	-0.003	-0.005
Education	-0.137	-0.109	-0.149
Ethnicity A (1 = Jews born in the former USSR)	0.401	0.241	0.303
Ethnicity B (1 = Israeli Jews)	0.181	0.135	0.206
Negative affectivity	0.260**	0.257**	0.265**
Social desirability	0.076	0.124	0.131
Drinking norms		0.104***	0.091**
Policy enforcement		-0.430***	-0.477***
Drinking norms × Policy enforcement			-0.031
Role overload		0.089	0.205*
Job insecurity		-0.045	-0.076
Job hazards		0.464***	0.527***
Drinking norms × Role overload			0.009
Drinking norms × Job insecurity			0.040
Drinking norms × Job hazards			0.023
Decision involvement		-0.084	-0.055
Self-estrangement		0.077	0.029
Social interactions		-0.195	-0.056
Drinking norms × Decision involvement			-0.030
Drinking norms × Self-estrangement			0.012
Drinking norms × Social interactions			-0.045*
Model summary	$R^2 = .127$	$R^2 = .325$ $\Delta R^2 = .198^{***,a}$	$R^2 = .346$ $\Delta R^2 = .021^{**b}$

^a Relative to Model 1. ^b Relative to Model 2.

* $p < .10$. ** $p < .05$. *** $p < .01$.

who, according to social identity theory, may be most instrumental in shaping an employee's substance use attitudes and behaviors, namely, those employees comprising the individual's informal peer group, may outweigh the effect of more formal organizational norms and regulations (Sonnenstuhl, 1996). These employees are typically those in whom the individual places the greatest trust, with whom s/he has the closest work-based ties, and to whom s/he turns to for advice and support (Hackman, 1992). For practitioners, this finding suggests the need to adopt intervention strategies that are focused on the organization's informal peer-based subcultures. Managers may need to work on a more micro level, mapping informal clusters or "hot spots" of substance use problems and seeking to influence those tending to emerge at the hub or core of these referent networks.

The results also confirm that perceptions regarding substance-use policy enforcement are associated with lower rates of substance use. From a subjective expected-utility perspective, employees perceiving

their supervisors as more able to confront and handle substance use problems are likely to upwardly estimate the costs of substance use (i.e., perceive higher risk for being sanctioned or dismissed), resulting in a decreased motivation to consume alcohol or illicit drugs. However, this increase of the expected costs of substance use is likely to be counterbalanced by a normative-based sense of obligation to workplace peers and, particularly, the drinking norms they perceived to be holding. Indeed, as hypothesized, the inverse association between policy enforcement and alcohol frequency was attenuated as a function of normative permissiveness. This finding suggests that managerial attempts to enforce substance-related policy may be most influential to the degree that these attempts are not perceived to undermine norms established by informal groups and thus jeopardize the solidarity of such groups (e.g., Blackard, 2000). Managerial efforts to handle substance use problems should take into account the normative context within which these problems occur and not only strictly en-

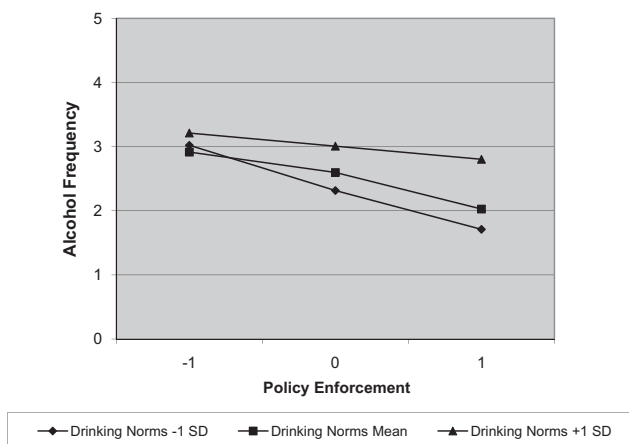


Figure 1. Policy enforcement and alcohol frequency as a function of drinking norms: Curves for three different levels of the moderator (-1 SD, mean, and $+1$ SD of perceived drinking norms).

force the formal, organization-wide policy (e.g., via disciplinary actions) but also identify potential sources of employee resistance. As with any attempt to change negative behavioral patterns, change agents (i.e., supervisors) need to better understand and set aside employees' preconceptions in favor of substance use, as these may influence the success of substance-related policies and programs (e.g., Piderit, 2000).

