Expanding the Tension-Reduction Model of Work Stress and Alcohol Use: Comparison of Managerial and Nonmanagerial Men and Women

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Among researchers and the general public, there has been a long-standing belief that heightened levels of work stress can lead to increased levels of alcohol consumption and alcohol-related problems. In its simple “cause and effect” form, this work-stress paradigm, also known as the “spillover” or “tension-reduction” model, has received limited support (Blum & Roman, 1997; Cooper, Russell, & Frone, 1990; Mensch & Kandel, 1988); more recent evidence, however, has substantiated such a relationship when work stress and alcohol consumption are linked using more complex moderated or mediated models (Frone, 1999; Frone 2003; Grunberg, Moore, Anderson-Connolly, & Greenberg, 1999; Grunberg, Moore, & Greenberg, 1998). Frone (1999) specifically noted that a more fruitful direction for the field may involve identification of certain subgroups of workers who “lack certain resources or who have certain vulnerabilities” (p. 286), as they may be more likely to turn to alcohol in response to work-based stressors.

Women, and particularly managerial women or women working in traditionally male-dominated environments, are one such group whose drinking vis-à-vis work has been examined in previous investigations (Davidson & Cooper, 1985; LaRosa, 1990; Moore, Grunberg, & Greenberg, 1999; 2003; Shore, 1992, 1997). Wilsnack and Wilsnack (1992) noted that women’s drinking rate has not risen at a pace commensurate with their employment rate; however, both Shore (1992, 1997) and Hammer and Vaglum (1989) cite evidence suggesting that employed women drink more than do women not employed outside the home. Moore et al (1999, 2003) found that managerial women reported significantly greater alcohol problems as compared to managerial men and nonmanagerial men and women, and LaRosa (1990) found significantly higher alcohol
consumption rates among executive women as compared to a matched control group of working women. The executive group also had three times the number of heavy drinkers (more than 25 drinks per week) as compared to the control group; on other indices of health, however, the two groups were quite similar. Several others have found that, overtime, women may begin to adopt the drinking patterns of men (Ames & Rebhun, 1996; Richman & Rospenda, 1992), suggesting that women may develop a coping style more similar to that of men.

In other attempts to explain the reasons for gender differences in alcohol consumption, a large body of research has focused on the unique work-related stressors that employed women confront; it is these distinctive stressors that have been thought to prompt a tension-reduction alcohol consumption response. It is the purpose of the present paper to examine the contributions of three, more recently-advanced explanations of women’s alcohol use, namely the stressors associated with gender ratio (e.g., Haavio-Mannila, 1991), generalized workplace abuse (Richman, Shinsako, Rospenda, Flahery, Freels, 2002; Rospenda, Richman, Wislar, & Flaherty, 2000), and negative coworker beliefs and expectations for women’s work performance (Eagly & Karau, 2002; Heilman, 2001). Indeed, Frone (1999) commented that the extant literature has focused predominately on the workplace stressors of job demands, control, and complexity, and a number of researchers (e.g., Ragland, Greiner, Krause, Holman, & Fisher, 1995) have remarked on the utility of exploring the effects of specific types of workplaces stressors. Using a large sample of managerial and nonmanagerial men and women, we examine these stressors in a tension-reduction framework to see whether they contribute to alcohol use and problems above that which is explained by more general workplace stress. We
also focus on managerial women to see whether these workplace stressors contribute to alcohol consumption and problems more than they do for nonmanagerial women.

**Gender Ratio**

The degree to which women work in a heavily male-dominated environment has been forwarded as one potential workplace stressor for female employees. Working with proportionately greater numbers of men, although not faced uniquely by women managers, is something they are more likely to face as they move into higher ranking positions (Eagly & Karau, 2002; Heilman, 2001). Therefore, we posit that this might be a more salient source of stress for managerial women. Simpson (2000), for example, found that “token” women (i.e., less than 20% of the total workers in the organization) reported experiencing career barriers and saw the organization as holding negative attitudes toward them more than did “nontoken” women. Gardiner and Tiggemann (1999) similarly found that as compared to women employed in female-dominated industries (e.g., hairdressing), women employed in male-dominated industries (e.g., information technology) experienced more workplace stress and poorer mental health when they used an interpersonal leadership style. McKeen and Burke, (1994), however, failed to find any differences on psychosomatic symptoms between women working in organizations with varying gender proportions.

A few studies have targeted the effects of gender proportions specifically on alcohol consumption. For example, Kraft, Blum, Martin, and Roman (1993), found that more heavily male-dominated work environments were associated with greater opportunities to drink, which, in turn, impacted drinking patterns. Similarly, Haavio-Mannila (1991) concluded that women who work with men, particularly token women,
tended to drink the most and to have the most problematic drinking, even after controlling for social status. Like Kraft et al., Haavio-Mannila noted that her findings could be a function of increased opportunities to drink alcohol; she also speculated that they could reflect increased “token stress” and attempts to cope with this stress through drinking.

A number of questions remain concerning the impact of gender ratio. First, it is not clear whether it is the ratio per se’ or other characteristics of a male-dominated industry that are responsible for the increased stress levels. We therefore address these issues in the present investigation by holding industry level characteristics constant and examining the gender ratio of one’s immediate, day-to-day working environment. Second, we examine this potential stressor along with more general forms of workplace stress in order to examine the unique contribution it makes above and beyond general workplace stress. To our knowledge, this has not been investigated in previous investigations.

Thus, based on the existing literature, we test the following:

Hypothesis 1a: A more heavily male-dominated, day-to-day work environment will be associated with greater alcohol consumption and problems for women but not men.

