Nurses whose professional functioning is impaired due to substance abuse represent a threat to the health and safety of patients, other health care staff, and themselves. The major means for identifying impaired nurses is nonimpaired coworkers. Yet, only 37% of nurses who have had experiences working with impaired colleagues reported them to supervisors. A cross-sectional correlational research design, employing structural equation modeling, was used to explicate the relationships among the latent attitudinal constructs: permissiveness, morality, treatment efficacy regarding substance abuse, and punitive attitudes toward impaired nurses. The influences of these attitudes on perceived severity of impairment in fictitious coworkers and subsequent intentions to report these coworkers to nursing supervisors were modeled in a sample of 126 nurses. Permissiveness and positive attitude toward treatment were significantly related to intentions to report nurses. Moralistic attitude was not related to intention. Moralistic attitude was, however, strongly associated with a punitive attitude toward impaired nurses.

Nurses compose the largest segment of employees in the U.S. health care industry, an estimated 2 million jobs in 1996 (Bureau of Labor Statistics, 1998; Moses, 1997). Nurses whose professional functioning is impaired due to substance abuse, mental illness, or both represent a threat to the health and safety of patients, other health care staff, and themselves. The U.S. Department of Health and Human Services (1990) projected a shortage of 600,000 nurses in the industry by the year 2005. As a consequence, programs that identify, treat, and bolster impaired nurses in the workforce have been developed (see Lippman, 1992, for review). In order for such programs to be successful, impaired nurses first must be identified, and second, enrolled in effective rehabilitation programs. The major resource available to hospitals and other health care organizations for identifying impaired nurses is non-impaired coworkers. Damrosch and Scholler-Jaquish (1993) found that only 37% of nurses who had experiences working with impaired colleagues...
reported them to supervisors for referral to treatment and rehabilitation. Hence, research is needed to facilitate such identification and referral efforts.

**PURPOSE**

We take the position that understanding nurses’ attitudes related to substance abuse and impairment is key in developing programs to improve referral rates. Changing specific attitudes, identified through empirical research as being predictive of such referral intentions, forms a basis for educational programs aimed at improving referral rates and reducing the number of impaired nurses in practice. The purpose of this study is to estimate the influence of key attitudes on social judgments made by nurses regarding the severity of impairment in fictitious colleagues and the likelihood of reporting these impaired colleagues to supervisors.

In the sections that follow, literature essential to the appreciation of the importance of this line of research and the theoretical framework employed is reviewed. First, professional impairment is defined. Second, research on the prevalence of impairment due to substance abuse among nurses is reviewed. This section is intended to provide a sense of the scope of impairment and to highlight for study the most common, or the most representative, substances of abuse. Third, the theories of reasoned action and planned behavior are briefly reviewed and used to develop hypothesized relationships between nurses’ attitudes and their decisions to report impaired colleagues for referral to rehabilitation programs.

**Definition of Professional Impairment**

Professional impairment is the inability to perform one’s professional duties and responsibilities due to cognitive, emotional, or psychomotor dysfunction. Professional impairment among health care workers can have devastating consequences and is therefore an important social issue. The American Nurses’ Association (ANA) (1984) defines professional impairment as follows: “Nursing practice is impaired when the individual is unable to meet the requirements of the professional code of ethics and standards of practice because cognitive, interpersonal, or psychomotor skills are affected by conditions of the individual in interaction with the environment. These factors may include psychological dysfunction or excessive use of alcohol and drugs.” Impairment, therefore, can result from substance abuse, mental illness, or both.
The Prevalence of Substance Abuse Among Nurses

Bissell and Jones (1981) suggested that because of the high stress of nursing positions coupled with nurses' greater access to controlled substances, the risk of substance abuse may be greater among nurses than in the general population. Early studies estimated rates of drug and alcohol abuse to be 30 to 100 times higher for nurses than in the general population (Chaney, 1987; Jefferson & Ensor, 1982; Kaab, 1984; Patrick, 1984). However, these studies had methodological limitations (see Trinkoff, Eaton, & Anthony, 1991, for discussion).

