Reporting peer wrongdoing in the healthcare profession: the role of incompetence and substance abuse information

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Abstract

This article reports an analysis of the thinking processes nurses use when making decisions to report peer wrongdoing. Nurses (N = 120) were asked to provide subjective probability estimates of the likelihood that they would report a hypothetical coworker for substance abuse and/or incompetence related to practice. Data were analyzed using formal inference-based recursive modeling (FIRM). Findings confirm that when considering workplace wrongdoing, nurses view working under the influence of any type of substance to be a very serious offense. More interesting, nurses combined incompetence and substance-abuse cues in complex ways, possibly due to the critical-thinking skills acquired during their education and practice.

Keywords: Workplace wrongdoing; Substance abuse; Incompetence; Healthcare

1. Introduction

The purpose of this article is to extend our understanding of nurses’ thinking processes used when making decisions to report a healthcare professional for giving inadequate patient care. In the parlance of ethics researchers, this is referred to as “reporting peer wrongdoing”. This paper reports data collected from nurses in a laboratory setting. Nurse participants were asked to provide subjective probability estimates of the likelihood that they would report a hypothetical coworker for technical incompetence and/or substance abuse related to nursing practice. The goals of the study were to predict what nurses do when they encounter such events in practice, and to understand how informational cues combine and interact during the formation of such decisions. Results describing what nurses are likely to do when faced with this type of wrongdoing are of use to policy makers and nurse educators who are interested in improving reporting efforts. Describing how nurses use informational cues is of interest to psychologists and other researchers interested in understanding cognitive processes such as decision making and critical thinking in nursing practice.

1.1. Prior research on reporting of peer wrongdoing in the healthcare profession

Nurses’ reporting of wrongdoing in the healthcare profession has been studied from a variety of perspectives using various methods. In a nationwide survey of 2000 nurses, Cerrato (1988) identified a number of cues that nurses declared influenced their decision to report or not report a healthcare professional for giving inadequate patient care. Two cues emerged as particularly important: whether the wrongdoing was perceived to be the result of incompetence or an honest mistake,
and whether the professional who committed the wrongdoing was a nurse or a physician. Respondents said that they would be more likely to report wrongdoing if they perceived it to be incompetence (i.e., a pattern of behavior) rather than an isolated event. The nurses also indicated they would be more likely to report if the wrongdoer was a nurse rather than a physician.

Randall and Gibson (1991) manipulated these two cues in another survey study. One of four versions of a scenario describing either a nurse or a physician as either incompetent or having made an honest mistake (a 2 × 2 factorial design) was sent randomly to nurses employed at three different hospitals. Respondents provided subjective probability estimates of the likelihood that they would report the incident. The likelihood of reporting one type of professional or the other did not differ significantly. Of particular interest however, there was a significant interaction of these two cues; the seriousness of the wrongdoing was considerably more influential when the act was committed by a nurse than by a physician. This finding suggests that informational cues may not combine in a simple additive fashion as nurses make such decisions. However, because the manipulation of cues was between-subjects (i.e., each nurse responded to only one of the four scenarios) it was not possible to examine how individuals traded-off one type of cue against the other.

Other forms of wrongdoing by healthcare professionals can indirectly compromise patient care. Nurses whose professional functioning is impaired due to substance abuse represent a threat to the health and safety of patients, other healthcare staff, and themselves (Beckstead, 2002). Substance abuse violates ethical codes of conduct for both nurses and physicians and may therefore be considered as workplace wrongdoing. Keenan (1995) found that wrongdoing which involved harm to others as a result of health and safety violations was rated as the most serious type of offense (when compared to other offenses such as fraud).

Hood and Duphorne (1995) examined the reporting strategies used by nurses faced with the decision to report substance abuse among their peers. Although inconclusive, some interesting findings are reported. Among them, nurses who believed that reporting would result in punitive consequences for the wrongdoer were actually deterred from making formal reports when they suspected co-workers of being under the influence of drugs or alcohol. Nurses who believed that rehabilitative, or assistive consequences would result for the wrongdoer were more likely to report them. These findings suggest that the thoughts and feelings that nurses hold regarding the consequences of their reporting actions may influence their decision outcomes.