Hypothesis 1b: Compared to nonmanagerial women, a more heavily male-dominated, day-to-day work environment will be associated with greater alcohol consumption and problems for managerial women.
Generalized Workplace Abuse

Generalized workplace abuse has been defined as consisting of “interpersonally hostile interactions at work” (Rospenda, et al., 2000) such as being treated disrespectfully (e.g., being humiliated or belittled) or being isolated at work (e.g., having one’s work contributions ignored). They point out that unlike some types of workplaces stressors (e.g., little decision latitude) which may be seen by incumbents as being an inherent part of the job, such abusive treatment is more likely to be viewed as being unnecessary and potentially more stressful than many of the commonly studied workplace stressors. Thus, these authors note that one possible reason that the spillover model has failed to explain much variation in alcohol consumption or problems stems from the possibility that certain workplace stressors identified by researchers may not, indeed, be stressful to the job incumbents.

Richman and colleagues (1999) have reported high levels of such abusive treatment, ranging, for example, from 52% to 77% across varied occupational groups employed by a university. Although these reports of abuse were related to depression, anxiety, and hostility for both men and women, frequency of drinking was linked to three of the five subscales of generalized workplace abuse for women but to only one of the subscales for men. Thus, this limited evidence suggests that women may be slightly more responsive to this work stressor vis-à-vis alcohol. Extending this work, Rospenda et al (2000) found that workplace abuse was more strongly linked to alcohol-related outcomes than were other workplace-related stressors, such as psychological workload.

Beyond simple gender differences, Shinsako, Richman, and Rospenda (2001) compared the impact of workplace abuse on drinking outcomes between graduate and
medical students. Compared to other groups, female medical students showed an opposite and more complex pattern. In addition to reporting greater levels of generalized workplace abuse overall, female medical students increased their alcohol use, reported an increase in alcohol-related problems, but decreased their time spent drinking in response to this abuse as compared to female graduate students. The authors concluded that different types of coping strategies employed by different populations could be responsible for such differences; they suggested that future research investigate such varied responses between not only genders but also diverse employee group.

Based on the above review, we predict the following:

Hypothesis 2a: Generalized workplace abuse will predict alcohol consumption and problems for all employees.

Hypothesis 2b: Generalized workplace abuse will predict alcohol consumption and problems significantly more for women than for men.

In addition, we will explore whether generalized workplace abuse differentially predicts alcohol consumption and problems between managerial and nonmanagerial women.

Coworker Beliefs and Expectations for Performance

The actual expectations or beliefs others hold about one’s work performance, as well as the perceptions one thinks others have of her work performance, are another potential source of workplace stress for all women, but perhaps particularly so for female managers given that their success often violates role norms. For example, in a series of three laboratory experiments using both undergraduate students and employees of a financial services company, Heilman, Wallen, Fuchs, and Tamkins (2004) found that
women who were successful in nontraditional work situations were disliked more often as compared to men. This dislike, in turn, led participants to rate the target as not being worthy of salary increases or promotions. Interestingly, these findings held for both male and female participants, pointing to the pervasiveness of gender role expectations.

Similarly, Singh (2003) had both male and female executives evaluate the work performance of successful female managers for whom the participants worked. Even though all rated managers had been previously given “excellent” work performance ratings by the company, only 40% of the subordinates gave a favorable evaluation to their female supervisor. Other researchers have noted that more negative ratings of managerial women are found among those holding more traditional stereotypes about women (Forsyth, Heiney, & Wright, 1997), or when the managerial women possess a more “masculine” leadership style (Eagly, Makhijani, & Klonsky, 1992). The actual effects of such negative evaluations on managerial women themselves is less well-documented; however, Davidson and Cooper (1985) found that women managers reported significantly higher levels of tenseness, headaches, tiredness, and mental exhaustion as compared to managerial men. The authors linked such outcomes to higher levels of performance pressure, “colleagues of opposite sex being treated more favorably by management,” and “lack of encouragement from supervisors.”

Indeed, the extant literature would suggest that violations of gender role expectation -- real or perceived -- are a relevant source of stress for women: It stands to reason that women in managerial positions or working in historically male-dominated industries would experience heightened levels of this stress. Further, we argue that for managerial women, the belief that other people hold negative thoughts or expectations for
their work performance, or the belief that barriers preventing their success are present in the organization, are additional manifestation of this workplace stressor, a concept similar to “stereotype threat” (Steele, 1997). Stereotype threat occurs whenever a particular negative stereotype about a given group (e.g., managerial women) becomes “activated” among members of that group. In this case, managerial women who believe that others see them negatively because of gender role violations, or who believe that the company expects poor performance from them, would be examples of such stereotype threat. In a number of experiments, Steele and his colleagues have linked stereotype threat to heightened levels of anxiety and arousal as well as to lower test score performances (1997). Because gender and the beliefs about the capabilities and skills as linked to gender are heightened in workplace environments where role incongruity is present, we would expect stereotype threat to be a salient source of stress for all women, particularly for managerial women. Therefore, we posit:

Hypothesis 3a: The perception that others hold negative beliefs about the work performance of managerial women (i.e., stereotype threat) will significantly predict alcohol consumption and problems for women.

Hypothesis 3b: Stereotype threat will predict alcohol consumption and problems significantly more for managerial women as compared to nonmanagerial women.