Our results also highlight the potential role of job stress and work alienation in the emergence of substance use problems. Perhaps more interesting is our finding that self-medication of such stress or alienation is more likely in a normative context perceived to be supportive of drinking, as evident from the significant interactions of drinking norms on the job hazards-alcohol quantity/alcohol frequency and the social interactions-alcohol quantity/drug frequency relationships. The paper thus responds to the call for more research to explain when, or under what, conditions work stressors or alienation are related to substance use (e.g., Frone, 2008a; Trice & Sonnenstuhl, 1988). More specifically, we were able to go beyond the simple cause-effect model and support Frone's moderated stress model by demonstrating that *even greater* encouragement to use alcohol as a means of tension reduction may occur if employees perceive tolerant norms for drinking. Here, too, to formulate more effective interventions, managers may need to consider both objective work conditions (e.g., exposure to work hazards) as well as subjective perceptions concerning the appropriateness of substance use.

However, it is also important to note that, aside from the association of job hazards with substance use, unlike Bacharach et al. (2002) we found no evidence of a link between other role stressors (e.g., role overload) and substance use, even under conditions of more permissive injunctive norms. Additionally, although studies in North America suggest that policy enforcement (by generating employee resistance) can both protect against as well as motivate on employee substance use (Bacharach et al., 2002; Bamberger & Bacharach, 2006), perhaps because alcohol has not played a role in labor-management conflict in Israel as it has in North America (Sonnenstuhl, 1996; Bacharach, Bamberger & Sonnenstuhl, 2001), we found policy enforcement to play a strictly protective role with a strictly inverse association between enforcement and substance use and no evidence of resistance-based backlash.

In that sense, the results of this study suggest that models developed in North America may be only partly generalizable to other countries—such as Israel—with low consumption per capita, a high prevalence of abstinence (Bamberger & Barhom-Kidron, 1998; Rehm et al., 2003), and, perhaps most importantly, a different set of cultural values and orientations with respect to the link between work and substance use. More specifically, despite increasing levels of per capita alcohol consumption and illicit drug use, and evidence of convergence with regard to the norms surrounding the consumption of alcohol and other drugs, our findings regarding the role of work-related risk factors and substance use among the Israeli blue-

collar workers studied give us reason to question the degree to which work-related conditions associated with substance use in one country will necessarily be associated with similar patterns of substance use in another. Still, we would be remiss were we to neglect the similarity between our findings and those reported by Bacharach et al. (2002). More specifically, the highly potent direct and indirect effects of permissive workplace norms found in both their study and ours suggests that at least some work-based risk factors may be robust to cross-cultural differences. This is particularly notable given the high proportion of study participants (91%) reporting that they abstained from alcohol in the past month.

Limitations and Suggestions for Future Research

The current study has several limitations. First, it may itself offer somewhat limited generalizability in that it focused strictly on blue-collar workers and did so in the context of only one enterprise in one country. Moreover, as evidenced by the high rate of abstinence noted, the fact that the particular workforce studied was considerably older than the Israeli labor force may limit the generalizability of the study's findings to the broader Israeli workforce. Accordingly, while this is one of the first comprehensive attempts to understand the role of workplace conditions as correlates of substance use for workers employed outside of North America (and the only one we know of in Israel), before researchers can comment upon the applicability of the proposed model to individuals employed in firms located outside of North America, it may be useful to examine the model among white-collar employees or among blue-collar workers (and, especially, younger and/or non-union workers) employed in other industries in and outside of Israel.

Second, it is important to consider the threat of common method variance (CMV), which may sometimes inflate the magnitude of the relationships between study variables. For three reasons, however, we deem this threat to be limited. First, following Edwards (2008), we controlled for common method variance by taking social desirability and negative affect into account in all of our models. Second, particularly given the interactions specified in our model, method variance is unlikely to account for the complex pattern of results documented in this study (Richardson, Simmering & Sturman, 2009). Finally, as Spector (2006) suggests, small interconstruct rela-

tions often counter the idea that CMV is a universal inflator of correlation. In our study, correlations among the self-report variables were rather modest, ranging from $-.38$ to $.59$. Nevertheless, we encourage researchers to explore other individual differences left unspecified in the current models that could conceivably account for some of the relations observed in this study. In particular, we encourage researchers to explore the role played by catastrophizing explanatory style (Peterson & Seligman, 1984), in that, as a cognitive personality variable, it may influence individuals' perceptions of work-based risks as well as their self-reporting of illness symptoms.

