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Patient Safety Culture and the Second Victim Phenomenon: Connecting Culture to Staff Distress in Nurses

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Abstract

Background—Second victim experiences can affect the well-being of healthcare providers and compromise patient safety. Many factors associated with improved coping after patient safety event involvement are also components of a strong patient safety culture, so that supportive patient safety cultures may reduce second victim–related trauma. A cross-sectional survey study was conducted to assess the influence of patient safety culture on second victim–related distress, in which associations among patient safety culture dimensions, organizational support, and second victim distress were investigated.

Methods—The Agency for Healthcare Research and Quality (AHRQ) Hospital Survey on Patient Safety Culture (HSOPSC) and the Second Victim Experience and Support Tool (SVEST), which was developed to assess organizational support and personal and professional distress after involvement in a patient safety event, were administered to nurses involved in direct patient care.

Results—Of 358 nurses, 155 (41%) responded, of whom 144 completed both surveys. Hierarchical linear regression demonstrated that the patient safety culture survey dimension *nonpunitive response to errors* was significantly associated with reductions in the second victim survey dimensions *psychological, physical, and professional distress* ($p < .001$). As a mediator, *organizational support* fully explained the *nonpunitive response to errors–physical distress* and *nonpunitive response to errors–professional distress* relationships and partially explained the *nonpunitive response to error–psychological distress* relationship.

Conclusions—A nonpunitive response to errors may mitigate the negative effects of involvement in a patient safety event by encouraging supportive interactions. Also, perceptions of

second victim–related distress may be less severe when hospital cultures are characterized by nonpunitive response to errors. Reducing punitive response to error and encouraging supportive coworker, supervisor, and institutional interactions may be useful strategies to manage the severity of second victim experiences.

For many health care providers, witnessing patient harm and loss is an unavoidable reality of the medical profession. However, when incidents occur unexpectedly or are the result of medical errors, they carry a unique and acute risk for health care clinicians to become traumatized. Across many medical specialties, survey data indicate that 14%–30% of health care providers were involved in a patient safety event within the previous year and had personal, emotional, and professional problems.^{1,2} Individual providers who experience trauma because of involvement in patient safety events were first described by Wu in 2000 as the “second victims” (after the patients themselves) of such events in acknowledgment of the pain and isolation that they often experience.³ Scott et al. provided a “consensus definition” of second victims of patient safety events as “health care providers who are involved in an unanticipated adverse patient event, in a medical error and/or a patient related injury and become victimized in the sense that the provider is traumatized by the event.”¹(p. 326)

Second victims report various symptoms and consequences to well-being. The symptoms include poor physical, psychological, and professional outcomes, such as sleeping difficulties,^{1,4,5} burnout,^{6,7} reduced job satisfaction,^{1,2,5} feelings of guilt, anger, and shame,^{4,5,8–11} as well as worries about punishment, job loss, and litigation.^{1,4–6,9,11,12} Even involvement in serious near-miss patient safety events can decrease job confidence and job satisfaction and increase anxiety, sleeplessness, and job-related stress in health care providers.⁵ Furthermore, a second victim experience can instigate a vicious cycle, predisposing health care providers to burnout and depression,^{13,14} which further increases the likelihood of committing errors and providing suboptimal care.^{7,15–17} Therefore, if not abated or treated, a second victim experience can harm the emotional and physical health of health care providers and subsequently compromise patient safety.