Focus of the Present Study

The following model illustrates the relationships we test separately for managerial and nonmanagerial men and women in this study. As noted previously, we attempt to understand the workplace stressors contributing to women’s and particularly managerial women’s drinking and related problems over and above that which might be explained
from general workplace stress. In this study, our emphasis is on the contributions of three, specific sources of workplace stress thought to have particular importance for women – gender ratio, generalized workplace abuse, and stereotyped threat -- in an effort to understand their alcohol consumption and problems within a tension-reduction paradigm. Thus, although we have included general work stress in this model, and expect it to contribute to the development of alcohol problems, our primary focus lies in the contribution of the other three forms of workplace-related stress, over and above general workplace stress.

The model below also includes the concept escapist motives for drinking (i.e., drinking as a means to regulate affect) as a mediating link between the work stressors and alcohol outcomes. Frone (1999) has asserted that moderated mediation models – models that attempt to explain who and how work stress leads to alcohol use – are an important contribution to the tension-reduction literature. A number of researchers (Ames & Rebhun, 1996; Richman, Flaherty, & Rospenda, 1996; Richman & Rospenda, 1992) have argued that using alcohol for the purposes of coping with work stress is an important link between work stressors and alcohol use. Thus, for the sake of simplicity our hypotheses posit relationships between the aforementioned work stressors and alcohol consumption and problems. Indeed, there is very little previous research to guide a complex set of mediated hypotheses, in addition to the direct hypotheses, between each of the work stressors, for each of the four groups. We do, however, expect to see escapist reasons mediate the work stressors – alcohol relationship. As the model illustrates, we also expect to see direct effects between the work stressors and alcohol outcomes, over and above partially mediated relationship.
Hypothesis 4: Escape reasons for drinking alcohol will partially mediate the relationship between work stress and alcohol use and problems.

Insert Figure 1 about here

Method

Study Site

This study forms part of a larger, longitudinal study designed to investigate two important aspects of the workplace: first, what the effects of workplace change are on employee well-being, and second, which is the focus of this paper, to examine whether women working in traditionally male-dominated workplaces experience a distinct set of stressors. The research was carried out in a large, manufacturing division of a multinational company on the west coast of the United States that produces sophisticated high technology products.

The division has traditionally been characterized as dominated by an engineering culture. Sizeable growth in the proportion of women in managerial positions is a relatively recent phenomenon (spanning the last 20 years or so). At the time of this study, the workforce comprised 22% women and 10% managers. A few women have risen to quite high positions, including to the vice president level, and one woman was appointed chief financial officer for a short time. Nevertheless, the company has been subject to class action lawsuits alleging gender discrimination in pay and promotion opportunities. The company settled many of these suits out of court.
Sample and Procedure

Although the larger study has a longitudinal panel design, data analyzed in this paper are from employees who responded to questionnaires in mid-2003, the third wave of four waves of data collection that began in 1997 and will end in 2006. Women and managers were oversampled at Wave 3 to increase the likelihood that relevant group sizes would have sufficient numbers to provide robust statistical results. In order to increase the response rate, employees were assured of complete confidentiality and were promised $35 for returned completed questionnaires. We also sent out two postcard reminders and an additional mailed questionnaire to non-respondents. Of the 2455 employees who were mailed wave 3 questionnaires, 1410 returned usable ones (a 57% response rate). The final sample is comprised of 37% women and 39% managers, with 43% of the women and 36% of the men having managerial status.

In preparation for the survey a member of the research team conducted 19 in-person interviews with male and female managers (11 women and 8 men) who had responded to a written request sent to 100 randomly selected employees (32 managers agreed to be interviewed). Interviews lasted from one to two-and-a-half hours and were conducted at a mutually agreeable location. The primary purpose of these interviews was to explore whether women managers faced distinct or heightened levels of work stressors and also to understand how they were responding to the ongoing changes in the division. These interviews helped guide the construction of some of the scales in the study (e.g. stereotype threat). We followed up these interviews with two focus groups to test a preliminary version of the questionnaire, checking in particular to ensure that the
questions were comprehensible and comprehensively covered issues of concern to women managers.

Measures

In addition to a number of demographic questions, measures used in this paper include scales adapted from those found in the literature as well as items specifically developed for use in this study.

Gender Ratio. One question asked respondents to indicate what percentage of the people they work closely with each day are women.

Generalized Workplace Abuse. Adapted from scales developed by Richman and associates (Richman et al., 1999) this latent measure reflects two sub-scales, one measuring isolation or exclusion and the other disrespectful treatment. Isolation is made up of five questions that ask respondents how often they have been in a situation where someone in their work setting, for example, has labeled them a troublemaker if they expressed different opinions. Disrespectful treatment comprises nine questions using a similar format and covers such treatment as being humiliated, talked down to, and embarrassed. Response format for both sets of items were never, once, and more than once.

Stress. This latent variable reflects measures of emotional exhaustion, job stress, and work overload. Emotional exhaustion is one of the dimensions of the Maslach, Jackson, and Leiter’s (1997) burnout scale and was measured by asking respondents to indicate their level of agreement (ranging from strongly agree to strongly disagree) with the three statements: “I feel emotionally drained from my work,” “I feel burned out from my work,” and “I feel fatigued when I get up in the morning and have to face another day
on the job.” *Job stress* was assessed by asking respondents to think of their job in general and to indicate whether the following descriptors applied to their jobs most of the time: “tense,” “pressured,” “hassled,” “relaxed,” “pushed,” and “stressful” (Stanton, Baker, Smith, Parra & Ironson, 2001). *Work Overload* is a composite measure using a Likert format where respondents were asked to indicate their agreement on whether they had “too much work to do everything well,” on whether “the amount of work I am asked to do is fair,” and whether they “never seem to have enough time to get everything done” (Cammann, Fichman, Jenkins & Klesh, 1983).