A third limitation stems from the use of overall measures for substance use—presumably capturing all contexts of employee substance use, including substance use during the workday, before and after the workday, and at times and places far removed from the workday. A recent study by Frone (2008a) highlights the importance of the context of substance use by demonstrating that context-free substance use (i.e., away from work) manifests different relationships with such stressors as work overload and job insecurity when compared to those relationships manifested when the focus is on a specific temporal context (i.e., before/during/after work). We, too, encourage researchers to make such distinctions when examining the work-based etiology of employee substance use in their substance use measures.

Fourth, while we followed convention by assessing alcohol use on the basis of measures of *modal* frequency and quantity of consumption (e.g., Frone, 2008a), such measures may not accurately capture variability in consumption. Still, these measures have been widely validated (Del Boca and Darkes, 2003). Moreover, cross-cultural comparisons are feasible only to the extent that common measures are utilized.

Finally, our study's findings with respect to the role of permissive drinking norms are somewhat limited by our focus strictly on injunctive norms. And although a recent U.S.-based study by Frone and Brown (2010) found that only workplace injunctive norms (and not descriptive norms) predicted overall levels of employee alcohol and illicit drug use, we cannot be sure that this is the case in other countries, for example, Israel. Future research should consider the other two normative components noted by Ames and her colleagues (2000), namely, physical availability and descriptive norms.

