

# Work Stress, Coping, and Substance Use Among Female Nurses

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## INTRODUCTION

As women enter the work force, they are exposed to new or additional sources of stress, which may result in substance use. This chapter presents results from a National Institute on Drug Abuse (NIDA)-funded research project on work stress, coping, and substance use among a regional sample of female nurses. It includes a summary of data on the prevalence of substance use among these nurses and a test of models of the relationships among personality, work stress, coping, and substance use in a subsample of female nurses. Findings from this research will enhance understanding of the complex issues involved in women's use of a variety of substances.

## WORK STRESS AND SUBSTANCE USE

Although theoretical and commonsense notions suggest a link between work stress and substance use among women, empirical support for such a relationship is not consistent (Wilsnack and Wilsnack 1992). Some studies have reported support for such a link (e.g., Parker and Farmer 1988, pp. 113-130; Sadava et al. 1978; Timmer et al. 1985, pp. 171-198). For example, Timmer and colleagues (1985, pp.171-198) reported that women, particularly young women, were more likely to use alcohol to cope with work-related stress than were men. Sadava and colleagues (1978) reported that all their measures of drug use were significantly related to job stress. Other studies have reported no support for substance use as a direct response to work stress but have found limited support for the notion that individuals who use less effective coping strategies are more likely to use substances as a function of work stress (Cooper et al. 1990; Harris and Fennell 1988; Steffy and Laker 1991). These studies suggest that job stress, particularly when combined

with ineffective coping strategies, can increase the potential for substance use.

## **COPING AND SUBSTANCE USE**

Coping involves efforts to master, reduce, or tolerate the demands that are created by stress. Use of a particular coping strategy may be the result of several factors, including more enduring dispositional characteristics such as personality. Most coping strategies are grouped as either *adaptive* responses that solve or remove the source of stress or *maladaptive* responses that provide temporary escape or avoidance from the stressor (Lazarus and Folkman 1984; Roth and Cohen 1986; Suls and Fletcher 1985).

Substance use is typically seen as an example of a short-term coping strategy that provides temporary relief from distress but leaves the original source of the distress unchanged; thus, it is maladaptive (Folkman and Lazarus 1980; Timmer et al. 1985, pp. 171-198; Wills and Shiffman 1985, pp. 3-24). To the extent that women have been socialized to use fewer adaptive coping strategies, some women more readily may turn to substance use to alleviate difficulties temporarily (Beckman and Bardsley 1981; Timmer et al. 1985, pp. 171-198; Wills 1990, pp. 215-250). Thus, women who experience high levels of stress may use substances as a function of either their stress or their socialization to use coping strategies that provide only temporary relief.

## **NEUROTICISM AND THE RELATIONSHIPS AMONG STRESS, COPING, AND SUBSTANCE USE**

Given the inconsistencies regarding the relationships among stress, coping, and substance use, the authors sought a variable common to these constructs that might further illuminate their interrelationships. The decision was made to explore the role of personality, particularly neuroticism, because neuroticism has been independently linked to stress and coping and may be predictive of substance use. If neuroticism helps explain the links among stress, coping, and substance use, it may help reconcile some of the inconsistencies in the literature as well as represent another variable that places some women at risk for substance use and abuse.

The five-factor model of personality is currently accepted as a viable explanation of normal adult personality functioning (Costa and McCrae 1985). One of these factors, neuroticism, is said to be related to stress and to coping (Bolger 1990; Bolger and Schilling 1991; McCrae 1990; McCrae and Costa 1986; Parkes 1986) and also may be related to substance use (Cox 1987, pp. 55-89; Earleywine et al. 1990; Martin and Sher 1994). Neuroticism involves negative states such as anxiety, depression, hostility, self-consciousness, impulsiveness, and vulnerability (Costa and McCrae 1985). It has been linked to the propensity to perceive events as stressful; highly neurotic subjects report more exposure to stress and greater emotional reactivity to daily stressors (Bolger and Schilling 1991).

One possible explanation for differences in the reaction to stress is that highly neurotic individuals use fewer adaptive coping strategies, thereby exacerbating stressful encounters. Persons high in neuroticism generally use maladaptive coping strategies such as hostility, escape, and wishful thinking. That is, they attempt to lessen emotional distress by changing the meaning of the situation or escaping from the stressor, but typically, they are not effective in removing the source of stress.

The authors' research began with the notion that the links among stress, coping, and substance use might be related to neuroticism, a dispositional characteristic that is independently related to stress and coping. The key question was whether work stress and coping contribute to substance use among nurses or whether personality, particularly neuroticism, affects the relationships among stress, coping, and substance use. These relationships were tested using structural equation modeling, with alcohol use as the dependent variable.

