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Pediatric Novice Nurses: Examining Compassion Fatigue as a Mediator Between Stress Exposure and Compassion Satisfaction, Burnout, and Job Satisfaction

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We investigated whether compassion fatigue mediated associations between nurse stress exposure and job satisfaction, compassion satisfaction, and burnout, controlling for pre-existing stress. The Life Events Checklist was administered to 251 novice pediatric nurses at the start of the nurse residency program (baseline) and 3 months after to assess pre-existing and current stress exposure. Compassion satisfaction, compassion fatigue, and burnout were assessed 3 months after baseline and job satisfaction 6 months after. Stress exposure significantly predicted lower compassion satisfaction and more burnout. Compassion fatigue partially mediated these associations. Results demonstrate a need for hospitals to prevent compassion fatigue in healthcare providers.

NURSES WORKING IN an acute care environment are frequently exposed to highly stressful and emotional situations, such as the relapse or death of a patient. Furthermore, Alacacioglu, Yavuzsen, Dirioz, Oztop, and Yilmaz (2009) found that nurses experience more emotional exhaustion than physicians. Nurses' stress on-the-job can lead to lower quality patient care (Emery, 1993), lower patient satisfaction (Vahey, Aiken, Sloane, Clarke, & Vargas, 2004), and lower job satisfaction (McGowan, 2001), which is strongly related to job burnout (Oehler & Davidson, 1992; Piko, 2006). Novice nurses also experience stress related to their performance during the first few months of working (Duchscher, 2009). Therefore, this study examines how stress influences negative outcomes, such as job satisfaction and burnout, in new graduate nurses.

Until the last 5 to 10 years, limited research has attempted to understand the well being of new graduate nurses (Laschinger & Grau, 2012). The first year as a nurse is formative and crucial in developing long-term job satisfaction (Scott, Engelke, & Swanson, 2008). Novice nurses are particularly vulnerable to job stress as it is inversely related to age, years as a nurse, and years in an organization (Ernst, Messmer, Franco, & Gonzalez, 2004). Novice nurses have been shown to feel incompetent and less confident during their first year on-the-job (Casey & Hancock, 2004). Stressors typically include high workload, feeling inadequate to perform procedures, and working in poorly staffed environments (Scott et al., 2008). Among pediatric oncology nurses, newly hired nurses were found to demonstrate fewer adaptive coping reactions than experienced nurses and frequently end

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up resigning (Hinds, Quargnenti, Hickey, & Mangum, 1994). Leveck and Jones (1996) tested Hinshaw, Atwood, Gerber, and Erickson's (1985) anticipated turnover model in nurses to examine how various factors, such as management style, group cohesion, job stress, and job satisfaction worked together to influence quality of patient care. From this model, it is clear that job stress negatively predicts job satisfaction which then predicts lower quality patient care (Leveck & Jones, 1996). The current study aims to further explore the impacts of job stress on nursing job outcomes.

Nurse Stress, Burnout, and Job Satisfaction

Numerous studies have linked occupational and personal stress to burnout (Braithwaite, 2008; Garrosa, Rainho, Moreno-Jimenez, & Monteiro, 2010) and job satisfaction (Bratt, Broome, Kelber, & Lostocco, 2000; Ernst et al., 2004) in nurses and nursing students. Burnout, as it relates to the work environment, is defined as the process in which workers' behaviors and attitudes become negative in response to job strain (Leiter, Harvie, & Frizzel, 1998). Burnout has also been defined as a prolonged response to repeated stressors on-the-job and has been described as possessing three dimensions: exhaustion, cynicism, and inefficacy (Maslach, Schaufeli, & Leiter, 2001). Common feelings associated with burnout include frustration, powerlessness, inability to meet work goals (Valent, 2002), as well as being less engaged in work (Schaufeli, Leiter, & Maslach, 2009). In a retrospective study, a positive work environment (e.g., adequate staffing, support of nurses) has been associated with lower nurse job burnout, intention to leave, and job dissatisfaction (Kutney-Lee, Wu, Sloane, & Aiken, 2013). Having a day shift, less routine, and more promotional opportunities have been shown to correlate positively with job satisfaction (Blegen & Mueller, 1987), whereas higher turnover rates among nursing staff has been shown to negatively correlate with job satisfaction (Shader, Broome, Broome, West, & Nash, 2001). Overall, hospitals that invest in positive work environments for nurses can increase job retention (Li et al., 2013; Van den Heede et al., 2013). Despite the fact that these relationships are well-known, the specific mechanisms through which stress predicts burnout and job satisfaction have yet to be determined.