Many factors can increase the likelihood of a second victim–related trauma after the health care provider has experienced a patient safety event; they can be event related or personal, including event severity and outcome,¹⁸ personality traits of the health care provider,¹⁹ previous beliefs and expectations,²⁰ and coping strategies after event involvement. Certain aspects of a health care organization's environment, as conceptualized as its patient safety culture, may also contribute to or protect against second victim–related trauma. Patient safety culture is commonly assessed by self-report surveys through several dimensions, many of which are associated with organizational responses to patient safety events.¹⁹

Positive perceptions of a hospital's patient safety culture may reduce second victim distress by fostering an environment that promotes effective coping with involvement in patient safety events. Qualitative research indicates that successful coping with safety event involvement increases when events are discussed openly, in a nonjudgmental manner, and can lead to constructive changes in health care delivery practices.^{1,13,21} Also, receiving support or encouragement from colleagues and supervisors can help health care providers

cope emotionally and professionally after an adverse event.^{22–24} Therefore, hospital environments that promote open discussion and support about events and offer meaningful patient safety event feedback, enhance the ability to learn and improve from mistakes, and respond to errors in nonpunitive ways may help health care providers cope effectively with involvement in a patient safety event.

Conversely, patient safety cultures that encourage environments that blame, criticize, silence, or stigmatize patient safety events can make coping difficult, resulting in amplified emotional, physical, and professional distress of involved providers.^{13,18,20,21,25–29} There is also extensive evidence that a lack of support from colleagues and supervisors can profoundly affect the coping of health care providers involved in those events, leading to greater distress or protracted recovery for second victims.^{1–3,28–31}

The association between hospital response to event involvement and health care provider distress has been suggested qualitatively, but quantitative evidence is limited.¹³ Given that many aspects of patient safety culture conceptually relate to organizational influences on second victim experiences, this study represents the first attempt to quantitatively link patient safety culture to second victim-related distress. Empirical evidence that supported the use of patient safety culture survey results will be of value, especially considering the widespread and routine practice of hospitals collecting patient safety culture survey data. For example, the 2014 comparative report for the Agency of Healthcare Research and Quality's (AHRQ) Hospital Survey on Patient Safety Culture (HSOPSC), a tool that was first published in 2004 for hospitals to use in assessing staff opinions about patient safety culture, medical error, and event reporting,³² contained responses from 640 U.S. hospitals.³³

The purpose of this study was to (1) investigate the effect of patient safety culture on health care provider second victim-related distress and to (2) explore whether patient safety culture affects the degree to which second victims are supported in the aftermath of event involvement. Nurses are at high risk of involvement in a patient safety event, as they spend much of their time at the point of care, perform the majority of medication administrations,³⁴ and, as generally “sharp”-end care providers, have also demonstrated greater susceptibility to second victim-related harm than other clinician types.⁸

We hypothesized that second victim personal and professional distress would be associated with dimensions of hospital patient safety culture. In addition, we expected that patient safety culture dimensions would influence provider distress by encouraging colleagues and supervisors to respond supportively or critically in the aftermath of patient safety event involvement. Therefore, we also hypothesized that culture effects on provider distress are mediated by support from colleagues, supervisors, and the hospital overall.

Methods

Setting

This study, which was conducted at a specialized pediatric hospital that treats children with cancer and other catastrophic illnesses, was approved by the hospital's Institutional Review Board.

Participants

Nurses at the hospital involved in direct patient care ($N = 358$) were invited in May 2013 via e-mail to participate in the study. Four e-mail reminders were sent to participants during the study period (that is, two consecutive weeks in May–June 2013)—two e-mail reminders in the first and two in the second week of the study period. During the study period, our hospital did not have a formalized program to address the prevention or reduction of the effects of second victim experiences. Two surveys were administered sequentially during the same administration period using an online data collection module. Informed consent was obtained at the start of each survey. The first survey was the AHRQ HSOPSC,³⁴ and the second, the Second Victim Experience Survey Tool (SVEST), was used to assess second victim symptoms and support.³⁵ **[PROD: FOOTNOTE: *The full version of the SVEST is available in the article.]**

To reduce the effect of priming on subsequent responses, the surveys were administered such that participants completed the AHRQ HSOPSC first. We assumed that priming participants to think about traumatic events from work may unduly influence their perceptions of the hospital culture variables captured in the AHRQ measure. Additional details regarding data collection have been previously described.³⁵

Measures

Patient safety culture was measured from AHRQ HSOPSC items, and second victim distress and organizational support were measured from SVEST items.