More recent and rigorous epidemiological studies offer strong evidence that the prevalence of drug and alcohol problems among nurses is not significantly higher than in the general population. Trinkoff et al. (1991), using data from the National Institute of Mental Health Epidemiologic Catchment Area (ECA) Program, estimated the lifetime prevalence of any illicit drug use on at least one occasion among the 2 million working nurses at 32.9%, a percentage not significantly different from the 35.1% estimated for the working population at large. For each specific substance examined, Trinkoff et al. found nurses reported prevalence rates that were either less than or equal to those outside the profession. Prevalence of heavy drinking, defined as 7 drinks daily, was estimated from the ECA data to be 4.9% for nurses and 8.8% for others. Marijuana and narcotics appear to be the most frequently reported illicit drugs used by nurses. Trinkoff and Storr (1994) found that 41% of employed nurses reported having smoked marijuana on at least one occasion and that 3% reported using it in the past year. Trinkoff and Storr also found that lifetime prevalence of prescription-type narcotics was 34.3%, and annual prevalence was 6.8%. In a larger study, Trinkoff and Storr (1998) found that the rate of nurses' marijuana and cocaine use in the past year (3.6%) was lower than that of the general population. They noted, however, that critical care and emergency nurses were 3.5 times more likely to use marijuana or cocaine than nurses in other specialties.

Theoretical Framework

Widely accepted theories of behavioral change (Ajzen, 1985, 1991; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) maintain that a powerful antecedent to behavioral change is attitude change. Two major related theories developed to predict and explain behavior are the theory of reasoned action and the theory of planned behavior. The theory of planned behavior
(Ajzen, 1985, 1991) is an extension of the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) made necessary by the original theory's limitations in dealing with behaviors over which people have incomplete control. The central factor in both theories is that the individual's intention, or decision, to perform a given behavior is determined by independent antecedents. The first antecedent is attitude toward the behavior and refers to the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question. The second antecedent is a social factor termed subjective norm; it refers to the perceived social pressure to perform or not to perform the behavior. The third antecedent of intention is the degree of perceived behavior control, which refers to the perceived ease or difficulty of performing the behavior and is assumed to reflect past experience as well as anticipated impediments and obstacles. Empirical evidence summarized by Ajzen (1991) indicates that attitude is the most consistently influential of these antecedents across a wide range of behaviors and situations. Godin and Kok (1996) analyzed the findings from 56 publications applying the theories to predicting health-related intentions and found attitudes were more strongly related to intentions than were subjective norms (average correlations $r = .46$, and $r = .34$, respectively).

Thus, from this perspective, understanding the attitudes related to substance use and professional impairment is paramount in developing effective programs to improve referral rates. Attitudes toward substance use and impairment are hypothesized to influence nurses' social judgments of impairment in coworkers and, consequently, the likelihood of reporting impaired colleagues for referral to rehabilitation programs.

**METHOD**

**Design**

A cross-sectional, correlational research design, employing structural equation modeling, was used to explicate the relationships among the latent attitudinal constructs: permissiveness, morality, treatment efficacy regarding substance abuse, and punitive attitudes toward impaired nurses. The influences of these attitudes on perceived severity of impairment in fictitious nurses and subsequent intentions to report these coworkers to nursing supervisors were modeled in a sample of 126 nurses.
Sample

A total of 119 female and 7 male registered nurses and nursing students in west central Florida volunteered to take part in the study. Each received $20 for participating. The average age was 32.7 years. Of the participants, 76% were Caucasian, 5.6% were African American, 9.5% were Hispanic, 5.6% were Asian, and 3.2% did not specify their ethnic background. When asked about the highest educational level obtained, 47% of the participants had a baccalaureate degree, 36.5% had an associate's degree, 7.9% held a master's degree, 3.2% had doctoral degrees, 3.2% had diploma degrees in nursing, and 2.4% did not specify. Of the participants, 41 were nursing students, and 85 were registered nurses with an average of 10.4 years' experience working as a nurse. No information was obtained about their area of specialization or education specific to substance abuse.