The authors focused on female nurses because nursing is a predominantly female occupation (95.7 percent) (American Nurses Association 1994), and empirical and anecdotal reports suggest that nursing is a highly stressful occupation. Sources of stress include low pay, low status, advanced technology, patient care, high administrative demands, and lack of supervisory support (Haack 1987, 1988; Moos and Schaefer 1987; Numerof and Abrams 1984; Naegle 1988). These work-related stressors, as well as access to a variety of medications, may place nurses at high risk for substance use or abuse (Bissell and Haberman 1984; Hutchinson 1986; Sullivan 1987; Trinkoff and Storr 1994). However, some studies have reported rates of substance use among nurses comparable with the

general population of working women (Haack and Harford 1985, pp. 201-226; Plant et al. 1991; Trinkoff et al. 1991). Although nursing has some features that make it unique (e.g., patient care, rotating shifts), nursing provides an adequate context for beginning to examine the relationships among the variables of interest.

## **SURVEY METHOD**

### **Sample**

The sample consisted of 1,951 female nurses who resided and worked in the 8 counties of western New York. They were identified based on lists of professional nurses collected by the New York State Department of Education, Division of Professional Licensing Services. Survey booklets were mailed to the homes of a random sample of 4,000 licensed nurses (registered nurses and licensed practical nurses). After mailing the survey and 2 reminder cards, the authors received 2,400 responses (a response rate of 60 percent), of which 1,951 contained usable data. Each participant received \$30 as compensation. Descriptive information for the entire sample is provided in table 1.

Data on the prevalence of substance use are presented on the complete sample of 1,951 nurses. Also tested were models of the relationships among neuroticism, stress, coping, and substance use (specifically alcohol consumption) on a subsample of 637 nurses who worked in patient care workplaces and were current drinkers (women who reported having consumed alcohol during the past month). This subsample had demographic characteristics similar to the larger sample; the mean age was 34.6 years (standard deviation [SD]=8.6).

### **Measures**

**Assessment of Substance Use.** Nurses' substance use was assessed for lifetime and the past month. Four categories of substances were included in the survey: (1) licit substances (e.g., alcohol, caffeine, tobacco), (2) illicit substances (e.g., marijuana, cocaine/crack, opiates), (3) prescription drugs (e.g., barbiturates, tranquilizers), and (4) over-the-counter (OTC) drugs (e.g., pain medications, sleeping pills, antiobesity drugs). Lifetime use was categorized into "never used" and "used." Past-month substance use was measured dichotomously (yes/no).

**TABLE 1.** *Demographic characteristics of sample of female nurses (n=1,951)*

Variable	N	Percent
Age		
18-24	187	9.6
25-34	661	33.9
35-44	747	38.3
45-54	253	13.0
55	80	4.1
Marital status		
Married	1,209	62.0
Separated/divorced/widowed	284	14.5
Never married	306	15.7
Children		
Yes	1,422	72.9
No	528	27.1
Ethnicity		
European-American	1,817	93.1
African-American	76	3.9
Hispanic-American	10	0.5
Asian-American	3	0.2
Other	34	1.7
Highest degree in nursing		
Diploma	793	40.6
Associate degree	655	33.6
Bachelor's degree	418	21.4
Master's degree	64	3.3
Doctoral degree	0	0
Type of nurse		
Licensed practical nurse	587	30.1
Registered nurse	1,363	69.9
Work setting		
Urban	986	50.5
Suburban	537	27.5
Rural	375	19.2
Workplace		
Hospital	1,149	58.9
Private medical office	102	5.2
Nursing home	280	14.4
Community/public health agency	147	7.5
University/research facility	25	1.3
Other	244	12.5
Typical shift		
Days	1,116	57.2
Evenings	357	18.3
Nights	344	17.6
Rotation	128	6.6
Work schedule		
Full time	1,254	64.3
Part time	682	35.0

**TABLE 1.** (continued)

Variable	N	Percent
Tasks (at least 50 percent of time)		
Direct patient care	1,405	72.0
Administrative	127	6.5
Supervision	164	8.4
Teaching/research	90	4.6
Other	164	8.4
Salary		
<\$10,000	192	9.8
\$10,001-\$20,000	676	34.6
\$20,001-\$30,000	735	37.7
\$30,001-\$40,000	292	15.0
>\$40,000	46	2.4
Specialty		
Medical/surgical	390	20.0
Geriatrics	290	14.9
Pediatrics/obstetrics-gynecology/nursery	265	13.6
Critical/intensive care	157	8.0
Community/school/home care	150	7.7
Psychiatric/mental health	103	5.3
OR/ER/anesthesia/recovery	88	4.5
Cardiology	69	3.5
Oncology	59	3.0
Administration/education	48	2.5
Orthopedics	33	1.7
Rehabilitation	31	1.6
Neurology	16	0.8
Miscellaneous	119	6.1

NOTE: Because of missing data, not all variables add up to 100 percent.