Patient Safety Culture—Perceptions of patient safety culture were measured using 16 items from the AHRQ HSOPSC, which has been validated psychometrically in various contexts and cultures. In total, the HSOPSC contains 42 items measuring 10 dimensions of patient safety culture, 2 broad indicators of overall patient safety culture, and 2 indicators of event-reporting behavior. Four dimensions from the AHRQ measure were included in the analysis, as follows:

1. *Nonpunitive response to error*, which assesses the extent to which staff feel that their mistakes are not held against them and that mistakes are not kept in their personnel file (3 items; for example, “When an event is reported, it feels like the person is being written up, not the problem” [reverse worded]).
2. *Communication openness*, which assesses the extent to which staff will freely speak up if they see something that may negatively affect patient care, and feel free to question those with more authority (3 items; for example, “Staff are afraid to ask questions when something does not seem right” [reverse worded]).
3. *Feedback and communication about errors*, which assess the extent to which staff are informed about errors that happen, given feedback about changes put in place based on event reports, and discuss ways to prevent errors (3 items; for example, “We are given feedback about changes put into place based on event reports”)

4. *Organizational learning*, which assesses the extent to which mistakes have led to positive changes and to which changes are evaluated for their effectiveness, (3 items; for example, “We are actively doing things to improve patient safety”).

All dimension items use a 5-point Likert scale, with anchors ranging from “strongly disagree” (1) to “strongly agree” (5).

Second Victim Distress—Second victim distress was measured by using 12 items from the SVEST, which has 29 items measuring distress following event involvement, professional consequences to second victims, and desires for institutional support. Because the catalyst to a second victim experience is not limited to error involvement, the SVEST refers to respondents' experiences with various types of unexpected patient safety events, errors and non-errors, harm and no-harm events, as well as near-misses that did not reach the patient. The measure captures 3 dimensions of distress associated with the second victim experience: *psychological distress* (4 items; for example, “My involvement in these types of instances has made me feel fearful of future occurrences”), *physical distress* (4 items; for example, “My experience with these occurrences can make it hard to sleep regularly”), and *reduced professional self-efficacy (alternatively, professional distress)*; 4 items; for example, “My experience makes me wonder if I am not really a good healthcare provider”).

All items use a 5-point Likert scale, with anchors ranging from “strongly disagree” (1) to “strongly agree” (5), with high scores on each dimension reflecting greater amounts of felt distress in response to a patient safety event.³⁵

Organizational Support—Organizational support was measured using 11 items from the SVEST assessing level of support received from various work sources following involvement in patient safety incidences. Three sources of support were assessed and averaged to form a composite Organizational Support score: *colleague support* (4 items; for example, “Discussing what happened with my colleagues provides me a sense of relief”), *supervisor support* (4 items; for example, “I feel my supervisor treats me appropriately after these occasions”), and *institutional support* (3 items; for example, “My organization offers a variety of resources to help me get over the effects of involvement with these instances”). All items use a 5-point Likert scale, with anchors ranging from “strongly disagree” (1) to “strongly agree” (5).

Statistical Analyses

Data were analyzed by using the SPSS software (version 22.0, SPSS, Chicago). An unweighted average of the individual items was used to construct SVEST and HSOPSC dimension scores. Frequencies and percentages were calculated for the descriptive data. Pearson's bivariate correlations, means, and standard deviations were computed for all study variables. Preliminary analyses were conducted to ensure that no assumptions of normality, linearity, homoscedasticity, and multicollinearity were violated. To examine the direct effects of patient safety culture, three hierarchical multiple regression models were constructed using the second victim distress dimensions as outcome variables. To control for their unique effects, demographic variables (specialty tenure, unit tenure, hospital tenure, and week hours) were entered into the first step of each hierarchical regression model. Next,

the hypothesized patient safety culture dimensions were entered into the second step of the hierarchical regression model to separately assess effects on the distress associated with involvement in patient safety events.