Measurements

Social judgment task. The stimuli judged consisted of 24 scenarios describing the attributes of a fictitious nurse. The scenarios were devised using a $4 \times 3 \times 2$ factorial design using the attributes: substance use, technical incompetence, and mental illness. These attributes, and the values chosen to define them, were empirically based and selected for their realism and generalizability. Four levels of substance use: *smokes marijuana, drinks alcohol, uses narcotics, and does not use any substances*, defined this attribute. The technical incompetence attribute was operationalized on the basis of medication errors and had three levels: *has made one medication error, has made more than one medication error*, and *has never made a medication error*. Berens (2000) reports that medication errors made by nurses (e.g., giving the wrong medication or an incorrect dose) have resulted in death or injury to more than 10,000 hospital patients in the United States since 1995. For the purposes of this study, the third attribute, mental illness, was defined with two levels, *has depression* and *does not have depression*. Depression was chosen to operationalize this variable because it is one of the most prevalent mental illnesses in this country. The prevalence of depression among nurses (lifetime prevalence estimated at 7.8%) has been shown to be comparable with the rates reported in the general population (Hendrie, Clair, Brittain, & Fadul, 1990; Williams, Hagerty, Murphy-Weinberg, & Wan, 1995). Participants were given the instruction, "When you think of
fictitious nurses described as having depression, we mean that he/she has depressive symptoms severe enough to warrant a diagnosis of depression.” The decision to use these particular substances, examples of technical incompetence, and form of mental illness in constructing the stimulus scenarios was based on their prevalence and generalizability. An example of one of the 24 scenarios is “A nurse who smokes marijuana, has made more than one medication error, and has depression.” Each scenario was typed and transferred to a black-on-white 35-mm slide for presentation.

*Rating scales.* Scenarios were evaluated using two rating scales. First, judgments of impairment were made using a 0-to-10 scale with the verbal anchors *not at all impaired, moderately impaired, quite impaired, very impaired, extremely impaired,* and *completely impaired,* centered under the numerals 0, 2, 4, 6, 8, and 10, respectively. Participants were provided with the ANA definition of impairment (ANA, 1984). The instruction “Rate how impaired you believe the person in each description is” appeared at the top of each answer sheet. Judgments of intention, or the likelihood of reporting an impaired nurse, were made using a 0-to-10 scale with dual sets of the anchors. Verbal anchors *not at all, probably not, doubtful, probably, definitely,* and *undeniably* were centered under the numerals 0, 2, 4, 6, 8, and 10, respectively. Also, percentages (0% likely, 20% likely, 40% likely, 60% likely, 80% likely, and 100% likely) were anchored accordingly under the same numerals. The instruction, “Rate how likely you would be to report such a person to a supervisor” appeared at the top of each answer sheet.

*Attitude measurements.* Attitudes toward substance abuse were measured using the Substance Abuse Attitude Survey (SAAS) developed to assess attitudes among clinicians (physicians, nurses, psychologists, and social workers) toward various aspects of alcohol and drug abuse (Chappel, Veach, & Krug, 1985). Attitude toward impaired nurses was measured using the Perceptions of Nursing Impairment Inventory (PNII) developed by Hendrix, Sabrutt, McDaniels, and Field (1987). The SAAS was developed by Chappel et al. (1985) from an original pool of 153 Likert-type items using a series of factor analytic studies. Factor analysis indicated the presence of three stable factors labeled *permissiveness, moralism,* and *treatment optimism.* Jenkins, Fisher, and Applegate (1990) reexamined the factor structure underlying the SAAS and provided additional data on its psychometric properties. Three coherent factors were identified, and 11 items were discarded because they did not load significantly on the resulting factors. These factors were also labeled *treatment, moralism,* and *permissiveness.* Internal consistency
estimates of reliability were reported as .75, .78, and .74, respectively. The PNII was designed and developed by Hendrix et al. (1987) to assess perceptions and attitudes toward impaired nurses. The PNII uses a Likert-type format consisting of 31 statements about nursing impairment. Statements on the PNII do not refer specifically to emotional distress or alcohol or other substance abuse but generically to “impairment.” The PNII was developed using a random sample of 1,047 registered nurses in Kentucky. The authors report that the PNII has an alpha coefficient reliability of .80. Factor analysis revealed the dominant dimension of the PNII to be “disciplinary orientation” or a punitive attitude toward impaired nurses. Participants responded to all attitude items using an 11-point scale with the verbal anchors strongly disagree, moderately disagree, and slightly disagree centered under the numerals –5, –3, and –1, respectively, and the anchors slightly agree, moderately agree, and strongly agree centered under the numerals 1, 3, and 5, respectively.