References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Ames, G. M., Cunradi, C. B., & Moore, R. S. (2002). Alcohol, tobacco, and drug use among young adults prior to entering the military. *Prevention Science, 3*, 135–144.
- Ames, G. M., Grube, J. W., & Moore, R. S. (2000). Social control and workplace drinking norms: A comparison of two organizational cultures. *Journal of Studies on Alcohol, 61*, 203–219.
- Ames, G. M., & Janes, C. R. (1987). Heavy and problem drinking in an American blue-collar population: Implications for prevention. *Social Science & Medicine, 25*, 949–960.
- Anderson, P., & Baumberg, B. (2006). *Alcohol in Europe*. London, England: Institute of Alcohol Studies.
- Ashford, S. J., Lee, C., & Bobko, P. (1989). Content, causes, and consequences of job insecurity. *Academy of Management Journal, 32*, 803–829.
- Bacharach, S., Bamberger, P., & Biron, M. (2010). Alcohol consumption and workplace absenteeism: The moderating effect of social support. *Journal of Applied Psychology, 95*, 334–348.
- Bacharach, S. B., Bamberger, P. A., & Conley, S. (1990). The dimensionality of decision participation in educational organizations: The value of a multi-domain evaluative approach. *Educational Administration Quarterly, 26*, 126–167.
- Bacharach, S. B., Bamberger, P. A., & Sonnenstuhl, W. J. (2001). *Mutual aid and union renewal: Cycles of logics of action*. Ithaca, NY: Cornell University Press.
- Bacharach, S. B., Bamberger, P. A., & Vashdi, D. (2005). Diversity and homophily at work: Supportive relations among white and African-American Peers. *Academy of Management Journal, 48*, 619–644.
- Bacharach, S. B., Bamberger, P. A., & Sonnenstuhl, W. J. (2002). Driven to drink: Managerial control, work-related risk factors, and employee problem drinking. *Academy of Management Journal, 45*, 637–658.
- Bamberger, P. A., & Bacharach, S. B. (2006). Abusive supervision and subordinate problem drinking: Taking resistance, stress, and subordinate personality into account. *Human Relations, 59*, 1–30.
- Bamberger, P. A., & Barhom-Kidron, A. (1998). Spirit at work in the promised land: Ethnic identity, work related risk factors and drinking behavior among Israeli Jews. *The Journal of Applied Behavioral Science, 34*, 445–467.
- Bar-Hamburger, R., Ezrachi, Y., Roziner, I., & Nirel, R. (2009). *The use of psychoactive substances in Israel* (Epidemiologic Research). Jerusalem, Israel: Israel Anti-drug Authority.
- Bar-Hamburger, R., Ezrachi, Y., Roziner, I., & Steinberg, D. (2005). *The use of psychoactive substances in Israel* (6th Epidemiologic Research). Jerusalem, Israel: Israel Anti-drug Authority.
- Barley, S. R., & Kunda, G. (1992). Design and devotion: Surges of rational and normative ideologies of control in managerial discourse. *Administrative Science Quarterly, 37*, 363–399.
- Blackard, K. (2000). *Managing change in a unionized workplace*. Westport, CT: Greenwood Publishing Group.
- Campbell, R. L., & Langford, E. R. (1995). *Substance abuse in the workplace*. Boca Raton, FL: Lewis Publishers.
- Conger, J. (1956). Reinforcement theory and the dynamics of alcoholism. *Quarterly Journal of Studies on Alcohol, 17*, 296–305.
- Cooper, M. L., Russell, M., & Frone, M. R. (1990). Work stress and alcohol effects: A test of stress-induced drinking. *Journal of Health and Social Behavior, 31*, 206–276.
- Corrao, G., Bagnardi, V., Zambon, A., & La Vecchia, C. (2004). A meta-analysis of alcohol consumption and the risk of 15 diseases. *Preventive Medicine, 38*, 613–619.
- Cosper, R. (1979). Drinking as conformity: A critique of the sociological literature on occupational differences in drinking. *Journal of Studies on Alcohol, 40*, 868–891.
- Crum, R. M., Muntaner, C., Eaton, W. W., & Anthony, J. C. (1995). Occupational stress and the risk of alcohol abuse and dependence. *Alcoholism: Clinical and Experimental Research, 19*, 647–655.
- de Witte, H. (1999). Job insecurity and psychological well-being: Review of the literature and exploration of some unresolved issues. *European Journal of Work and Organizational Psychology, 8*, 155–177.
- Del Boca, F. K., & Darkes, J. (2003). The validity of self-reports of alcohol consumption: State of the science and challenges for research. *Addiction, 98*, 1–12.
- Edwards, J. R. (2008). To prosper, organizational psychology should overcome methodological barriers to progress. *Journal of Organizational Behavior, 29*, 469–491.
- Edwards, R. (1979). *Contested terrain*. New York, NY: Basic Books.
- Elhai, J. D., Calhoun, P. S., & Ford, J. D. (2008). Statistical procedures for analyzing mental health services. *Psychiatry Research, 160*, 129–136.
- Erikson, K. (1986). On work and alienation. *American Sociological Review, 51*, 1–8.
- Evans, R. (2004). *Drug testing in the workplace*. York, England: Joseph Roundtree Foundation.
- Frone, M. R. (1999). Work stress and alcohol use. *Alcohol Research & Health, 23*, 284–291.
- Frone, M. R. (2006). Prevalence and distribution of illicit drug use in the workforce and in the workplace: Findings and implications from a U.S. national survey. *Journal of Applied Psychology, 91*, 856–869.
- Frone, M. R. (2008a). Are work stressors related to employee substance use? The importance of temporal context assessments of alcohol and illicit drug use. *Journal of Applied Psychology, 93*, 199–206.
- Frone, M. R. (2008b). Employee alcohol and illicit drug use: Scope, causes, and organizational consequences. In J. Barling & C. L. Cooper (Eds.), *The SAGE handbook of organizational behavior: Volume One: Micro approaches* (pp. 519–540). Thousand Oaks, CA: Sage.
- Frone, M. R. (2009). Does a permissive workplace substance use climate affect employees who do not use alcohol and drugs at work? A U.S. national study. *Psychology of Addictive Behaviors, 23*, 386–390.
- Frone, M. R., & Brown, A. L. (2010). Workplace substance use norms as predictors of employee substance use and impairment: A survey of U.S. workers. *Journal of Studies on Alcohol and Drugs, 71*, 526–534.
- Frone, M. R., Russell, M. R., & Cooper, M. L. (1997). Job stressors, job involvement, and employee health: A test