Compassion Satisfaction and Fatigue in Nurses

Nurses are at high risk for developing stress disorders given the amount of stress that novice nurses experience, such as caring for chronically ill and dying patients. Compassion fatigue is the emotional stress that people may experience by having close contact with a trauma survivor (Figley, 1995; Leibowitz, Jeffreys, Copeland, & Noël, 2008). Figley (2002) also describes it as a "cost to caring." Compassion fatigue has typically been associated with people working in a clinical setting (Adams, Boscarino, & Figley, 2006). The prevalence of compassion fatigue has been studied extensively in various types of healthcare providers such as nurses (Yoder, 2010), oncology nurses (Potter et al., 2013), mental health workers (Rossi et al., 2012), and child protection workers (Conrad & Kellar-Guenther, 2006). Stress exposure may influence the level of compassion fatigue. For example, Meadors and Lamson (2008) found that a higher frequency of stress in healthcare providers was related to higher levels of compassion fatigue. Understanding compassion fatigue in nurses may help improve job retention and prevent the negative effects of compassion fatigue on-the-job (Yoder, 2010). Higher levels of compassion fatigue have been shown to be associated with psychological distress (Adams et al., 2006) and negatively associated with levels of compassion satisfaction (Slocum-Gori, Hemsworth, Chan, Carson, & Kazanjian, 2011). Compassion satisfaction is the pleasure one feels from being able to effectively help others in their role as a caregiver (Stamm, 2002), which may include feeling supported by colleagues, and satisfaction with being able to contribute to ones' organization and to the greater good (Stamm, 2002).

It is also important to note the importance of acknowledging vicarious traumatization in the healthcare field. Vicarious traumatization is generally defined as the negative effects of empathic engagement with the traumatized victim (McCann & Pearlman, 1990). Pediatric nurses in particular may be at higher risk because children are typically seen as helpless and vulnerable. Therefore, the possibility of empathic engagement is potentially high. Given that stress in the nursing occupation cannot necessarily be diminished, it is important to understand the mechanisms by which stress influences negative outcomes, such as burnout and job satisfaction. Once identified, appropriate prevention programs focusing on these mechanisms can be introduced to alleviate the negative effects of stress on-the-job and other nurse job outcomes.

Present Study

The present study adds to the current literature in three ways. First, the current study uses a longitudinal methodology to examine the effects of stress on compassion satisfaction, burnout, and job satisfaction following 3 months of bedside experience while controlling for pre-existing stress exposure. Second, while a number of studies have examined the relationship between job stress and job satisfaction in novice nurses, the mechanisms by which pre-existing and current stress exposure predict compassion satisfaction, job satisfaction, and burnout remain unclear. The study aims not only to control for pre-existing stress exposure, but also to determine how direct (stressful event happened to the participant) and indirect (stressful event was witnessed by the participant) stress exposure may influence nurse outcomes differently (Zimering, Gulliver, Knight, Munroe, & Keane, 2006). Given that nurses may experience

stressful life events as well as witness and work with children who have experienced stressful life events, we were interested in studying both types of experiences. Vicarious traumatization can develop into painful images and emotions (Jenkins & Baird, 2002), similar to experiencing the stressor directly. By examining how both direct and indirect stressful life events impact the development of compassion fatigue, we can elucidate the relationships between stress and nurse outcomes. Finally, the majority of the current literature on stress among nurses has examined job-related stress and its relationship with compassion fatigue and burnout, without taking into account the influence of pre-existing stress exposure. Determining levels of pre-existing stress exposure in novice nurses allows us to gain an understanding of characteristics of nurses entering the profession, as it may be possible that individuals entering the nursing profession already have a high level of stress that may influence them on-the-job. Overall, the current study aims to increase our understanding of nurses entering the pediatric setting and how stress and compassion fatigue influence job satisfaction, compassion satisfaction, and burnout among novice nurses.