**Procedures**

Participants were tested in small groups in classrooms. Each group received one of 6 sets of stimuli counterbalanced for sequencing effects (see Beckstead, in press, for more details). Standardized instructions, describing the purpose of the study and the nature of the judgment tasks, were provided and read aloud to all participants. The stimulus slides were projected onto a screen using a Kodak Ektagraphic III projector equipped with a programmable timer. To equate the time available for cognitive processing across all stimuli, each stimulus was presented for 15 seconds with a 1-second interstimulus interval. Participants then completed the SAAS, PNII, and demographic questions.

**Data analysis**

Structural equation modeling (SEM) was used to examine hypothesized influences among measured and latent variables. In SEM the researcher is concerned with two interrelated models. The first is the measurement model that specifies how the latent variables are reflected in terms of measured variables or indicators. In the present study, each latent variable was represented by 2 indicators formed by randomly splitting the items in each instrument (or subscale) into two subsets. The second model is the structural model that is used to specify directional and nondirectional influences.
among the latent variables. SEM provides various advantages over more conventional regression approaches; most notably, an assessment of overall model fit is obtained. In the present application, primary concerns are with assessing overall model fit and the direct and indirect influence of latent variables on one another. Interpretation of the relationships among latent variables in a given model requires the introduction of path analysis. Path coefficients may be thought of as standardized regression coefficients that represent both the direction and magnitude of the relationship between variables. The influence of one variable on another connected by a sequence of paths may be obtained by multiplying the respective path coefficients.

The models below were examined with LISREL 8.30 using maximum likelihood estimation (Jöreskog & Sörbom, 1996). Evaluation of each model is based on considering a variety of fit measures, and model comparisons are based on incremental differences in fit. These measures are now briefly discussed. $\chi^2$ is an inferential test of the plausibility of a model explaining the data. The root mean square error of approximation (RMSEA) expresses the lack of fit due to reliability and also model (mis)specification (Browne & Cudeck, 1993). RMSEA expresses fit per degree of freedom of the model and should be less than .1 for acceptable fit, with .05 or lower indicating a very good fitting model. The goodness of fit index (GFI) and adjusted goodness of fit index (AGFI), which adjusts for the number of parameters estimated, range from 0 to 1 with values of .9 or greater indicating a good fitting model (Jöreskog & Sörbom, 1996). These indices are analogous to $R^2$ in multiple regression. A conservative fit index that takes into account the degree of parsimony in the model is the parsimony goodness of fit index (PGFI) proposed by Mulaik et al. (1989), which will always be substantially smaller than other indices unless the number of parameters estimated is much smaller than the number of data points. The standardized root mean square residual (SRMR) is the averaged differences between the sample correlations and the estimated population correlations. The SRMR has a range from 0 to 1; values of .08 or less are desired (Hu & Bentler, 1999).

RESULTS

Preliminary Analysis

Prior to conducting multivariate analyses, the data were screened for univariate outliers by examining the frequency distributions of all variables. Screening for multivariate outliers was done by calculating Mahalanobis
distance scores for all cases. Using a critical value of $\chi^2 = 32.909$, $\alpha = .001$, and $df = 12$, no outliers were found. The Kaiser-Meyer-Olkin measure of sampling adequacy was satisfactory at .690, and the Bartlett’s test of sphericity was significant ($\chi^2 = 903.664$, $p < .001$, and $df = 66$). Both of these measures indicated that the data were appropriate for SEM analysis (Norman & Streiner, 1994; Pedhazur & Schmilkin, 1991). Internal consistency estimates of reliability were .71, .77, and .76 for the treatment, moralism, and permissiveness subscales of the SAAS, respectively. Reliability of the PNII was estimated as .77.