- of identity theory. *Journal of Occupational and Organizational Psychology*, 68, 1–11.
- Glassner, B., & Berg, B. (1980). How Jews avoid alcohol problems. *American Sociological Review*, 45, 647–664.
- Grant, M. (1998). *Alcohol and emerging markets: Patterns, problems, and responses*. Hove, England: Psychology Press.
- Greenberg, E. S., & Grunberg, L. (1995). Work alienation and problem alcohol behavior. *Journal of Health and Social Behavior*, 36, 83–102.
- Hackman, R. J. (1992). Group influences on individuals in organizations. In M. D. Dunnette, & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (pp. 199–267). Palo Alto, CA: Consulting Psychologists Press.
- Hao, W. (1995). Alcohol policy and the public good: A Chinese view. *Addiction*, 90, 1448–1450.
- Heather, N. (1994). Alcohol, accidents and aggression. *British Medical Journal*, 308, 1254.
- Jiafang, Z., Jiachun, W., Lu, Y., Xiaoxia, Q., & Ya, F. (2004). Alcohol abuse in a metropolitan city in China: A study of the prevalence and risk factors. *Addiction*, 99, 1103–1110.
- Kobasa, S. C., Maddi, S. R., & Kahn, S. (1982). Hardiness and health: A prospective study. *Journal of Personality and Social Psychology*, 42, 168–177.
- Kuntsche, E., Rhem, J., & Gmel, G. (2004). Characteristics of binge drinkers in Europe. *Social Science & Medicine*, 59, 113–127.
- Leigh, P. J. (1996). Alcohol abuse and job hazards. *Journal of Safety Research*, 27, 17–32.
- Liu, S., Wang, M., Zhan, Y., & Shi, J. (2009). Daily work stress and alcohol use: Testing the cross-level moderation effects of neuroticism and job involvement. *Personnel Psychology*, 62, 575–597.
- Maisto, S. A., Connors, G. J., & Allen, J. P. (1995). Contrasting self-report screens for alcohol problems: A review. *Alcoholism: Clinical and Experimental Research*, 19, 1510–1516.
- Mangione, T. W., Howland, J., Amick, B., Cote, J., Lee, M., Bell, N., & Levine, S. (1999). Employee drinking practices and work performance. *Journal of Studies on Alcohol*, 60, 261–271.
- Mannello, T. A., & Seaman, F. J. (1979). *Prevalence, costs and handling of drinking problems on seven railroads: Final report*. Washington, DC: University Research Cooperation.
- Marlatt, G. A., Baer, J. S., Donovan, D. M., & Kivlahan, D. R. (1988). Addictive behaviors: Etiology and treatment. *Annual Review of Psychology*, 3, 223–252.
- Marshall, N. L., Barnett, R. C., & Sayer, A. (1997). The changing workforce, job stress, and psychological distress. *Journal of Occupational Health Psychology*, 2, 99–107.
- Martin, J. K., Roman, P. M., & Blum, T. C. (1996). Job stress, drinking networks, and social support at work: A comprehensive model of employees' problem drinking behaviors. *Sociological Quarterly*, 37, 579–600.
- Midford, R. (2005). Australia and alcohol: Living down the legend. *Addiction*, 100, 891–896.
- Newton, T. J., & Keenan, A. (1987). Role stress reexamined: An investigation of role stress predictors. *Organizational Behavior and Human Decision Processes*, 40, 346–368.
- O'Toole, J. (1974). *Work and the quality of life*. Cambridge, MA: MIT Press.
- Paulhus, D. L. (1991). Measurement and control of response bias. In J. P. Robinson, P. Shaver, & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes* (pp. 17–59). San Diego, CA: Academic Press.
- Peterson, C., & Seligman, M. E. P. (1984). Causal explanations as a risk factor for depression: Theory and evidence. *Psychological Review*, 91, 347–374.
- Piderit, S. K. (2000). Rethinking resistance and recognizing ambivalence: A multidimensional view of attitudes toward an organizational change. *Academy of Management Review*, 25, 783–794.
- Quest Diagnostics Incorporated. (2007). *The drug testing index*. Lyndhurst, NJ: Author.
- Rahav, G., Hasin, D., & Paykin, A. (1999). Drinking patterns of recent Russian immigrants and other Israelis: 1995 National Survey Results. *American Journal of Public Health*, 89, 1212–1216.
- Ramchand, R., Pomeroy, A., & Arkes, J. (2009). *The effects of substance use on workplace injuries*. Santa Monica, CA: Rand Corporation.
- Rehm, J., Rehn, N., Room, R., Monteiro, M., Gmel, G., Jernigan, D., & Frick, U. (2003). The global distribution of average volume of alcohol consumption and patterns of drinking. *European Addiction Research*, 9, 147–156.
- Richardson, H. A., Simmering, M. J., & Sturman, M. C. (2009). A tale of three perspectives: Examining post hoc statistical techniques for detection and correction of common method variance. *Organizational Research Methods*, 12, 762–800.
- Roxburgh, S. (1998). Gender differences in the effect of job stressors on alcohol consumption. *Addictive Behaviors*, 23, 101–107.
- Sanders, K. (2004). Playing truant within organizations. *Journal of Managerial Psychology*, 19, 136–155.
- Sarros, J. C. C., Tanewski, G. A., Winter, R. P., & Santora, J. C. (2002). Work alienation and organizational leadership. *British Journal of Management*, 13, 285–304.
- Sayette, M. A. (1999). Does drinking reduce stress? *Alcohol Research and Health*, 23, 250–255.
- Schein, E. H. (1992). *Organizational culture and leadership* (2nd ed.). San Francisco, CA: Jossey-Bass.
- Seeman, M. (1975). Alienation studies. *Annual Review of Sociology*, 1, 91–123.
- Seeman, M., & Anderson, C. (1983). Alienation and alcohol: The role of work mastery and community in drinking behavior. *American Sociological Review*, 48, 60–77.
- Smith, A., Wadsworth, E., Moss, S., & Simpson, S. (2004). *The scale and impact of illegal drug use by workers*. London, England: Health and Safety Executive.
- Snyder, C. (1958). *Alcohol and the Jews*. Glencoe, IL: Free Press.
- Sonnenstuhl, W. J. (1996). *Working sober*. Ithaca, NY: Cornell University Press.
- Spector, P. E. (2006). Method variance in organizational research: Truth or urban legend? *Organizational Research Methods*, 9, 221–232.
- Staines, G. L., & Quinn, R. P. (1979). American workers evaluate the quality of their jobs. *Monthly Labor Review*, 1, 3–17.
- Stone, E. F., & Hollenbeck, J. R. (1989). Clarifying some controversial issues surrounding statistical procedures for