Method

The current study is a longitudinal study examining nurse stress exposure, compassion fatigue, burnout, and job satisfaction across 6 months of nurses' RN residency program. We hypothesized that after controlling for pre-existing stress exposure, higher levels of stress exposure experienced during the first 3 months of bedside experience would predict higher levels of burnout at 3 months of bedside experience as well as lower levels of job satisfaction after 6 months of bedside experience. We also hypothesized that both direct (happened to me) and indirect (witnessed it) stress exposure would have equal levels of impact on nurse outcomes. Additionally, we predicted that compassion fatigue would mediate these relationships. In other words, compassion fatigue would act as the mechanism through which these associations occur.

Participants

A sample of nurses entering the Versant™ RN Residency Program at Children's Hospital Los Angeles were approached for participation in this study. The Versant™ RN Residency Program at Children's Hospital Los Angeles (CHLA) is a 22-week program that provides additional training to new nursing school graduates who are licensed and have less than 1 year of previous nursing experience. The residency program is a comprehensive clinical and learning experience to prepare nurses for work in an acute care environment. The program includes pediatric specific didactics, skills labs, clinical experiences with a preceptor, a mentoring component that focuses on professional development, and a debriefing program that supports the new nurse during this major transition.

Nurses participating in the program from September 2007 through March 2010 were invited to participate in the study. Two hundred and fifty one participants (231 female and 20 male) agreed to participate in the study out of a possible 261 nurses (96% recruitment rate). At the 3 month follow-up, 20 participants were not present to fill out the survey (n = 231). At the 6 month follow-up, 35 participants did not fill out the questionnaire on job satisfaction (n = 216). A few of the absences at both follow-ups were due to nurses dropping out of the program (n = 3). One stated she was not able to complete the program due to other commitments, one stated that her unit assignment was not the right fit for her, and one relocated to another city. Out of the entire study sample, there were 60.1% participants that were 23 to 30 years of age, 16.1% were less than 23 years of age, 16.1% were 31 to 40 years of age, 6.3% were 41 to 50 years of age, and 1.4% were over 50 years of age. Seventy-six participants (30.3%) were Caucasian/White, 48 participants (19.1%) were Asian, 26 participants (10.4%) were Latino, 6 participants (2.4%) were Black/African American, 2 participants (0.8%) were more than one race, one participant was Native Hawaiian or other Pacific Islander, one declined to state their ethnicity, and 90 participants (35.9%) did not answer this question. Participation in this research was not a requirement of the nurse residency program. All participants completed the informed consent and procedures approved in accordance with requirements established by the U.S. Department of Health and Human Services and approved by the Clinical Committee of Investigations of CHLA, the hospital's institutional review board.

Procedure

Baseline

Nurses were approached for participation in the study during the first week of their nurse residency program. After learning about the study and undergoing the consent process, nurses were asked to complete self-report pencil and paper questionnaires, which took approximately 15–20 minutes. Nurses were allowed to decline participation if they did not wish to participate. The Life Events Checklist (LEC), a well-validated measure was administered to determine pre-existing exposure to stressful and potentially traumatic life events. A demographic questionnaire was also administered at the beginning of the program.

Three Month Follow-up

After 3 months of bedside experience, nurses were asked to repeat the LEC and to evaluate their exposure to stressful events after their first 3 months of bedside experience. Nurses were also asked to complete questionnaires to determine their levels of compassion satisfaction, compassion fatigue, and burnout. These measures took approximately 20–25 minutes to complete.

Six Month Follow-up

Job satisfaction data were collected by the nurse residency program, via Versant Voyager™, a Web-based program, after 6 months of bedside experience. This questionnaire took about 5–10 minutes to complete.