KEY: OR=operating room, ER=emergency room

**Neuroticism Scale of the NEO Personality Inventory.** The Neuroticism Scale of the NEO Personality Inventory (Costa and McCrae 1985) consists of six facets: anxiety, hostility, depression, self-consciousness, impulsiveness, and vulnerability. Subjects rate their level of agreement with each item (e.g., “I often feel tense or jittery”; “I am seldom sad or depressed”) on a 5-point Likert scale (0=strongly disagree, 4=strongly agree), and ratings are summed across the 8 items of each facet. The facets are summed to form a score for neuroticism. The scale possesses good internal consistency (Cronbach alpha=0.85 for this sample) and test-retest reliability.

**Nursing Stress Inventory.** The Nursing Stress Inventory (NSI) (Numerof and Abrams 1984) contains 46 items designed to assess nursing-related stress. Subjects rate each item based on its frequency

of occurrence during the past month (1=not at all, 5=all the time) and degree of stress (1=no stress, 5=high stress). The NSI includes six factors: organizational environment, work demands, emotional aspects of patient care, death-related issues, lack of procedural/administrative support, and supervisor's role. Item scores are calculated by multiplying ratings of frequency of occurrence by degree of stress. The authors' factor analysis of the six NSI scales yielded a single higher order factor named "work stress" ( $\alpha=0.85$ ).

**The COPE.** The COPE (Carver et al. 1989) is a multidimensional coping inventory designed to measure approaches to handling stress. Subjects rate the degree to which they typically use each of 60 ways of responding to stress (e.g., "I try to get advice from someone about what to do") on a 4-point scale (1="I usually don't do this at all," 4="I usually do this a lot"). The items form 15 factors (e.g., active coping, acceptance), each of which contains 4 items. Factors exhibit good to moderate reliability (mean  $\alpha=0.71$ ) (Carver et al. 1989) and test-retest reliability. Scale scores are calculated by summing across ratings. The dispositional version of the COPE was administered. The factor analysis of the COPE subscales yielded three factors: competent coping (CC) (strategies that typically resolve or remove stress), social-emotional coping (SEC) (provides social support and emotional release), and disengagement coping (DC) (provides temporary escape/avoidance from stress).

**Alcohol-Related Variables.** Alcohol use is represented by three different variables. (1) Drinking to cope with work (DCW) asks respondents to rate a single item ("Were you more likely to drink if you have had a rough day at work?") on a 10-point scale (1=not likely, 10=very likely). The mean score was 2.16 ( $SD=2.02$ ), indicating that for the most part, subjects did not rate themselves as likely to drink to cope with work stress. (2) Typical drinking (TD) represents the number of drinks consumed in a typical month (zero to 10 or more drinks per day). The mean number of drinks per month was 17.19 ( $SD=14.20$ ). (3) Effects of intoxication (EI) represent experiences of acute negative effects of drinking, such as feeling flushed and tipsy, during the past month. Each EI item was rated on a 6-point scale (1=never, 6=always), and ratings were summed to derive a total score ( $\alpha=0.65$ ). The mean rating for experiencing acute effects was 4.61 ( $SD=1.83$ ), indicating that these effects were experienced with relatively low frequency.

Based on previous research, the authors expected that all three alcohol-related variables would be positively related to each other and that drinking to cope would be the alcohol variable most likely to be associated with work stress.

## RESULTS

The results are presented in two sections. First, an overview of the prevalence of substance use for the entire sample of 1,951 nurses is presented to provide a context for model testing. Second, the testing results of a series of hierarchically nested models of the relationships among neuroticism, stress, coping, and substance use are described. These models were tested on a subsample of 637 nurses who self-reported consuming alcohol during the past month.

### Prevalence of Substance Use

Lifetime and past-month prevalence for four categories of substances (licit, illicit, prescription, and OTC) were assessed. Results are presented in table 2.

**Use of Licit Substances.** The highest rate of lifetime use of licit substances was for alcohol (94.9 percent), followed by caffeine (93.9 percent) and tobacco (55.8 percent). Nurses' use of licit substances during the past month was significantly lower than their lifetime use. Although caffeine use stayed relatively high (88.1 percent), there were significant drops in past-month use of alcohol (66.2 percent) and tobacco (26.6 percent).

**Use of Illicit Substances.** Marijuana was the most widely used illicit drug (37.3 percent) over the lifetime. Rates for the use of other illicit substances ranged from 16.0 percent (opiates) to 3.4 percent (hallucinogens). The authors were not able to distinguish between prescribed and non-prescribed use of opiates. Even so, lifetime opiate use in this sample is notable. Rates of past-month use were significantly lower than lifetime use. They ranged from a high of 2.1 percent (opiates) to zero percent (hallucinogens).