**Stereotype Attitudes.** To assess the degree to which attitudes towards women managers conformed to certain stereotypes, we developed six items, based on the comments received by women managers in focus groups and individual interviews, that asked respondents to indicate whether they agreed or disagreed with the following statements: “Women managers have their ideas challenged more often than do managerial men;” “women managers have to perform much better than male managers in order to succeed;” “women managers must behave in a typically ‘masculine way’ in order to be taken seriously;” “compared to male managers, female managers must continually prove themselves;” “women managers have their work judged more critically than do male managers;” and “compared to male managers, female managers are often uncomfortable in taking credit for their success.”

**Escape Reasons for Drinking.** This scale measures the degree of importance people give to six “escapist” reasons for drinking. These include drinking to “relax” and drinking “to forget about” one’s job. Response options were *not important, somewhat important* and *very important* (Fennell, Rodin & Kantor, 1981).
Alcohol Problems is a latent variable reflecting three indices. CAGE is a standard measure of alcohol dependence which asks respondents to answer yes or no to whether in the last 5 years (a) they have felt they “ought to cut down” on their drinking; (b) people have “annoyed” them by criticizing their drinking; (c) they have “felt bad or guilty” about their drinking; and (d) they have had a “drink first thing in the morning” to steady their nerves or get rid of a hangover (Ewing, 1984). Negative Consequences from Drinking is a modified, seven-item version of scales developed to measure consequences of drinking alcohol (Jessor, Donovan & Costa, 1991; Cahalan, 1970). The items asked respondents how many times (ranging from never to four or more times) in the past 12 months the following things happened because of their drinking: they were criticized by friends; they missed work or had to call in sick; they had difficulties with spouse or partner; a family member expressed concern; they had driven when they had had a good bit to drink. Alcohol consumption was measured by asking participants to indicate the number of times in the past six months, ranging from never to every day, they had drunk four different amounts of alcohol: (a) one to two drinks, (b) three or four drinks, (c) five to seven drinks, (d) 8 or more drinks. These quantities were multiplied by the number of occasions to arrive at a total number of drinks consumed in the past 6 months. To correct for skewness, we used a square root transformation of this variable in all analyses.

Analytic Approach

We were primarily interested in how the relationships among stressors and alcohol outcomes manifested themselves across four groups: female managers, male managers, female non-managers, and male non-managers. Before examining specific relationships across the groups, however, we implemented three steps to test equivalence
across groups (Garson, 2001; Kenny, 1998; Kline, 1998; Vandenberg, 2002; Vandenberg & Lance, 1998, 2000): (a) single sample analysis of model convergence and fit to confirm well-fitting baseline models; (b) test of configural and metric equivalence to assess measurement equivalence; and (c) an omnibus test of structural equivalence. Acceptance of equivalence in the first two tests establishes that groups use equivalent meaning systems when responding to the questionnaire: differences in relationships can therefore be interpreted unambiguously. The last test sets the stage for examining the groups relative to our hypotheses; that is, rejection of structural equivalence suggests that there are differences in relationships among latents exist between groups and comparisons of path models are justified.

Based on the recommendations of Vandenberg and Lance (2000), we used TLI, CFI, RMSEA, and SRMR in addition to the CMIN/DF to evaluate fit of individual models. The chi square difference test was used to assess change in fit upon application of constraints (Kline, 1998). For all analyses, a covariance matrix was submitted to AMOS 5.0. A list and description of variables (indicators and latents) used in the analysis is found in Table I. Per standard practice, one indicator per latent was fixed to 1 to scale the latent construct and, because it is assumed that a single item latent is measured without error (Garson, 2001; Kline, 1998), error variance is fixed to zero for latents measured by only one indicator (GRATIO and ESCAPE REASONS). Final sample sizes for each group, after listwise deletion for missing data (Kline, 1998) are: female managers \(n = 180\), male managers \(n = 252\), female nonmanagers \(n = 189\), and male nonmanagers \(n = 351\).
Results

Equivalence Testing

Single group models. The first step was to assess each employee group relative to the proposed conceptual model to ensure that there are no convergence or fit difficulties that would preclude using the models for subsequent analyses (Kenny, 2001). Fit summaries for the single group models are found in Table II.

Fit for all single group models was very good. Indices for CMIN/DF exceeded the threshold value of 3.00 (1.60, 1.35, 1.57, and 1.72 for female managers, male managers, female nonmanagers, and male nonmanagers respectively). TLI and CFI values were generally at or above the threshold value of .95 for all groups, the exception being TLI for female managers at .94. RMSEA and SRMR values for the male groups were under .05, whereas for women, values slightly exceeded the .05 threshold but were still well within “adequate” levels. The conceptual model, then, appeared to fit each group quite well.

Configural and metric equivalence. Unambiguous interpretation of group differences in the structural model requires that groups interpret the latent constructs in a
similar way. Acceptance of an unconstrained model based on the pooled groups suggests that the number and configuration of indicators and latents is similar across the four employee groups (Vandenberg, 2002, Vandenberg & Lance, 2000). Specifically, factor loadings for each indicator are specified to be equal across groups, and the fit of this “nested” model is compared to unconstrained model.\(^5\) Table III summarizes fit indices for the unconstrained baseline configural model (Line 1) as well as fit for the constrained measurement model in which factor loadings are constrained to be equal across groups (Line 2).