Modeling the Effects of Attitudes on Nurses’ Intentions to Report Impaired Colleagues

Fitting the model to the data. The basic assumption underlying the modeling here was provided by the theories of reasoned action and planned behavior; attitudes are antecedents of social judgments and intentions to report impaired coworkers. Precise relationships among the attitude variables studied here were also hypothesized; attitudes toward substance use and treatment were expected to influence attitude toward impaired nurses. The initial model tested was one in which all attitude variables affected both perceived degree of impairment and intention to report an impaired nurse to a supervisor and in which perceived degree of impairment influenced the intention to report an impaired nurse. The model had a nonsignificant $\chi^2 = 48.651$, $df = 41$, $p = .192$ and other indices of fit suggesting a reasonable fit to the data (see Table 1). Several paths were nonsignificant, however, and the PGFI, which reflects a penalty for each parameter in the model, was low (.497). The next step in the analysis was to remove all nonsignificant paths among the latent variables and reestimate the model. This data-driven model did not fit well (see Table 1.) Comparing the two $\chi^2$ values shows that these strictly data-driven modifications significantly impaired the fit of the model to the data. The parsimonious inclusion of theoretical paths linking the latent attitude variables to the latent judgment variables was then fit to the data. This model was a significant improvement relative to the data-driven model and was not significantly different from the initial model. Comparing the various indices of fit among the three models illustrates this (see Table 1). The PGFI shows that the final model actually fits better than the initial model when adjusting for the number of parameters being estimated. The standardized parameter estimates for the model appear in Figure 1. All factor loadings relating latent variables to their indicators were significant.
TABLE 1: Summary of Model Fit Statistics

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>p</th>
<th>GFI</th>
<th>AGFI</th>
<th>PGFI</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial: All paths from attitude variables to judgment variables</td>
<td>48.651</td>
<td>41</td>
<td>.192</td>
<td>.946</td>
<td>.897</td>
<td>.497</td>
<td>.0195</td>
<td>.0461</td>
</tr>
<tr>
<td>Data-driven: All nonsignificant structural paths deleted</td>
<td>79.675</td>
<td>52</td>
<td>.008</td>
<td>.915</td>
<td>.873</td>
<td>.610</td>
<td>.0516</td>
<td>.1260</td>
</tr>
<tr>
<td>Final solution: Figure 1 parsimonious inclusion of theoretical paths</td>
<td>61.932</td>
<td>49</td>
<td>.102</td>
<td>.934</td>
<td>.895</td>
<td>.587</td>
<td>.0258</td>
<td>.0663</td>
</tr>
</tbody>
</table>

NOTE: $\chi^2 = \text{minimum fit function test}; \ GFI = \text{goodness of fit index}; \ AGFI = \text{Jöreskog & Sörbom's adjusted goodness of fit index}; \ PGFI = \text{Mulaik's parsimony goodness of fit index}; \ RMSEA = \text{root mean square error of approximation}; \ SRMR = \text{standardized root mean square residual}.

Applying the model to estimate relationships among the latent variables. Moralistic and permissive attitudes toward substance use were inversely and significantly correlated. Attitude toward substance abuse treatment was not related to these attitudes. Punitive attitude toward impaired nurses was significantly influenced by moralistic attitude toward substance use but not by permissive attitude nor by attitude toward substance abuse treatment. As might be expected, the more permissive a nurse’s attitude toward substance use, the less impaired she or he perceived substance users to be. In contrast, the more positive a nurse’s attitude toward substance abuse treatment, the more impaired she or he perceived substance users to be. Punitive attitude toward impaired nurses did not significantly influence how participants perceived the impairment of substance users, although deleting this path proved detrimental to the overall fit of the model. Finally, the more impaired a participant perceived the fictitious nurse in the scenarios to be, the greater the self-reported likelihood of reporting such a person to a supervisor. Applying the principles of path analysis, indirect, and hence, total effects of the latent variables on one another were calculated. LISREL estimates standard errors for these total effects and provides tests of significance. These total effects are presented in Table 2. Permissive attitude toward substance use and positive attitude toward substance abuse treatment were significantly related to intention to report. Moralistic attitude toward substance use was not significantly related to either perceived impairment or intention. Punitive attitude toward
Figure 1: Final structural equation model: Attitudinal antecedents of nurses' intentions to report impaired colleagues to supervisors. Measured variables are represented by squares; latent variables are represented as circles. All factor loadings relating measured and latent variables are significant.