**Use of Prescription Drugs.** Nurses exhibited high levels of lifetime use of the three classes of prescription drugs included in the survey. Almost 20 percent of nurses had used tranquilizers, and about 12 percent had used barbiturates and amphetamines during their lifetime. Rates of use during the past month were much lower than lifetime, ranging from about

**TABLE 2.** Respondents' substance use (n=1,951) and general population estimates (percent)

Substance	Respondents		General Population			
	Lifetime Use	Past Month	Lifetime Use		Past Month	
<b>Licit</b>						
Alcohol	94.9	66.2	88.5	(86.1-90.6)*	54.7	(50.9-58.5)*
Caffeine	93.9	88.1	—	—	—	—
Tobacco	55.8	26.6	70.2	(67.2-73.0)*	28.5	(25.3-31.9)*
<b>Illicit</b>						
Marijuana	37.3	1.3	32.6	(29.5-35.7)*	4.1	(3.2-5.2)*
Opiates	16.0	2.1	—	—	—	—
Cocaine	4.7	0.3	10.0	(8.6-11.5)*	0.6	(0.5-0.8)*
Hallucinogens	3.4	0.0	7.3	(6.7-7.9)*	0.1	(0.1-0.2)*
<b>Prescription†</b>						
Tranquilizers	19.7	2.1				
Barbiturates	12.5	1.0				
Amphetamines	12.2	0.2				
<b>Over-the-counter medications</b>						
Analgesics	n/a	80.3				
Allergy	n/a	28.9				
Antacids	n/a	23.6				
Cough/cold	n/a	11.3				
Laxatives	n/a	8.1				
Sleeping pills	n/a	2.0				
Stimulants	n/a	1.2				
Antiobesity	n/a	1.1				

\*95-percent confidence interval

†Sometimes used illegally

NOTE: General population estimates are not available for prescription and over-the-counter medications.

KEY: n/a=not applicable

2 percent for tranquilizers to 0.2 percent for amphetamines. The format of the survey did not allow investigators to distinguish between prescribed and nonprescribed use.

**Use of Over-the-Counter Medications.** Because most people use many OTC medications during their lifetimes, only past-month use of these drugs was assessed. In this sample of nurses, the prevalence of OTC medication use was particularly high for analgesics (80.3 percent). There was a significant drop in the next most frequently used class of drugs, allergy medications (28.9 percent), which was followed by gradual

declines to low rates of use of stimulants (1.2 percent) and antiobesity drugs (1.1 percent).

### **Comparison of Substance Use Among Nurses and the General Population of Women**

Comparison of substance use rates of this sample of nurses with those of women in the general population provides a context for considering these findings concerning substance use among nurses. Where possible, rates of substance use among this sample of nurses were compared with prevalence estimates from the National Household Survey on Drug Abuse data on women ages 18 to 64 years who resided in the mid-Atlantic (New Jersey, New York, Pennsylvania) region of the United States (personal communication, health official, Office of Applied Studies, Substance Abuse and Mental Health Services Administration, March 1994).

Alcohol use was reported with high frequency by both nurses and the general population of women. However, the sample of nurses had slightly higher rates of lifetime use of alcohol (94.9 percent) than did the general population of women (88.5 percent). Nurses also reported slightly higher rates of marijuana use (37.3 percent compared with 32.6 percent). Conversely, nurses reported much lower lifetime rates of tobacco, cocaine, and hallucinogen use than those estimated for the general population of women.

The pattern for substance use in the past month was slightly different from that for lifetime use. In comparison with the general population of women, nurses reported higher rates of alcohol use, similar rates of tobacco use, and lower rates of marijuana and cocaine use.

Although some differences existed in the rates of substance use, nurses and the general population of adult women reported comparable rates for licit substances. However, nurses reported using less marijuana and cocaine than their counterparts in the general population.

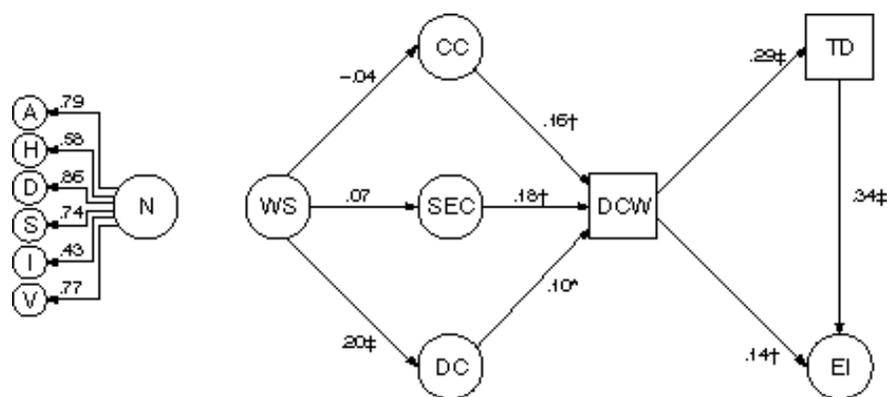
### **Tests of Models of the Relationships Among Neuroticism, Work Stress, Coping, and Substance Use**

Previous research results as well as the authors' prevalence data suggest that alcohol is the most commonly used of the addictive substances. Thus, models of substance use were tested that focused on three alcohol-related variables: (1) DCW, (2) TD, and (3) EI.