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Insert Table III about here

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Absolute fit indices for both measurement equivalence models remained very good. CMIN/DF were well below the threshold for “good” fit for both configural (1.56) and measurement constrained models (1.61); TLI and CFI levels were at or above the .95 threshold established for “good” fit (.96 and .97 respectively for the configural model and .95 and .96 for the measurement constrained model). RMSEA and SRMR values were also consistent with “good” models. The solid fit indices for the configural model established configural equivalence. It was the nested comparison of measurement (Table IV) constrained model to unconstrained baseline, however, that provided the test of metric equivalence. This comparison resulted in a \(\Delta \chi^2\) of 65.94 (30), \(p < .001\) and suggested that we reject the hypothesis of metric invariance. However, examination of standardized factor loadings for the unconstrained models (Table V) suggested that the primary difference in latent meanings resided in the “Stress” latent (i.e., general work
stress for female managers reflected relatively more emotional exhaustion as compared to other groups). Because the measurement differences appeared to be limited to this single construct, lack of equivalence, in this case, did not preclude unambiguous interpretation of relationships between groups. Therefore, we proceeded to the omnibus tests of structural equivalence.

Structural equivalence testing. Before assessing the group models relative to specific hypotheses, we needed to determine if the models were statistically different, overall, at the structural level. Returning to Table III above, we first note that the overall fit of the model with structural constraints remained very good (Table III, Line 3). CMIN/DF was well under the 3.00 threshold (1.59), and other fit indicators such as TLI and RMSEA also suggested that the constrained structural model continued to fit the data well (.95 and .03 respectively).

The chi square difference between the baseline unconstrained model and model with structural (and measurement) constraints was 103.21 (57), p < .001. This omnibus test of structural path coefficients suggested that relationships between constructs differed in some way across groups. Further structural differences can be noted among exogenous latent constructs: there was a marked deterioration in fit for the test of structural covariances with $\Delta \chi^2 = 214.17$ (87), p < .001. In sum, these results indicated that there were group differences at a structural level, and comparisons of groups relative to our hypotheses were warranted.
Group Comparisons: Hypothesis Tests

Table VI provides a summary of all standardized structural path coefficients as well as zero order (correlation) relationships among exogenous and endogenous constructs. Although this table provides the primary evidence we use to test our hypotheses, Figures 2-5 summarize the trimmed models, which include only statistically significant standardized path coefficients. A group by group description of these paths, (found in the discussion section), provides an account of the varied linkages between work stressors and problematic alcohol use. Following standard practice, all covariances (correlations) among exogenous variables are retained regardless of significance (Kline, 1998); however, those that are not statistically significant at .05 are in lighter type.

Gender ratio. To review, our initial set of hypotheses focused on the relationship between gender ratio, or proportion of women and men in the workplace, and the alcohol latent. Our results suggested that, contrary to other investigator’s findings, gender ratio had little or no relationship to alcohol use or problems for any group. The only group for whom a direct path approached significance was the male managers (.14, p<.06). This finding was, in fact, contrary to our hypothesis that gender ratio would have a greater impact for women, and managerial women in particular. Gender ratio also had little, if any, relationship with using escape motivations as the reason for drinking. No path (or zero-order) coefficients approached significance for any of the groups. These findings suggested that, in this context at least, the ratio of men to women in the workplace had
limited impact on alcohol consumption or problems. Later review of correlations among exogenous constructs, however, suggested that there may be an indirect, albeit weak, relationship via stereotype threat.

Workplace abuse. We hypothesized that being treated disrespectfully, being isolated, or otherwise socially abused at the workplace would be associated with higher levels of alcohol consumption. When examining the results for workplace abuse (W Abuse) on alcohol problems, we noted that only one direct path coefficient approached significance: the path for the female nonmanagers was .17 (p < .06) suggesting that for this group, workplace abuse might directly impact alcohol consumption. This partially supports our hypothesis that generalized workplace abuse will predict alcohol consumption and problems more for women than for men, but we did not see any support for Hypothesis 2a (that workplace abuse would predict for all groups), and the direct relationship did not hold for all women.

Note, however, that there is evidence of an indirect, or mediational, path for male managers. That is, a moderate and statistically significant zero-order correlation between workplace abuse and alcohol problems (.23) was rendered nonsignificant when the impact of “escape reasons” was included in a path model. Further, zero-order correlations between escape reasons and workplace abuse and between escape reasons and alcohol problems were significant, fulfilling the three requirements for mediation suggested by Kenny (2001). These findings suggested that for managerial men, workplace abuse did impact problem alcohol use, but via increasing the motivation to use alcohol as an escape coping style. We saw a suggestion of a similar mediational pattern
Stereotype threat. Our last set of hypotheses stated that coworker beliefs or perceptions regarding one’s work or performance, particularly negative beliefs, will contribute to problem alcohol consumption. In Table VI, we see little, if any evidence of a direct relationship between stereotype threat and alcohol consumption for any group, including both female groups. All direct path coefficients between “S Threat” and “Alcohol” are small and nonsignificant. The only suggestion of an indirect or mediational path is found in the male manager group where a modest but significant zero-order correlation (.16, p<.03) reduces to a nonsignificant direct path coefficient (.08) in the structural analysis. These findings are counter to our hypotheses that stereotype threat would be a significant predictor of alcohol consumption for women, much less managerial women.

Discussion

Despite results from structural path equivalence tests that showed that there were different relationships between constructs for different groups, we found limited support for our specific hypotheses regarding work-related stressors and problematic alcohol use. Gender ratio had little impact on reported alcohol problems for any group. A direct relationship between workplace abuse and problematic alcohol use existed for nonmanagerial women, but not for any other group; and, contrary to our expectations, an indirect relationship for workplace abuse via escape reasons for drinking was evident for managerial men. Finally, stereotype threat did not directly impact alcohol use for any of the groups, and we saw only a modest indirect effect for managerial men, not women.
Examination of correlations among the exogenous variables as well as visual inspection of the path diagrams for each group indicate that, while our hypotheses may not have been entirely supported, the four stressors differentially impact alcohol use for each of these four groups. Below, we briefly look at some of the distinctive patterns in each group (See Figures 2 – 5) and consider a number of explanations for these findings.