To examine the indirect effects hypothesized, the procedure originally described by Baron and Kenny³⁶ was used, in which four statistical criteria must be present to establish mediation: (1) the predictor variable must be significantly related to the outcome variable; (2) the predictor variable must be significantly related to the mediator; (3) when the outcome is regressed simultaneously on the predictor and mediator, the mediator must be significantly related to the outcome; and (4) the relation between the predictor and the outcome with the mediator in the regression equation must be significantly more attenuated than when the outcome was regressed only on the predictor. For each model, *nonpunitive response to errors* was the predictor, *organizational support* was the mediator, and dimensions of second victim distress were the outcomes. The strength of the indirect effect was indexed using the procedure described by Sobel³⁷ to test the significance of the indirect path from the predictor to the outcome through the mediator.

Results

Respondents

Of the 358 invited nurses, 178 (49.7%) participated in the study, with 160 (90%) responding to both surveys. Comparison analyses were conducted to determine whether there were differences in response patterns between those responding to both surveys and those responding to one of the surveys. Independent samples *t*-tests revealed no significant differences between groups with respect to hours worked, unit tenure, hospital tenure, specialty tenure, or patient safety culture. Because of incomplete data, 14 responses were removed, resulting in a final sample of 155 (41% of those invited) nurses. Post hoc power analysis suggested that our sample size was sufficient to generate adequate statistical power.³⁸

Demographic information of respondents is presented in Table 1. The respondents were predominately RNs (94.2%), with much fewer licensed vocational nurses and licensed practical nurses (5.8%). Most of the responding nurses had at least 10 years of experience in their specialty, and approximately a quarter of the sample had been in the nursing profession for 21 years or more. The majority of respondents had worked within the hospital or work unit/work area for at least five years. About half of the sample reported working 40 or more hours per week, on average.

Correlations Among Study Variables

The correlations among study variables (Table 2) revealed that all patient safety culture dimensions were significantly related to second victim distress in the predicted direction, suggesting that perceptions of a poor patient safety culture are associated with perceived increases in clinician psychological, physical, and professional distress. Each regression analysis was first modeled to determine the degree to which perceptions of patient safety culture directly affect patient safety event-related distress (Appendix 1, available in online

article). Demographic variables explained a small and nonsignificant amount of variance for each of the three models. Of the patient safety culture dimensions, *nonpunitive response to errors* was significantly associated with reduced *psychological distress*, ($\beta = -.328, p = .000$), reduced *physical distress* ($\beta = -.320, p = .000$), and with improved *professional self-efficacy* (*professional distress*; $\beta = .266, p = .001$). These models were significant, with *nonpunitive response to error* explaining 15.8% of the variance in *psychological distress* [$F(8, 268) = 7.485, p = .000$], 12.9% of the variance in *physical distress* [$F(8, 268) = 6.121, p = .000$], and 8.5% of the variance in *professional self-efficacy* [$F(9, 267) = 3.919, p = .000$].

Mediational Analyses

The results from the mediational analyses are presented in Table 3. *Nonpunitive response to error* significantly predicted all second victim distress dimensions and was used as the predictor variable for all subsequent mediational models. *Organizational support* emerged as fully mediating the direct relationships among, *nonpunitive response to error* and physical distress ($B = -0.153, p > .05$) and professional distress ($B = -0.159, p > .05$). “Full mediation” was represented by the fact that these relationships were no longer significant when controlling for the effects of *organizational support*. Partial mediation by *organizational support* was observed in the *nonpunitive response to error–psychological distress* direct relationship by the fact that the significance of this relationship was reduced ($B = -0.390, p < .01$)

These results suggest that *organizational support* explains the observed significant relationships between *nonpunitive response to error* and each of the three distress variables. That is, nonpunitive culture was associated with reductions in all forms of perceived second victim distress because of increased perceived support of second victims. Sobel's test of the indirect effect on *psychological distress*, *physical distress*, and *professional distress* via *organizational support* was significant ($p < .01$), which further affirms the observed mediated role of *organizational support*.