Based on the research literature, the authors generated a base model in which work stress has an indirect effect on alcohol use. This relationship is mediated by coping. The investigators predicted that because coping occurs in response to stress, work stress and coping are positively related, regardless of the type of coping. Adaptive forms of coping would be negatively related to alcohol-related outcomes, whereas maladaptive forms of coping would be positively related to alcohol-related outcomes. In the base model (figure 1), neuroticism is part of the measurement model, but it is not linked to any other model components.

### Relationships Among Variables in the Models

Means, SDs, and the correlation matrix for the variables included in the model are presented in table 3. Neuroticism was significantly correlated with all variables, except TD. All such relationships were positive, with the exception of a moderately strong negative correlation



**FIGURE 1.** Base model of relationships among neuroticism, work stress, coping, and substance use

Chi-squared (367, n=637)=1,368.21,  $p<0.001$ ; normed fit index=0.81; nonnormed fit index=0.84; comparative fit index=0.85

\* $p<0.05$

† $p<0.01$

‡ $p<0.001$

NOTE: Standardized parameter estimates and significance levels of paths are presented.

KEY: A=anxiety; H=hostility; D=depression; S=self-consciousness; I=impulsiveness; V=vulnerability; N=neuroticism; WS=work stress; CC=competent coping; SEC=social-emotional coping; DC=disengagement coping; DCW=drinking to cope with work stress; TD=typical drinking; EI=effects of intoxication. Circles represent latent constructs; squares represent single-item manifest variables.

**TABLE 3.** *Descriptive statistics and correlations among model variables (n=637)*

Variable	Mean	Standard Deviation	1	2	3	4	5	6	7
Neuroticism	78.77	22.37							
Work stress	37.91	15.12	0.21*						
Competent coping (CC)	67.34	9.34	-0.32*	-0.04					
Social-emotional coping (SEC)	34.37	6.12	0.13*	0.07	0.36*				
Disengagement coping (DC)	20.11	4.31	0.43*	0.17*	-0.08*	0.10*			
Typical drinking (TD)	17.19	14.20	0.07	0.05	-0.06	-0.03	0.11*		
Drinking to cope with work (DCW)	2.16	2.02	0.20*	0.23*	-0.07	0.10*	0.13*	0.29*	
Effects of intoxication (EI)	4.61	1.83	0.17*	0.12*	-0.12*	0.12*	0.16*	0.29*	0.23*

\* $p < 0.05$ , two-tailed

between neuroticism and CC. Although neuroticism was related to DCW and EI, it was not related to TD. This suggests that neuroticism was related to the more maladaptive aspects of drinking (DCW and EI) but not to TD, which was likely to occur as a function of a variety of social and cultural factors. Work stress was positively related to three variables: DCW, DC, and EI. Again, data indicate that stress and a variety of maladaptive responses were associated. Although all three coping variables were significantly related, the relationships were relatively small, except for that between CC and SEC,  $r(636)=0.36$ . As expected, the three alcohol-related variables exhibited low, but significant, correlations with each other.

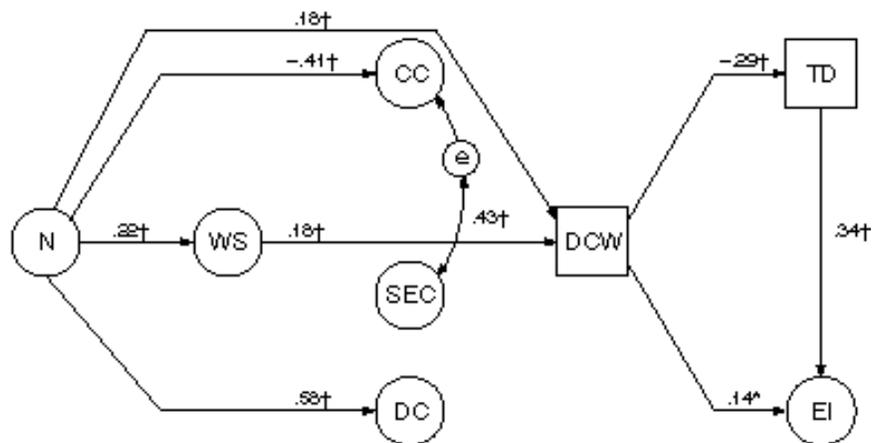
### Tests of Hierarchically Nested Models

The models were tested using maximum likelihood estimation procedures in the EQS structural equations modeling program (Bentler 1989). Given the large sample size, the chi-squared test is a less accurate reflection of model fit. The NNFI (nonnormed fit index) and the CFI (comparative fit index) are goodness-of-fit indexes less influenced by sample size and, thus, are a more accurate reflection of model fit when the sample size is large (Bentler and Bonett 1980).