**Group Patterns**

**Female managers.** Contrary to expectations, this is the group for whom our initial set of hypotheses appeared to be least applicable; for example overall model fit, while “good,” was lowest for this group. There was no statistically significant relationship between stressor latents and outcomes of escape motivation or alcohol problems. However, there was a suggestion that workplace abuse and generalized stress might have significantly impacted escape reasons for drinking had sample size been larger for this group – a pattern most similar to male managers rather than to female nonmanagers. Interestingly, the relationship between escape reasons for drinking and alcohol problems, while still quite large (.61), was not as strong for female managers as it is for other groups. Simply stated, female managers may not turn to alcohol as readily as a form of escape from workplace stressors.

There was, however, a solid set of relationships between all general and gender-specific stressor variables, suggesting that the experience of workplace stress is multifaceted for these women: their experience of general stress in the workplace appears to be highly influenced by gender-specific stressors. Also, for these women, the experience of general workplace stress was more defined by emotional exhaustion as
compared to other groups. The wear and tear of “being a woman in a man’s world” may accelerate burnout for this particular group. This is clearly an area for further exploration.

The utility of the spillover model as a means of explaining alcohol use and problems for managerial women should also be examined in subsequent investigations. Although it may be the case that we failed to identify relevant work stressors for this group, examination of the observed variable means by group (not shown) does not support this conclusion: managerial women reported significantly higher levels of stereotype threat, as compared to the other three groups, and equally high levels of general job stress and isolation and exclusion. They also reported gender ratio percentages that were as low as managerial and nonmanagerial men (nonmanagerial women reported significantly higher proportions of women in their day-to-day work environment). Nonetheless, there may be other stressors, or other work-related contexts that we failed to identify that are specifically or uniquely associated with alcohol use and problems for this group. Qualitative research with this group may help illuminate these unique stressors and alcohol use patterns. Other types of deleterious outcomes, such as increased levels of depression or work absences, should also be examined in future research. For example, comments made by managerial women during interviews and focus groups suggested that prescription drug use, sleep difficulties, and extended leaves of absence were believed to be commonly observed manifestations of work stress.

Male managers. Perceptions of workplace abuse and general work stress appear to increase the use of escape motivations for drinking, which, in turn is strongly related to alcohol problems for male managers. The most striking difference for this group, as compared to the two female groups, is the total lack of relationship between the gender...
specific stressors (i.e., gender ratio and stereotype threat) and any other component in the model. Not only are there no direct or indirect paths from these stressors to the outcome variables, there appears to be no relationship between these gender specific stressors to more generic stress perceptions (i.e., all correlations between specific and general stressors are nonsignificant). The “story” for the male managers, then, seems to be fairly straightforward: if these managers feel isolated or excluded from the “inner circle” of management, feel that they are not accorded the respect they are due, and/or are generally stressed by work demands, they will be more likely to look to alcohol as a form of escape from these unpleasant experiences and, then, are more likely to increase their consumption or report problems related to their alcohol use. This group seems to best fit a tension reduction model of alcohol use.

Female nonmanagers. Contrary to expectations, female nonmanagers were the group for whom stereotype threat appears to be most salient in relation to alcohol use and problems. While there was not a direct relationship between negative perceptions of female managers and problem alcohol use, it did appear that, for female nonmanagers, perceptions of performance of their female managerial peers were associated with escape motivations for drinking, which, in turn, was very strongly related to alcohol use. Also, perceptions of stereotype threat for this group were strongly correlated with more general workplace stress. Notice, however, that general work stress was directly, but negatively, associated with problem drinking behaviors for this group once escapist motivations for alcohol use were considered. This suppression effect, also referred to as a “nonescapist response,” has been noted in other investigations (e.g., Grunberg et al., 1999).
Interestingly, for managerial women, perceptions of how others evaluated them as a group did not seem to impact their alcohol use. For female nonmanagers, however, perhaps these perceptions stimulate “glass ceiling” frustrations that can increase the motivation to use alcohol as an escape coping mechanism. That is, those female nonmanagers who perceive that female managers must prove themselves or are judged more critically may have a heightened sense of barriers to their own career progression. Frustration of goals for future career mobility may lead some to use alcohol as a means to escape the disappointment of overtly thwarted ambitions. However, the negative impact of stereotype threat appears to be balanced, somewhat, by the suppression effect of general work stress: those female nonmanagers who are experiencing stress in the workplace may tend to reduce alcohol consumption. This is an interesting area for further inquiry; namely, how the stress of “bumping” the glass ceiling (but not “breaking through” it as in the case of managerial women) manifests itself in escape drinking motivations and how this might be counterbalanced by the tendency to reduce drinking under stress.

Male nonmanagers. Like their female nonmanagerial peers, this group also demonstrated the suppression effect of general work stress on problem drinking outcomes: higher work stress reports were associated with lower levels of alcohol consumption and problems unless there were high motivations to use alcohol as an escape coping strategy. For these nonmanagerial men, however, stereotype threat failed to play a significant role: the mixed effect of general workplace stress on escape motivations (direct, positive path coefficient of .39) combined with the suppression effect
on problem drinking did not strongly support a tension reduction model, but certainly supported theory that speaks to a role of workplace stress in alcohol use.