* $p < .05$.

impaired nurses was not significantly related to intention to report. The final solution explained more than 50% of the variance (1 – .459) in nurses' intentions to report impaired coworkers to a supervisor for referral to treatment and rehabilitation.

**DISCUSSION**

This study estimated the influence of key attitudes on social judgments made by a sample of nurses regarding the severity of impairment in fictitious colleagues and the likelihood of reporting these impaired colleagues to supervisors. Following the framework offered by the theories of reasoned action and planned behavior, attitudes were modeled as antecedents of perceptions and intentions (see Figure 1). Precise relationships hypothesized
among the attitude variables were tested. In general, attitudes toward substance use and treatment were expected to influence attitude toward impaired nurses. Of the attitudes examined here, only the moralistic attitude toward substance use was found to be related to punitive attitude toward impaired nurses. Given this isolated relationship between moralistic and punitive attitudes, endorsing moralistic positions and enforcing moralistic policies may result in counterproductive feelings toward coworkers in a time when all nurses ought to be pulling together to help one another.

The correlations among attitudes regarding substance use and treatment were insightful in their own right. Whereas moralistic and permissive attitudes were inversely related to one another, neither was significantly related to attitude toward substance use and treatment. This finding suggests that the way one feels about substance abuse may be independent of what she or he believes about the effectiveness of treatment programs.

Positive attitude toward substance abuse treatment was significantly related to perceived impairment and to intention to report impaired colleagues to supervisors. These findings suggest that educational efforts aimed at informing nurses about the efficacy of available substance abuse treatment will be more effective than efforts that focus on the moral aspects of substance use as a means of changing reporting behaviors and improving referral rates. To the extent that treatment works, the data suggest that educating nurses about the effectiveness of treatment may lower their subjective thresholds for perceiving impairment among their colleagues and hence increase the likelihood of their reporting impaired colleagues.

Some limitations must be kept in mind concerning the results reported above. First, the convenience sample was of moderate size and limited to
only one state in the United States (Florida). Therefore, the findings should not be considered representative of the entire country. Second, the data analyzed were obtained from nurses’ self-reports and, consequently, may reflect bias in reporting certain feelings and intentions. Third, individual differences in the amount of knowledge and education the participants had regarding substance abuse and impaired professionals was not assessed. Fourth, the effects of omitted variables (e.g., personality traits or experience with substance abuse) are unpredictable. Their absence could lead to misleading conclusions with regard to the effects of the variables examined. Specifically, the attitude variables included in the study failed to explain completely the variance in perceived degree of impairment and intention to report impaired colleagues. Although these data may provide some insight into how key attitudes precede such judgments, their value must be weighed and taken in context. Further study is needed to control for these methodological issues.

This study contributes to our understanding of how certain attitudes are related to nurses’ intentions to report impaired coworkers. Various steps need to be taken to further this line of research. A retrospective study could be used to examine actual referral behaviors made by individual nurses who could then complete the SAAS and PNII. Also, educational programs based on the findings reported here need to be developed and piloted. Specifically, educational materials pertaining to the efficacy of available treatment programs could be compiled and distributed. A more challenging goal for researchers and educators is to alter permissive attitudes without affecting moralistic attitudes. Social norms and organizational culture are also important in understanding the referral behavior of nurses. For example, the presence of an employee assistance program (EAP) in a hospital or health maintenance organization may explain some referral behavior. Whether the EAP is internal or external is another potential factor. Likewise, the work group norm for drinking (do members of the work group drink socially?) may contribute to the social pressures influencing referral behavior. Other sources of organizational culture influencing referral behavior may include the perceived attitude of unit supervisors or administrators. These factors need to be examined in consort.

The data reported here suggest that different routes may exist for influencing nurses’ intentions to report impaired colleagues. Altering key attitudes is likely to prove more effective than altering other, more extraneous ones. Attempting to change attitudes is not enough. Attempts at changing those attitudes that have been shown empirically to be relevant may lead to significant improvements in reporting and referral efforts.
REFERENCES