Estimation of the base model resulted in a significant chi-squared test, chi squared (367, n=637)=1,368.21,  $p<0.001$ , indicating a poor model fit. However, this was expected, given the many subjects in the study. Additional fit indexes suggested a reasonable fit of the model to the observed covariance matrix (normed fit index [NFI]=0.81, NNFI=0.84, CFI=0.85).

To further refine the model, the authors hypothesized that the indirect effects of neuroticism on alcohol use were mediated through its direct effects on work stress and its direct and indirect effects on coping. That is, neuroticism was predicted to be positively related to work stress and to the use of maladaptive coping strategies but negatively related to the use of adaptive coping strategies that remove or lessen stress. Work stress and coping, in turn, affected alcohol use. The next steps moved through a series of hierarchically nested models involving the addition of direct and indirect paths. Paths were introduced from neuroticism to the other model components (first work stress, coping, then alcohol use), while maintaining the previously introduced paths. In this way, the unique contribution of each new set of paths could be evaluated. The final model (figure 2) incorporated theoretically derived modifications to improve the fit as well as the constraint of nonsignificant paths to zero. As expected, the large sample size produced a significant chi-squared test, chi squared (361, n=637)=1,118.04,  $p<0.001$ , for the final model. However, the fit indexes that are less influenced by sample size suggested a reasonable fit of the model to the observed covariance matrix (NFI=0.84, NNFI=0.87, CFI=0.89).

In the final model, both neuroticism and work stress had direct effects on DCW, but the indirect effect of neuroticism on DCW as mediated by work stress was not significant. The strongest relationships in the final model were those between neuroticism and DC and CC. Interestingly, none of the coping factors predicted DCW after neuroticism was included in the model. Thus, the final model provided support for the notion that with neuroticism accounted for, coping has no relationship to alcohol use.



**FIGURE 2.** Final model in which nonsignificant paths are constrained to zero

Chi-squared (361, n=637)=1,118.04,  $p<0.001$ ; normed fit index=0.84; nonnormed fit index=0.87; comparative fit index=0.89

\* $p<0.01$

† $p<0.001$

NOTE: Standardized parameter estimates and significance levels of paths are presented.

KEY: N=neuroticism; WS=work stress; CC=competent coping; SEC=social-emotional coping; DC=disengagement coping; e=error; DCW=drinking to cope with work stress; TD=typical drinking; EI=effects of intoxication

## RELATIONSHIP OF FINDINGS TO NURSES' SUBSTANCE USE

### Prevalence of Substance Use

Findings for use of licit and illicit substances are consistent with other studies of nurses (Haack and Harford 1985, pp. 201-226; Plant et al. 1991; Trinkoff et al. 1991), which have reported levels of substance use similar to those of women in the general population.

Nurses' lifetime and past-month rates of prescription drug use were high but comparable with those reported for a sample of male and female physicians (Hughes et al. 1992). This consistency across two studies of health care professionals suggests that these professionals may be at particular risk for use and abuse of psychoactive substances. Both nurses and physicians have access to prescription medications, including controlled substances, which may contribute to attitudes that facilitate

use (Naegle 1988; Trinkoff and Storr 1994). Future prevention efforts for health care professionals should focus on access and attitudes regarding the use of prescription medications.

### **Role of Neuroticism in Substance Use**

Models of the relationships among neuroticism, stress, coping, and substance use clearly indicate that adding neuroticism to the stress-coping-alcohol connection lessens the role of coping as a contributor to alcohol use. Results suggest that neuroticism accounted for the relationships between stress and coping as well as between coping and alcohol use. The final model (figure 2) suggests that there may be two different routes by which neuroticism affects alcohol-related outcomes: (1) a direct route involving use of alcohol to cope and (2) an indirect route mediated by work stress. The former route is consistent with notions that negative affect contributes to use of substances to cope (Pandina et al. 1992, pp. 179-209). The latter suggests that as the propensity to experience negative affect and other neurotic symptoms increases, so does the perception and experience of work stress (compare Bolger and Schilling 1991). Thus, for women prone to anxiety or negative affect, the demands of work (in this case patient care and administrative tasks related to nursing) may enhance the likelihood of drinking in an attempt to cope with stress.