Discussion

Personal involvement in unexpected patient harm, or patient safety events that could have resulted in harm, can have a debilitating effect on health care clinicians. Preventing and limiting the negative consequences of these experiences has implications for the overall well-being of staff and patient safety. The second victim phenomenon is a critical component for health care leaders to address as they broaden efforts to respond to safety events more effectively through disclosures and apology to the patients, while also considering the needs of the care givers.³⁹ Assessment of a health care organization's second victim-related trauma and organizational support is an important step in developing and evaluating interventions designed to support second victims. This study demonstrated that in addition to the SVEST as a recently developed survey dedicated to second victim assessment,³⁵ a well-established and widely used survey instrument, the AHRQ HSOPSC, may provide its own insights into the prevalence of a health care organization's second victim-related trauma.

Our results suggest that nurses working in a safety culture that is perceived as punitive in nature may experience greater second victim–related psychological, physical, and professional distress in the aftermath of an unanticipated safety event. Also, the mediation analyses results suggest that this distress is largely explained by the perceived lack of organizational support. Organizational support fully mediated the relationships between nonpunitive culture and physical, as well as nonpunitive culture and professional distress. This suggests that nonpunitive culture creates an environment in which support is effective in reducing physical and professional distress for second victims. Organizational support also partially mediated the relationship between nonpunitive culture and psychological distress, which suggests that organizational support also plays a meaningful role in explaining this relationship. Overall, nonpunitive patient safety cultures may provide an environment that fosters support for those involved in patient safety events, which, in turn, reduces or prevents second victim-related trauma.

These findings are in agreement with previous qualitative research indicating that second victim experiences are amplified by unsupportive work environments in which increased hostility, blaming, and fears of punishment or reputational harm are common.

This study also aligns with similar research that has highlighted the importance of increasing support networks for second victims and improving the reactions to safety events from peers and supervisors, specifically in terms of peer support, as highlighted by research on communication and resolution programs.⁴⁰ The study adds to this knowledge base by revealing that nonpunitive cultures for errors and events help nurture environments for these changes to be successful.

Given that many hospitals regularly assess their patient safety culture,⁴¹ our findings add utility to the valuable information the HSOPSC provides and suggest that many hospitals already have data on the effect of cultural factors on second victim distress. This has practical implications for hospitals leaders interested in learning more about how the second victim phenomenon may be affecting their staff. For example, as improvements in the HSOPSC dimension, *nonpunitive response to errors*, improve, our results suggest that these improvements would also be related to improvements in organizational support for second victims and potential subsequent reductions in the severity of second victims' distress symptoms. When the resources required to collect and analyze data for the SVEST are not available, scores from this dimension of the HSOPSC, or other measures of punitive safety culture, can provide immediate insights into how the second victim phenomenon may be affecting health care staff.

Nurses were selected for this study primarily because they provide the majority of direct patient care in hospital settings and because they are the most prevalent members of a hospital's clinical staff. Differences across types of clinical providers' reactions to medical errors, safety events, and susceptibility to second victim experiences have been previously observed^{8,42} (for example, physicians may be less aware than nurses of punitive cultures because of the embedded hierarchy of hospitals), and future research can investigate how safety culture affects other subpopulations of hospital clinical staff. As mentioned in the Methods section, at the time of data collection, our hospital did not have a formalized

program to address the prevention or reduction of the effects of second victim experiences. Such a program might have introduced unwanted biases in the survey responses. If this study is replicated at hospitals with such a program, the results could vary. For example, the presence of a peer support program may affect clinician perceptions of patient safety culture independent of their experiences with patient safety events.