The thoughts and feelings that nurses hold toward substance abuse, in general, can also affect these decision processes. Proceeding under the assumption that decision processes are influenced by attitudes, Beckstead (2002) examined four related, yet distinct, attitudes: permissiveness, moralism, treatment optimism regarding substance abuse, and punitive attitude toward impaired nurses. Permissiveness toward substance use was found to be the strongest predictor of intention to report an impaired nurse. Moralistic attitude toward substance use (moralism) influenced punitive attitude, but had no relationship to intention. Treatment optimism, (believing that rehabilitative efforts are productive) also predicted intention to report substance abuse, strengthening Hood and Duphorne’s findings. Beckstead (2003) demonstrated that nurses’ attitudes moderated the influence of various cues when making judgments about the degree of impairment experienced by a hypothetical substance-using coworker. Nurses with less permissive attitudes toward substance use emphasized information about drug use and de-emphasized information provided on technical incompetence; nurses with more permissive attitudes showed the reverse pattern. In another study, these attitudes were found to moderate nurses’ intentions to report coworkers for substance abuse (Beckstead, 2004). While nurses with more permissive attitudes were less likely to report coworkers for using substances while off duty, they were more intolerant of on-the-job substance users when compared to their less permissive counterparts.

The present investigation had two specific aims: (1) to assess the extent to which the influence of incompetence information may be modified when considered in the context of substance-abuse information as nurses make decisions to report workplace wrongdoing, and (2) to do so using a within-subjects manipulation in order to determine if (and how) the individual nurse’s decision process involves non-additive trade-offs or interactions among these cues.

2. Method

This section is organized into four parts. First, the characteristics of the participants are described. Second, the approach to measuring subjective probability judgments and the stimulus materials employed are presented. Third, the data collection procedure and counterbalanced design are outlined. Finally, the data analysis strategy, using formal inference-based recursive modeling, is explained in detail.
2.1. Participants

One-hundred-thirteen female, and seven male registered nurses and nursing students in west central Florida volunteered to take part in the experiment (N = 120). Each received $20 for participating. The average age was 32.8 years, SD = 9.8. Seventy-nine percent were Caucasian, 9.2% were Hispanic, 5.8% were African American, 5.0% were Asian, and 1% did not specify their racial or ethnic background. Forty-eight percent had a baccalaureate degree, 36.7% had an associate degree, 8.3% held a master’s degree, 3.3% had doctoral degrees, 2.5% had diploma degrees in nursing, and 1.2% did not specify their highest educational level. Thirty-nine of the participants were nursing students in the final semester of their baccalaureate program. Eighty-one of the participants were registered nurses with an average of 10.3 years experience working as a nurse (SD = 8.0). No information was obtained about their area of specialization, or education specific to substance abuse and treatment.

2.2. Measuring subjective probability of reporting wrongdoing

Participants were presented with 42 scenarios describing the characteristics of a hypothetical nurse-coworker and asked to estimate the likelihood (subjective probability) that they would report such a person for wrongdoing. The scenarios were devised with a $3 \times 3 \times 2 \times 2$ factorial design using cues describing the characteristics: type of substance, degree of technical incompetence, pattern of use, and mental illness. Six additional scenarios were included describing a coworker who did not use any drugs in terms of technical incompetence and mental illness cues.

These characteristics, and the cues chosen to define them, were empirically based and selected for their realism (ecological validity) and generalizability. Three types of substance use—“smokes marijuana”, “drinks alcohol”, or “uses narcotics”—defined this characteristic. The decision to use these particular substances as cues was based on their generalizability as determined by prevalence estimates in the population. Trinkoff and Storr (1994, 1998) found that 92% of employed nurses had used alcohol at least once in their lifetime. Fifty-four percent reported having had more than 5 drinks on at least one occasion, with 19% reporting such use in the past year. Forty-one percent of employed nurses reported having smoked marijuana on at least one occasion and 3.6% reported using it in the past year. The lifetime prevalence of prescription-type narcotics among employed nurses was 34.3%, and annual prevalence was 6.8%.

The second characteristic, technical incompetence, had three degrees—“has made one medication error”, “has made more than one medication error”, and, “has never made a medication error”. Berens (2000) reported that medication errors made by nurses (e.g., giving the wrong medication, or simply an incorrect dose) have resulted in death or injury to over 10,000 hospital patients in the United States since 1995.

The third characteristic, pattern of use, was defined with two levels—“uses while at work” and “uses only while off duty”. Obviously using substances while at work is the greater wrongdoing, but, off-duty use too can compromise patient care (e.g., working while “hungover”). This variable was included to increase the ecological validity of the scenarios and because the off-duty-use context might reveal subtle distinctions in nurses’ perceptions of the three substances that would otherwise be overshadowed by the wrongfulness of their use while at work.