Neuroticism predicted DC and CC, neither of which predicted alcohol use. The strong positive relationship between neuroticism and DC is particularly noteworthy because this is an all-female sample. Research indicates that anxiety disorders and depression are relatively common among women (McGrath et al. 1990) and women tend to use coping strategies that are less effective (Stone et al. 1985, pp. 199-220; Vingerhoets and Van Heck 1990; Weidner and Collins 1993, pp. 241-265). However, this characterization of women's coping styles must be considered in the context of complex issues concerning the controllability and duration of the stressor, which are beyond the purview of the study described in this chapter.

### **LIMITATIONS AND CONCLUSIONS**

This research contains limitations regarding the sample and the model testing that affect the generalizability of the findings. With

regard to the sample, nursing has certain unique characteristics, and the sample was homogeneous in gender and occupation. Thus, the results should not be generalized beyond female nurses. Another limitation involves the use of structural equation modeling with cross-sectional data, which inherently does not allow for testing of causal relationships. Longitudinal data would provide a better basis for evaluating assumptions of the study regarding the directions of the proposed relationships.

Even with these limitations, the findings indicate that this regional sample of nurses exhibited rates of legal and illegal substance use that were comparable with those of the general population of women. In addition, nurses who were highly neurotic were likely to experience greater work stress, which in turn could contribute to substance use.

## REFERENCES

- American Nurses Association. *Nursing Facts*. Washington, DC: American Nurses Association, 1994.
- Beckman, L.J., and Bardsley, P.E. The perceived determinants and consequences of alcohol consumption among young women heavy drinkers. *Int J Addict* 16:75-88, 1981.
- Bentler, P.M. *EQS Structural Equations Program Manual*. Los Angeles: BMDP Statistical Software, 1989.
- Bentler, P.M., and Bonett, D.G. Significance tests and goodness of fit in the analysis of covariance structures. *Psychol Bull* 88:588-606, 1980.
- Bissell, L., and Haberman, P.W. *Alcoholism in the Professions*. New York: Oxford, 1984.
- Bolger, N. Coping as a personality process: A prospective study. *J Pers Soc Psychol* 59:525-537, 1990.
- Bolger, N., and Schilling, E.A. Personality and the problems of everyday life: The role of neuroticism in exposure and reactivity to daily stressors. *J Pers* 59:355-386, 1991.
- Carver, C.S.; Scheier, M.F.; and Weintraub, J.K. Assessing coping strategies: A theoretically based approach. *J Pers Soc Psychol* 56:267-283, 1989.
- Cooper, M.L.; Russell, M.; and Frone, M.F. Work stress and alcohol effects: A test of stress-induced drinking. *J Health Soc Behav* 31:260-276, 1990.
- Costa, P.T., and McCrae, R.R. *The NEO Personality Inventory Manual*. Odessa, FL: Psychological Assessment Resources, 1985.
- Cox, W.M. Personality theory and research. In: Blane, H.T., and Leonard, K.E., eds. *Psychological Theories of Drinking and Alcoholism*. New York: Guilford, 1987.

- Earleywine, M.; Finn, P.R.; and Martin, C.S. Personality risk and alcohol consumption: A latent variable analysis. *Addict Behav* 15:183-187, 1990.
- Folkman, S., and Lazarus, R.S. An analysis of coping in a middle-aged community sample. *J Health Soc Behav* 21:219-239, 1980.
- Haack, M.R. Alcohol use and burnout among student nurses. *Nurs Health Care* 8(4):239-242, 1987.
- Haack, M.R. Stress and impairment among nursing students. *Res Nurs Health* 11:1-10, 1988.
- Haack, M.R., and Harford, T.C. Patterns of substance use and responses to stress among developing professionals. In: Parvez, S.; Burov, Y.; Parvez, H.; and Burns, E., eds. *Alcohol, Nutrition and the Nervous System*. Utrecht, The Netherlands: VNU Science Press, 1985.
- Harris, M.M., and Fennell, M.L. A multivariate model of job stress and alcohol consumption. *Sociol Q* 29:391-406, 1988.
- Hughes, P.H.; Brandenburg, N.; Baldwin, D.C., Jr.; Storr, C.L.; Williams, K.M.; Anthony, J.C.; and Sheehan, D.V. Prevalence of substance use among US physicians. *JAMA* 267(17):2333-2339, 1992.
- Hutchinson, S. Chemically dependent nurses: The trajectory toward self-annihilation. *Nurs Res* 35:196-201, 1986.
- Lazarus, R.L., and Folkman, S. *Stress, Appraisal, and Coping*. New York: Springer-Verlag, 1984.
- Martin, E.D., and Sher, K.J. Family history of alcoholism, alcohol use disorders and the five-factor model of personality. *J Stud Alcohol* 55(1):81-90, 1994.
- McCrae, R.R. Controlling neuroticism in the measurement of stress. *Stress Med* 6:237-241, 1990.
- McCrae, R.R., and Costa, P.T. Personality, coping, and coping effectiveness in an adult sample. *J Pers* 54(2):385-405, 1986.
- McGrath, E.; Keita, G.P.; Strickland, B.R.; and Russo, N.F. *Women and Depression: Risk Factors and Treatment Issues*. Washington, DC: American Psychological Association, 1990.
- Moos, R.H., and Schaefer, J.A. Evaluating health care work settings: A holistic conceptual framework. *Psychol Health* 1:97-122, 1987.
- Naegle, M.A. Drug and alcohol abuse in nursing: An occupational hazard? *Nurs Life* 8(1):42-54, 1988.
- Numerof, R.E., and Abrams, M.N. Sources of stress among nurses: An empirical investigation. *J Hum Stress* 10:88-100, 1984.
- Pandina, R.J.; Johnson, V.; and Labouvie, E.W. Affectivity: A central mechanism in the development of drug dependence. In: Glantz, M., and Pickens, R., eds. *Vulnerability to Drug Abuse*. Washington, DC: American Psychological Association, 1992.