Anecdotal evidence has indicated that opportunities to openly discuss errors and receive feedback or learn from patient safety events may aid health care providers in coping with event involvement. However, in this study, the survey dimensions that assess opportunities for *organizational learning*, *communication openness*, and *feedback and communication about error* were not associated with measures of second victim distress. Although these experiences may help individuals to gain insight and improve future performance following their involvement in a patient safety event, they appear to have little impact on providers' feelings of personal distress or professional vulnerability. One possible explanation is that cultures that affect provider distress involve conceptualizations of patient safety events as personally or professionally threatening and are therefore likely to elicit strong emotional responses. Although improved learning, communication, and feedback about errors may aid an individual in dealing with an event, they do not address the manner in which events are conceptualized or handled (disciplinarily or supportively) within the health care institution. In fact, our analyses suggest that any feedback, learning, or communication about events should be delivered in a nonpunitive manner to reduce the personal or professional distress second victims experience following event involvement.

Empirically examining the role of patient safety culture as an antecedent to second victim-related distress represents a novel addition to the understanding of the second victim phenomenon. However, because our findings are based on self-report survey data, common method bias should be considered in interpreting these results. In addition, the use of a cross-sectional design precludes drawing causal inferences between our variables of interest. Further research should longitudinally explore the relationship between culture and second victim distress to assess the directionality of these findings. Previous research has modeled patient safety culture as a multilevel construct, indicating that certain perceptions of culture reveal distinct unit- or hospital-level experiences.⁴³ Future research could examine these findings by using a multilevel framework for the nonpunitive culture dimension. Also, our sample was drawn from a specialized nursing population working with children with catastrophic diseases, and the degree to which these findings can be generalized to other health care professions or institutions is unknown. Opportunities exist to study second victim responses and cross-validate our results in other health care disciplines and clinical settings.

The nonsignificant relationships in our study may reflect a measurement issue, insofar as the SVEST and HSOPSC items would not have captured the requisite nuances in meaning for the respondents. Yet the fact that the dimension *nonpunitive responses to error* still emerged as statistically significant despite the limitations of self-report suggests that it is a substantial driver in the recovery from experience with patient safety events.

In the current study we did not collect information regarding the severity of the adverse events in which the respondents might had been involved. Rather, we measured distress and support across all severity levels of safety event involvement. It is also possible, while research suggests that it is unlikely,⁴⁴ that the respondents might never have been involved in a patient safety event—error or non-error. Therefore, the responses of such individuals would have reflected their anticipated perceptions of second victim–related distress. Future research could be conducted to determine the relationship between the prevalence and severity of patient safety event experiences and second victim–related distress and patient safety culture. Temporal considerations, possibly empirically modeling the steps to recovery outlined by Scott et al.,¹ could also be investigated relative to event severity experiences.

Conclusion

This study's results suggest that punitive safety cultures may contribute to self-reported perceptions of second victim-related psychological, physical, and professional distress, and that this distress can be explained by a lack of organizational support. However, nonpunitive patient safety cultures may act as a catalyst for a climate that increases support for those involved in patient safety events, which, in turn, reduces or even prevents second victim–related trauma. Hospitals interested in limiting the negative effects of second victim experiences may benefit from reducing punitive responses to errors and encouraging supportive responses as health care providers cope with their involvement in patient safety events. Connecting the information measured by the AHRQ HSOPSC survey to second victim-related trauma adds value to this widely used instrument. Moreover, given the prevalent use of the HSOPSC, many hospitals may already have useful insights on the second victim experiences of their clinical staff from their existing patient safety culture survey data.

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Appendix 1. Hierarchical regression model of psychological, physical, and professional distress

| Variable | Outcome 1: Psychological Distress | | | | Outcome 2: Physical Distress | | | | Outcome 3: Professional Distress | | | |
|-------------------------|-----------------------------------|-----|---------------------|-----|------------------------------|-----|---------------------|-----|----------------------------------|-----|---------------------|-----|
| | Step 1 - Demographics | | Step 2 - Predictors | | Step 1 - Demographics | | Step 2 - Predictors | | Step 1 - Demographics | | Step 2 - Predictors | |
| | β | SE | β | SE | β | SE | β | SE | β | SE | β | SE |
| <i>Work Unit tenure</i> | .17 | .13 | .02 | .12 | .11 | .12 | -.00 | .11 | -.15 | .12 | -.05 | .11 |
| <i>Hospital tenure</i> | -.10 | .15 | -.01 | .13 | -.09 | .14 | -.03 | .13 | .17 | .14 | .11 | .13 |
| <i>Specialty tenure</i> | -.05 | .09 | -.01 | .07 | -.04 | .08 | -.02 | .07 | .00 | .08 | -.04 | .07 |
| <i>Hours per week</i> | -.19 | .19 | .06 | .18 | -.14 | .18 | .10 | .17 | .29 | .18 | .15 | .18 |