The final characteristic, mental illness, had two levels—“has depression”, and, “does not have depression”. Depression 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 et al., 1990; Williams et al., 1995). Depression was included as a variable because it might show an interaction with other characteristics as nurses formed their responses, and because the American Nurses Association includes “psychological dysfunction” as well as “excessive alcohol and drugs” as factors that can preclude a nurse from meeting the requirements of the professional code of ethics and standards of practice (ANA, 1984). An example of one of the 42 scenarios is “A nurse who smokes marijuana only while off duty, 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. Subjective estimates of probability, or the likelihood of reporting a coworker, were made using a 0–10 scale with dual sets of anchors. Verbal anchors: not at all likely, probably not, doubtful, probably, definitely, and undeniably, were centered under the numerals 0, 2, 4, 6, 8, and 10, respectively. The use of such appropriate verbal quantifiers has been shown to enhance the equal-interval properties of such subjective estimates (Jones and Thurstone, 1955). These particular quantifiers were selected because they have been empirically demonstrated to correspond to the full range of probability (Howe, 1962). Other investigators have reported considerable agreement and consistency among healthcare professionals regarding the meaning of such probabilistic quantifiers (Kong et al., 1986). In addition to these verbal quantifiers, percentages (0% likely, 20% likely, 40% likely, 60% likely, 80% likely, and 100% likely), were anchored accordingly under the same numerals. Using such numeric ratings has been shown to compel
participants to deal with cue information in a more complete manner than merely requiring a choice (report or not) to be made (Billings and Scherer, 1988). The instruction “Rate how likely you would be to report such a person to a supervisor” appeared at the top of the answer sheet.

2.3. Procedure

To control for primacy and recency effects within each stimulus that could produce unequal attention to information due to its placement within each description, three forms of each scenario were used. The order of information regarding type of substance and its use, technical incompetence, and presence of depression, was systematically varied so that each type of cue appeared at the beginning, middle, and end of each unique combination. In this way, the syntax or placement of the information within each description was counterbalanced. Counterbalancing was also used to control for the effects of fatigue that could cause the participant to become less attentive to descriptions presented later in the sequence. This was accomplished by reversing the original randomized sequence of scenarios. The combination of these two counterbalancing measures resulted in six unique sets of stimulus materials.

Participants were tested in small groups. Each group received one of the six sets of 42 scenarios from the counterbalanced design described above. Standardized instructions, describing the purpose of the study and the nature of the judgment task, were provided and read aloud to all participants. The stimulus slides were projected onto a screen using a Kodak Ektographic III projector equipped with a programmable timer. To equate the time available for cognitive processing across all scenarios, each slide was presented for 15 s with a one-second inter-stimulus interval.

2.4. Data analysis

FIRM (Formal Inference-based Recursive Modeling) is a recursive partitioning procedure developed by Hawkins and Kass (1982) and available through Scientific Software International, Inc. The output from a recursive model analysis is a “dendrogram”, or tree diagram, that shows how predictor variables can be used to partition (split) the data into successively smaller and more homogeneous subgroupings called “nodes”. The dendrogram can be used as an immediate pictorial way of making predictions for future decisions, or interpreted in terms of the effects on the dependent variable of changes in the predictors (Hawkins, 2001). At each step in the partitioning process FIRM is designed to separate the data into groups that are maximally distinct and internally homogeneous on the response variable. There are three components to the recursive partitioning method: (a) deciding which predictor to use to define the split; (b) deciding which categories of the predictor should be grouped together so that the data set is not split more ways than are really necessary; and (c) deciding when to stop the growing decision tree.

When working with categorical predictors and a continuous response variable, as in this study, FIRM conducts one-way analysis of variance on each predictor, except that FIRM groups together different categories that do not differ significantly. This is done by calculating two-sample test statistics (Student’s t) between each pair of categories. If the most similar pair fails to be significantly different (at the user-specified significance level) then the two categories are merged into one composite category, reducing the number of categories by one. The pairwise tests are then repeated for the reduced set of categories until no more categories can be pooled. FIRM then determines the formal significance level for each predictor (based on the number of groupings that have occurred) by applying a Bonferroni approach. The final stage in the analysis is whether to split a node and if so, on which predictor. FIRM does this by finding the best predictor (the one that produced the smallest p-value) and making the split if its p-value multiplied by the number of active predictors in the node is below the user-specified cutoff. The analysis stops when none of the nodes has a significant split. In this analysis maximum p-values of 0.01 were specified for merging categories and splitting nodes.