**Study Limitation**

In addition to the common problems associated with self-report measures, we acknowledge that the sensitivity of the topic and the competitive workplace environment – that women managers felt especially scrutinized – may have contributed to underreporting for some of our measures. We also recognize that our stereotype threat scale, despite the fact that it showed good internal consistency and good initial evidence of construct validity, was developed for this study. Additional research on this or similar measures would help substantiate the role of stereotype threat in these models. Our study also fails to explain why, for example, certain groups illustrated a suppression effect while others did not. That is, additional research should be aimed at not only revealing group-specific pathways, but also discovering the group-specific reasons for such relationships. The present study marks but a small step in this direction.

**Conclusions and Implications for the Tension-Reduction Model**

Although the selected workplace stressors of gender ratio, generalized workplace abuse, and stereotype threat failed to emerge as strong predictors of either escape motivations or problematic alcohol use particularly for managerial women, our findings do underscore a number of important issues. First, our results again point to the importance of using mediated models in linking workplace stress to alcohol use and problems. Although studying escape drinking motivations as a mediator was not a primary emphasis of our work here, we did confirm its role in not only linking workplace stress to problematic alcohol use, but also replicated the negative association between
high work stress and low alcohol problems once high escape drinking motivations is removed in two of the four groups.

Second, we found a consistent link between workplace abuse and general work stress for all groups: this suggests that those experiencing disrespectful or isolating treatment feel greater levels of general work stress, or that those experiencing general work stress are more likely to characterize such treatment as abusive. Beyond this finding, however, the meaning of work stress and the factors contributing to work stress differed for managerial and nonmanagerial men and women. For managerial women, for example, our measurement equivalence results suggested that the very meaning of “general work stress” was qualitatively different, taking on stronger tones of emotional exhaustion than it did for other groups. Such evidence points to the utility of expanding the number and type of workplace stressors as recommended by other researchers (e.g., Frone, 1999; Ragland et al., 1995). Certainly this is not to say that some of the frequently examined stressors, such as job demands and control, are not important. Rather, our findings suggest that the interpretation and experience of work-based stress is different for varied groups in the workplace; this highlights the value of considering various participant characteristics, their unique concerns, pressures, supports, and so on in order to tailor our models more effectively.
References


*Contemporary Drug Problems, 18*, 597-627.

*British Journal of Addiction, 84*, 767-775.


*Journal of Substance Abuse, 5*, 157-174.


Notes

1. Authors names are listed alphabetically; their order reflects equal contribution to this paper.

2. Details of the scale development procedure are available from the first or second author.

3. Chi-square tests are the most commonly used “goodness of fit” measures in the SEM literature; specifically, a “relative” chi-square test is used to account for the complexity of degrees of freedom in the model, referred to as “CMIN/DF” in the AMOS environment. Vandenberg and Lance (2000) recommend that, because of sensitivity to sample size, chi-square tests be used in conjunction with other practical indices: “it is a fact that a statistically significant chi-square value can incur even though there are only minor differences between groups’ factor patterns” (p. 43). They recommend several indices based on a balance of trade-offs of sensitivity to sample size or model complexity, basis implicit of model comparison, and incremental versus absolute fit measures: TLI, CFI, RMSE, and SRMR. CMIN/DF values of 3.0 are usually viewed as reflecting “good” fit. Both TLI and CFI have traditionally been set at .90; however, recent research suggests that a level of .95 be considered as a “good” fit indicator. A level of .08 or less for RMSEA is usually viewed as the threshold for acceptance of a model as having “acceptable” fit; .05 or less is often deemed “good” (Garson, 2001; Vandenberg & Lance, 2002). Finally, a SRMR of zero implies no discrepancies between observed and modeled, or perfect fit. Kline (1998) recommends .10 as the threshold for “favorable” or acceptable fit.

4. Before assessing invariance, we need to look at sample size and equality of sample sizes across groups. Ideally, equivalence tests are run on groups with equal sample sizes; little
is known about impact on results of unequal samples. However, inequality of sample size is not too problematic if group sizes mirror proportion of groups in population (University of Texas Stat Services, 2003). In this analysis, distribution of respondents per group, while not directly proportional to the company's employee distribution (higher percent of women managers in our sample due to intentional over-sampling), does reflect the dominance of men in both managerial and nonmanagerial ranks.

5. Because we have not constrained other parameters of the model (e.g., factor, item, and error variances or covariances), we do not expect to see identical weights across the items (e.g., the absolute value of item loadings will not be the same). However, equivalence at this stage implies that the relative size of each factor loading will be similar across groups.
Table I

Variable Indicator List

<table>
<thead>
<tr>
<th>Variable Label</th>
<th>Description</th>
<th>alpha</th>
<th>Source</th>
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<tbody>
<tr>
<td>PERWMN</td>
<td>Percent people you work with who are women</td>
<td>NA</td>
<td>written for study</td>
</tr>
<tr>
<td>IDEAS</td>
<td>Women managers have their ideas challenged more than men</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>PERFORM</td>
<td>Women managers have to perform better than men to succeed</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>BEMASC</td>
<td>Women managers sometimes must behave in masculine way to succeed</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>PROVE</td>
<td>Women managers must continually prove themselves</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>JUDGE</td>
<td>Women managers work judged more critically than men</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>CREDIT</td>
<td>Women managers more uncomfortable than men in taking credit for successes</td>
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</tr>
<tr>
<td>ISOLATED</td>
<td>Generalized workplace abuse isolation/exclusion (5 item)</td>
<td>.77</td>
<td>Richman, et al, 1999</td>
</tr>
<tr>
<td>DISRESPECT</td>
<td>Generalized workplace abuse disrespectful treatment (9 item)</td>
<td>.79</td>
<td></td>
</tr>
<tr>
<td>R OVERLOAD</td>
<td>role overload- job demands (3 item)</td>
<td>.74</td>
<td>Cammann, et al, 1983</td>
</tr>
<tr>
<td>E EXHAUST</td>
<td>burnout scale - emotional exhaustion (3 item)</td>
<td>.88</td>
<td>Maslach, et al, 1997</td>
</tr>
<tr>
<td>W STRESS</td>
<td>general job stress (6 item)</td>
<td>.82</td>
<td>Stanton, et al, 2001</td>
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<tr>
<td>ESC INDEX</td>
<td>escape drinking beliefs (6 item)</td>
<td>.74</td>
<td>Fennell, et al, 1981</td>
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<tr>
<td>CAGE</td>
<td>cage total score (4 item)</td>
<td>.61</td>
<td>Ewing, 1984</td>
</tr>
<tr>
<td>AMOUNT</td>
<td>total number of drinks, 6 months; abstainers removed</td>
<td>NA</td>
<td>Jessor, et. al, 1991; Calahan, 1970</td>
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<tr>
<td>NEG CONS</td>
<td>negative consequences of drinking (7 item)</td>
<td>.81</td>
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Work stress 37
### Table II