| Variable | Outcome 1: Psychological Distress | | | | Outcome 2: Physical Distress | | | | Outcome 3: Professional Distress | | | |
|---------------------------------------|-----------------------------------|----|---------------------|-----|------------------------------|----|---------------------|-----|----------------------------------|----|---------------------|-----|
| | Step 1 - Demographics | | Step 2 - Predictors | | Step 1 - Demographics | | Step 2 - Predictors | | Step 1 - Demographics | | Step 2 - Predictors | |
| | β | SE | β | SE | β | SE | β | SE | β | SE | β | SE |
| <i>Nonpunitive response to errors</i> | | | -.69*** | .13 | | | -.57*** | .13 | | | .47*** | .13 |
| <i>Communication openness</i> | | | -.03 | .16 | | | .01 | .15 | | | -.07 | .15 |
| <i>Organizational learning</i> | | | -.02 | .23 | | | .06 | .22 | | | .18 | .22 |
| <i>Feedback about errors</i> | | | .02 | .16 | | | .01 | .16 | | | -.11 | .16 |
| <i>R²</i> | .02 | | .30*** | | .01 | | .22*** | | .03 | | .20 | |

Note.

p < .001.

Abbreviations: β , standardized regression coefficient; SE, standard error, R^2 , variance.

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Table 1
Respondents' tenure by specialty, unit, and hospital, and weekly work hours (N = 155)

| Demographic Variable | n | % |
|---------------------------------|----------|----------|
| <i>Specialty</i> | | |
| Registered nurse | 146 | 94.2 |
| LVN/LPN | 9 | 5.8 |
| <i>Specialty tenure (years)</i> | | |
| <1 | 7 | 4.5 |
| 1–5 | 28 | 18.1 |
| 6–10 | 38 | 24.5 |
| 11–15 | 20 | 12.9 |
| 16–20 | 23 | 14.8 |
| 21 years | 39 | 25.2 |
| <i>Work unit tenure (years)</i> | | |
| <1 | 25 | 16.1 |
| 1–5 | 61 | 39.4 |
| 6–10 | 39 | 25.2 |
| 11–15 | 15 | 9.7 |
| 16–20 | 9 | 5.8 |
| 21 | 6 | 3.9 |
| <i>Hospital tenure (years)</i> | | |
| <1 | 16 | 10.3 |
| 1–5 | 50 | 32.3 |
| 6–10 | 37 | 23.9 |
| 11–15 | 28 | 18.1 |
| 16–20 | 9 | 5.8 |
| 21 | 14 | 9.0 |
| <i>Work hours per week (h)</i> | | |
| < 20 | 2 | 1.3 |
| 20–39 | 77 | 49.7 |
| 40–59 | 74 | 47.7 |
| 60–79 | 1 | 0.6 |
| 80–99 | 1 | 0.6 |

Abbreviations: LVN, licensed vocational nurse; LPN, licensed practical nurses.