3. Results

Fig. 1 is a dendrogram showing the results of the FIRM analysis. All obtained p-values were < .003. The variable used to make each split is shown in italics. Not surprising, FIRM first split the data into three nodes (labeled 1, 2, and 3 in the figure) on the basis of the pattern of use predictor. Node 1 shows the subjective probability of reporting a coworker who doesn’t use drugs (but who may be incompetent, or have depression) was .204 which is displayed as 20.4%. Similarly, participants indicated a 41.6% likelihood of reporting a coworker for off-duty substance use (Node 2), and a 92.5% likelihood of reporting a coworker for using substances while at work (Node 3). What should be remembered here is that these estimates are marginal values obtained using a within-subjects factorial design and are formed by “collapsing” or averaging the data over all categories of the other predictors. As such, these are estimates of the subjective probabilities of reporting a coworker when no additional information (i.e., degree of incompetence, type of substance used, or presence of depression) is specified.

To index the magnitude or strength of this, and the other splits, Cohen’s measure of effect size f was
calculated and is also shown in Fig. 1. Conventional values for small, medium, and large effect sizes are 0.10, 0.25, and 0.40, respectively (see Cohen, 1988, for discussion). With this in mind, the very large value of $f = 1.35$ confirms what we could have guessed from the nature of the decision put to nurses; when considering workplace wrongdoing, nurses viewed working under the influence of any type of substance to be a very serious offense. Comparisons between probabilities (or likelihoods) are often made using odds ratios. For example, $92.5%/(100% - 92.5%) = 12.33$, suggesting that the odds of reporting a coworker for working under the influence are over 12 to 1. However, this estimate ignores the subjective probability of reporting a coworker who doesn’t use any drugs but who may be incompetent (20.4%). A more psychologically valid estimate of the odds that a nurse would report a coworker for substance use at work is given by $92.5%/20.4% = 4.53$, or close to 5 to 1.

Each of these three nodes was subjected to the same type of analysis. The most significant splits were obtained by separating the responses in Nodes 1 and 3 on the basis of degree of incompetence, and those in node 2 by type of substance. When considering scenarios that involved coworkers who did not use any drugs (Node 1), the likelihood of reporting them varied considerably as a function of their incompetence ($f = 0.56$). Responses to these scenarios were split into Nodes 4, 5, and 6, corresponding to the three incompetence cues. The likelihood of reporting a highly incompetent person who doesn’t use any drugs is 35.5%/6.8% or just over 5 to 1.

Information provided about coworker incompetence, when considered in the context on-the-job drug use (Node 3), showed a much smaller influence ($f = 0.12$) on the likelihood of reporting. In this context, the low incompetence (making one medication error) and no incompetence (has never made a medication error) cues did not produce significantly different probability estimates and were grouped together into Node 10.

![Dendrogram showing results of FIRM analysis on subjective probability estimates (displayed as percentages) of the likelihood of reporting a nurse-coworker. Numbers in parentheses identify each node in the analysis and are discussed in the text.](image-url)
Although the likelihood of reporting a substance-abusing coworker who has made “an honest mistake” was quite high, 91.4%, this likelihood increased significantly if the coworker showed a behavioral pattern of compromising patient care. Nodes 10 and 11 (as well as Node 6) are terminal; the responses they contained could not be separated any further based on type of substance or presence of depression cues.

Node number 2, containing the scenarios describing off-duty substance use, was split into Nodes 7, 8, and 9 on the basis of the type of substance cues describing off-duty use of alcohol, marijuana, or narcotics, respectively. Here we find psychological distinctions being made among the types of substances of abuse. These distinctions are informative on their own, but they also offer insight into the cognitive processing of the informational cues investigated here. Nurses indicated they are more likely to report a coworker for using narcotics, than for smoking marijuana which is more likely to be reported than drinking alcohol. The implications of this pattern of results for policy and education will be discussed below. Of psychological interest is the finding that the seriousness of using drugs at work overshadowed these distinctions (i.e., Nodes 3, 10 and 11 were not split on the basis of type of substance).

Nodes 7, 8 and 9 were split on the basis of the incompetence information provided. The influence of incompetence cues was strongest ($f = 0.47$) when nurses considered a coworker who used alcohol and weakest when they considered one who used narcotics ($f = 0.26$) with marijuana use falling in between ($f = 0.38$). When nurses considered coworkers who used any substance, the analysis revealed that they thought about the presence or absence of depressive symptoms only in coworkers who drank alcohol while off duty (Nodes 16 and 17 were split into Nodes 24 and 25, and 26 and 27, respectively). The influence of depressive symptoms was weaker in these scenarios ($f_s = 0.37$ and $0.27$ respectively) than in those where depression was considered in the absence of any drug use (Nodes12–15, $f_s = 0.49$ and $0.32$). Again, it appears that more serious forms of wrongdoing overshadow the influences of less serious forms.