*Fit Indices for Separate Group Models – Saturated*

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<tr>
<th></th>
<th>NPAR</th>
<th>CMIN</th>
<th>df</th>
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<th>TLI</th>
<th>CRI(RNI)</th>
<th>RMSEA</th>
<th>SRMR</th>
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<td>Female Managers ($n = 180$)</td>
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<td>145.47</td>
<td>91</td>
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<td>1.60</td>
<td>.94</td>
<td>.96</td>
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<td>.060</td>
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<td>1.35</td>
<td>.97</td>
<td>.98</td>
<td>.04</td>
<td>.045</td>
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<tr>
<td>Female Nonmanagers ($n = 189$)</td>
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<td>142.73</td>
<td>91</td>
<td>.00</td>
<td>1.57</td>
<td>.95</td>
<td>.96</td>
<td>.06</td>
<td>.053</td>
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<td>Male Nonmanagers ($n = 351$)</td>
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<td>156.36</td>
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<td>.97</td>
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Table III

*Fit Indices for Group Comparison Models*

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<th>CRI</th>
<th>RMSEA</th>
<th>SRMR</th>
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<tr>
<td>Baseline (Configural Models)</td>
<td>180</td>
<td>567.9</td>
<td>364</td>
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<td>1.56</td>
<td>.96</td>
<td>.97</td>
<td>.02</td>
<td>.06</td>
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<td>Models with Constraints</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td>Measurement weights</td>
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<td>1.61</td>
<td>.95</td>
<td>.96</td>
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<td>.95</td>
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### Table IV

*Fit Differences for Group Comparisons versus Baseline Configural Model*

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<td>214.17</td>
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*Note.* Fit differences are based on the assumption that the baseline is correct.
Table V

*Factor Loadings for Unconstrained Configural Model*

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<th>Latent</th>
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<th>Manager Men</th>
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<td>Alcohol</td>
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<td>Neg Cons.</td>
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<td></td>
<td>Amount</td>
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<td>.75</td>
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<td>Escape reasons</td>
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<td>Perform</td>
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<td>.79</td>
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<td>work stress</td>
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*Note.* All loadings significant at p < .001.
Table VI

*Zero Order and Structural Analysis Results*

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<td>Male Mgr</td>
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<td>.08</td>
<td>-.14</td>
<td>-.14</td>
<td>.37**</td>
<td>.22*</td>
<td>.44**</td>
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<td>-.12</td>
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<td>.10</td>
<td>.37**</td>
<td>.32**</td>
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<td>Alcohol Problems</td>
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<td>Female Mgr</td>
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<td>-.06</td>
<td>-.03</td>
<td>.02</td>
<td>.11</td>
<td>.05</td>
<td>.09</td>
<td>-.13</td>
<td>.64**</td>
<td>.72**</td>
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<tr>
<td>Male Mgr</td>
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<td>.08</td>
<td>.02</td>
<td>.14 †</td>
<td>.23**</td>
<td>.04</td>
<td>.20**</td>
<td>-.16</td>
<td>.82**</td>
<td>.92**</td>
</tr>
<tr>
<td>Female Nonmgr</td>
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<td>-.09</td>
<td>.00</td>
<td>.06</td>
<td>.15 †</td>
<td>.17 †</td>
<td>.11</td>
<td>-.19*</td>
<td>.79**</td>
<td>.85**</td>
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<tr>
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<td>-.04</td>
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<td>-.30**</td>
<td>.69**</td>
<td>.78**</td>
</tr>
</tbody>
</table>

*Note.* ** p < .01; * p < .05; † p < .10.
Figure Captions

Figure 1. Work stress and alcohol outcomes: General conceptual model.

Figure 2. Work stress and alcohol outcomes: Trimmed model for managerial women.

Figure 3. Work stress and alcohol outcomes: Trimmed model for managerial men.

Figure 4. Work stress and alcohol outcomes: Trimmed model for nonmanagerial women.

Figure 5. Work stress and alcohol outcomes: Trimmed model for nonmanagerial men.
Figure 1

Work Stress and Alcohol Outcomes
Conceptual Model
Figures 2-5

Trimmed Models: Managerial and Nonmanagerial Men and women.

Work Stress and Alcohol Outcomes - trimmed Female Managers (n=180)

Work Stress and Alcohol Outcomes - trimmed Female Nonmanagers (n=189)

Work Stress and Alcohol Outcomes - trimmed Male Managers (n=252)

Work Stress and Alcohol Outcomes - trimmed Male Nonmanagers (n=351)