Table 2
Means, standard deviations, Pearson's correlations, and Cronbach's alpha for study variables

| | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-----------------------------------|------|------|--------------------|--------------------|--------------------|-------------------|---------------------|---------------------|--------------------|--------------------|---------------------|--------------------|--------------------|-------|
| <i>Demographic variables</i> | | | | | | | | | | | | | | |
| 1. Work unit tenure | 2.61 | 1.26 | - | | | | | | | | | | | |
| 2. Hospital tenure | 3.04 | 1.41 | .83 ^{***} | - | | | | | | | | | | |
| 3. Specialty tenure | 3.91 | 1.59 | .50 ^{***} | .55 ^{***} | - | | | | | | | | | |
| 4. Work hours per week | 2.50 | .57 | .01 | .12 | .29 ^{***} | - | | | | | | | | |
| <i>Study variables</i> | | | | | | | | | | | | | | |
| 5. Nonpunitive response to errors | 3.28 | .94 | -.02 | -.07 | .09 | .28 ^{**} | (.79) | | | | | | | |
| 6. Communication openness | 3.79 | .87 | .00 | -.03 | .07 | .24 ^{**} | .63 ^{***} | (.82) | | | | | | |
| 7. Organizational learning | 3.99 | .59 | .07 | -.01 | .05 | .16 [*] | .51 ^{***} | .66 ^{***} | (.70) | | | | | |
| 8. Feedback about errors | 3.79 | .74 | -.02 | -.02 | .02 | .27 ^{**} | .36 ^{***} | .53 ^{***} | .59 ^{***} | (.78) | | | | |
| 9. Organizational support | 3.76 | .69 | -.01 | -.11 | -.02 | .17 | .65 ^{***} | .66 ^{***} | .60 ^{***} | .45 ^{***} | (.87) | | | |
| <i>Outcome variables</i> | | | | | | | | | | | | | | |
| 10. Psychological distress | 2.69 | 1.13 | .04 | .07 | -.02 | -.01 | -.52 ^{***} | -.34 ^{***} | -.29 ^{**} | -.20 [*] | -.45 ^{***} | (.86) | | |
| 11. Physical distress | 2.33 | 1.08 | -.03 | .01 | -.06 | -.08 | -.43 ^{***} | -.29 ^{**} | .25 ^{**} | -.18 [*] | -.48 ^{***} | .78 ^{***} | (.88) | |
| 12. Professional distress | 3.45 | 1.02 | .01 | -.04 | .02 | .13 | -.39 ^{***} | -.25 ^{**} | -.25 ^{**} | -.14 | -.40 ^{***} | .62 ^{***} | .65 ^{***} | (.88) |

Note. Statistical significance:

* p < .05,

**

p < .01,

*** p < .001.

Abbreviation: SD = standard deviation

Table 3
Summary of regression analyses for the hypothesized mediational models of support

| Criteria | Predictor Variable | Outcome variable | B | SE | T | Sobel's test |
|----------|------------------------|------------------------|-------|------|-----------|-----------------|
| 1 | Nonpunitive Culture | Psychological Distress | -.656 | .087 | -7.563*** | |
| 2 | Nonpunitive Culture | Organizational Support | .438 | .048 | 9.197*** | |
| 3 | Organizational Support | Psychological Distress | -.450 | .172 | -2.608** | |
| 4 | Nonpunitive Culture | Psychological Distress | -.390 | .123 | -3.215** | -2.51 (.078)** |
| 1 | Nonpunitive Culture | Physical Distress | -.492 | .088 | -5.576*** | |
| 2 | Nonpunitive Culture | Organizational Support | .438 | .048 | 9.197*** | |
| 3 | Organizational Support | Physical Distress | -.666 | .171 | -3.899*** | |
| 4 | Nonpunitive Culture | Physical Distress | -.153 | .122 | -1.254 | -3.58 (.081)*** |
| 1 | Nonpunitive Culture | Professional Distress | -.368 | .079 | -4.690*** | |
| 2 | Nonpunitive Culture | Organizational Support | .438 | .048 | 9.197*** | |
| 3 | Organizational Support | Professional Distress | -.467 | .160 | -2.913** | |
| 4 | Nonpunitive Culture | Professional Distress | -.159 | .111 | -1.436 | -2.80 (.074)** |

Note.

** p < .01,

*** p < .001

Abbreviations: B, unstandardized regression coefficient; SE, standard error; C', path C while accounting for paths A and B.