- detecting moderator variables: Empirical evidence and related matters. *Journal of Applied Psychology*, 74, 3–10.
- Substance Abuse and Mental Health Services Administration. (2005). *Results from the 2004 national survey on drug use and health*. Office of Applied Studies, NHSDA Series H-22, DHHS Publication No. SMA 033836. Rockville, MD: Author.
- Trice, H. M., & Roman, P. M. (1972). *Spirits and demons at work*. Ithaca, NY: ILR Press.
- Trice, H. M., & Sonnenstuhl, W. J. (1988). Drinking behaviors and risk factors related to the workplace. *Journal of Applied Behavioral Sciences*, 24, 327–334.
- Trice, H. M., & Sonnenstuhl, W. J. (1990). On the construction of drinking norms in work organizations. *Journal of Studies on Alcohol*, 51, 201–220.
- Vaillant, G. E. (1983). *The natural history of alcoholism*. Cambridge, MA: Harvard University Press.
- Vallas, S. P. (1988). New technology, job content, and worker alienation. *Work and Occupations*, 15, 148–178.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Journal of Personality and Social Psychology*, 54, 1063–1074.
- Yang, M. J., Yang, M. S., & Kawachi, I. (2001). Work experience and drinking behavior: Alienation, occupational status, workplace drinking subculture and problem drinking. *Public Health*, 115, 265–271.
- Zinberg, N. E. (1981). Alcohol addiction: Toward a more comprehensive definition. In M. H. Bean, & N. E., Zinberg (Eds.), *Dynamic approaches to the understanding and treatment of alcoholism* (pp. 97–127). New York, NY: Free Press.

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