4. Discussion

This study used a structured decision task, in which nurse-participants provided several subjective probability estimates of what they would do when faced with decisions to report coworkers for incompetence and substance abuse compromising patient care. This laboratory task offers some insight into how informational cues involved in such decisions are processed. These results were obtained using a inference-based recursive modeling approach that successively merged and split the responses according to patterns in these subjective probability estimates. The product of this analysis was a dendrogram explicating the decision process (see Fig. 1). Comparing these subjective probabilities using odds ratios illustrated that nurses are as likely to report impaired practice as they are to report technical incompetence (approximately 5:1). Other informative comparisons are possible.

The within-subjects manipulation of informational cues was effective in revealing the nature of the non-additive processes involved as nurse’s made decisions to report workplace wrongdoing. The results showed that as nurses made decisions to report peers (at least hypothetical ones) for workplace incompetence, the influence of incompetence information can be modified by additional information pertaining to the substance-use behavior of such peers.

Nurse educators, administrators, and policy makers can use this “map” for making predictions about how nurses are likely react to similar events in the future. By tracing the “branches” of this decision tree, it is possible to arrive at estimates of decision outcomes and to make comparisons among various cases of such wrongdoing in healthcare settings. While these estimates are not perfect, they represent a first step in describing what nurses (might) do when faced with such situations in practice. Other approaches to obtaining such estimates, such as retrospectively examining adverse event reports, are likely to yield less reliable estimates due to the sparse and biased nature of these records. Given the infrequent, but potentially serious consequences of technical incompetence and substance abuse among healthcare workers, the estimates reported here may prove more useful. For example, using data from Trinkoff and Storr (1994, 1998), 19% of nurses reported binge drinking in the past year compared to only 3.6% who reported smoking marijuana during the same time period. Yet, nurses in the current study indicated they were less likely to report an incompetent coworker for off-duty alcohol use (43.6% likelihood) than for smoking marijuana (53.2% likelihood).

For researchers interested in understanding cognitive processes such as decision making under uncertainty, and other forms of critical thinking, it is interesting to note that the informational cues examined here did not combine in a simple, additive fashion. Rather, nurses combined different types of information in complex ways, weighting the importance of various cues depending on the context provided by other cues. For example, in the context of off-duty substance use, information about technical incompetence influenced likelihood estimates to differing degrees depending on the type of substance involved. One explanation for this is that nurses may believe the impairing effects of narcotics to be the highest, followed by marijuana and alcohol, as
reported in previous research (Beckstead, 2003). Perhaps these pre-existing beliefs (expectations) regarding various substances of abuse are working to alter the influence of the incompetence cues during the decision process. This type of information-processing strategy may be an unforeseen (until now) application of the critical-thinking skills many nurses are taught for making inferences about the state of their patients and for deciding on the best therapeutic course of action to take in clinical settings.

Some limitations must be kept in mind concerning the results presented above. First, the data analyzed were obtained from nurses’ self-reports and, consequently, may reflect bias in expressing certain feelings or intentions. Second, the convenience sample was used for a small, limited study to one state (Florida). Third, individual differences in the amount of knowledge and education participants had regarding substance abuse and treatment were not assessed. Fourth, the effects of omitted variables (e.g., workplace characteristics, or experience with substance abuse) are unpredictable; their absence could lead to misleading conclusions with regard to the variables examined here. Although the findings may provide useful information to researchers, educators, and policy makers, their value must be weighed and taken in context.

Future investigations will focus on the social dynamics present among coworkers in the healthcare professions. Cerrato (1988) found that nurses were more likely to report wrongdoing (incompetence) committed by nurses than by physicians, yet when information about the type of professional involved was manipulated, Randell and Gibson (1991) did not observe this distinction. When individuals in one social group hold members of another social group to different standards than those they set for themselves, decision processes can be affected (Beckstead, 2003, 2004). Work in progress will examine how nurses subjective probability estimates of reporting wrongdoing are influenced by the type of healthcare professional involved. Future studies will also examine how these decisions are influenced by social norms and organizational culture. For example, to what extent are these decisions influenced by the presence of an employee assistance program in a hospital or clinic setting? How large a role is played by nurses’ expectations of how hospital administrators might react to such reports?

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