- Parker, D.A., and Farmer, G.C. The epidemiology of alcohol abuse among employed men and women. In: Galanter, M., ed. *Recent Developments in Alcoholism*. Vol. 6. New York: Plenum, 1988.
- Parkes, K.R. Coping in stressful episodes: The role of individual differences, environmental factors, and situational characteristics. *J Pers Soc Psychol* 51:1277-1292, 1986.
- Plant, M.L.; Plant, M.A.; and Foster, J. Alcohol, tobacco and illicit drug use amongst nurses: A Scottish study. *Drug Alcohol Depend* 28(2):195-202, 1991.
- Roth, S., and Cohen, L.J. Approach, avoidance, and coping with stress. *Am Psychol* 41:813-819, 1986.
- Sadava, S.W.; Thistle, R.; and Forsyth, R. Stress, escapism and patterns of alcohol and drug use. *J Stud Alcohol* 39(5):725-736, 1978.
- Steffy, B.D., and Laker, D.R. Workplace and personal stresses antecedent to employees' alcohol use. *J Soc Behav Pers* 6:115-126, 1991.
- Stone, A.A.; Lennox, S.; and Neale, J.M. Daily coping and alcohol use in a sample of community adults. In: Shiffman, S., and Wills, T.A., eds. *Coping and Substance Use*. Orlando, FL: Academic Press, 1985.
- Sullivan, E.J. A descriptive study of nurses recovering from chemical dependency. *Arch Psychiatr Nurs* 1:194-200, 1987.
- Suls, J., and Fletcher, B. The relative efficacy of avoidant and nonavoidant coping strategies. *Health Psychol* 4:249-288, 1985.
- Timmer, S.G.; Veroff, J.; and Colten, M.E. Life stress, helplessness, and the use of alcohol and drugs to cope: An analysis of national survey data. In: Shiffman, S., and Wills, T.A., eds. *Coping and Substance Use*. Orlando, FL: Academic Press, 1985.
- Trinkoff, A.M.; Eaton, W.W.; and Anthony, J.C. The prevalence of substance abuse among registered nurses. *Nurs Res* 40:172-175, 1991.
- Trinkoff, A.M., and Storr, C.L. Relationship of specialty and access to substance use among registered nurses: An exploratory analysis. *Drug Alcohol Depend* 36:215-219, 1994.
- Vingerhoets, A.J., and Van Heck, G.L. Gender, coping and psychosomatic symptoms. *Psychol Med* 20(1):125-135, 1990.
- Weidner, G., and Collins, R.L. Gender, coping and health. In: Krohne, W.H., ed. *Attention and Avoidance*. Toronto: Hogrefe and Huber, 1993.
- Wills, T.A. Stress and coping factors in the epidemiology of substance use. In: Kozlowski, L.T.; Annis, H.M.; Cappell, H.D.; Glaser, F.B.; Sellers, E.M.; and Vingilis, E.R., eds. *Research Advances in Alcohol and Drug Problems*. Vol. 10. New York: Plenum, 1990.

Wills, T.A., and Shiffman, S. Coping and substance use: A conceptual framework. In: Shiffman, S., and Wills, T.A., eds. *Coping and Substance Use*. Orlando, FL: Academic Press, 1985.

Wilsnack, R.W., and Wilsnack, S.C. Women, work, and alcohol: Failures of simple theories. *Alcohol Clin Exp Res* 16:172-179, 1992.

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