Measures

Stress Exposure

The Life Events Checklist (LEC) (Gray, Litz, Hsu, & Lombardo, 2004) is a 17-item questionnaire assessing exposure to stressful and potentially traumatizing life events. The questionnaire lists a variety of potentially traumatic events (e.g., natural disaster, assault, death of a loved one, severe human suffering), and participants are asked to rate the level of exposure they have had to each event on a 5-point Likert scale (1 = *happened to me*, 2 = *witnessed it*, 3 = *learned about it*, 4 = *not sure*, 5 = *does not apply*). To distinguish whether there were differences in direct versus indirect exposure on nurse outcomes, the LEC was coded to reflect this aim. To examine the effects of direct stress exposure, items in which the participants reported "not sure", "does not apply", "witnessed it (happen to someone else)", and "learned about it" received a score of 0. The responses "happened to me (personally)" received a score of 1. All items were then summed for a total score. Indirect exposure ("witnessed it") was also examined to determine whether witnessing a stressful event had similar effects compared to direct exposure. To account for this, items in which the participants reported "not sure", "does not apply", "learned about it", and "happened to me" received a score of 0. The responses "witnessed it" received a score of 1. All items were then summed for a total score. The LEC sum at the start of the program was used to determine pre-existing stress exposure (stress exposure in their entire life), and the LEC sum after 3 months of starting the program was used to determine current stress exposure. Current stress exposure included any stressful life events experienced during the first 3 months of bedside experience, both on-the-job and outside of work. Therefore, the LEC was administered at the start of residency and at the 3-month follow-up. The LEC, which is commonly used in clinical settings, is a validated measure (e.g., good convergent validity with the Traumatic Life Events Questionnaire) and has demonstrated stable test-retest reliability over 7 days for both item and total scale scores (Gray et al., 2004).

Compassion Satisfaction, Compassion Fatigue, and Burnout

The Compassion Fatigue Self Test (CSFT) (Figley & Stamm, 1996) is a 66-item self-report questionnaire measuring individuals' levels of compassion satisfaction, compassion fatigue, and burnout in their role as a helper. Compassion satisfaction is the pleasure felt from being able to do well in the work of helping others. Burnout is comprised of the feelings of exhaustion, frustration, anger and depression coming from one's work more generally. Compassion fatigue is comprised of negative feelings associated with working specifically in care giving environments where one is constantly exposed to extremely stressful events. Participants are asked to rate the extent to which each item applies to them (0 = *never*, 1 = *rarely*, 2 = *a few times*, 3 = *somewhat often*, 4 = *often*, 5 = *very often*). Items are summed to create the three sub-scale total scores: compassion satisfaction, burnout, and compassion fatigue. Each scale demonstrated good internal consistency in our sample (α = .87, .90, and .87 respectively). An updated version of the scale has become available since the time of the study; the Professional Quality of Life Scale (ProQOL) Version 5 (Stamm, 2010). All versions of this scale have demonstrated strong internal reliability in previous studies (Figley & Stamm, 1996; Jacobson, 2012; Stamm, 2002; Young, Derr, Cicchillo, & Bressler, 2011).

Job Satisfaction

The Mueller McCloskey Satisfaction Scale (MMSS) (Mueller & McCloskey, 1990) is a 23-item scale, which is used to determine the nurse's job satisfaction with items specific to nursing practice (e.g. work conditions, work relationships and support, salary and benefits). Participants are asked to rate how much they agree with a series of statements (1 = *strongly agree*, 2 = *agree*, 3 = *undecided*, 4 = *disagree*, 5 = *strongly disagree*). The survey demonstrated good internal consistency in our sample (α = .90). The 23-item scale and 7-factor model have been shown to have stronger validity compared to the 31-item version and 8-factor model of the scale (Tourangeau, Hall, Doran, & Petch, 2006). Tourangeau et al. (2006) also noted that internal consistency of the sub-scales for the 8-factor model ranged from .29 to .84 and .31 to .85 for the 7-factor model; three factors (i.e., satisfaction with collegial relationships and support, satisfaction with salary and benefits, and satisfaction with support for family responsibilities) demonstrated low reliability (below .70). Given that the total score yielded stronger reliability, we used only the total score of the measure. Additionally, Van Saane, Sluiter, Verbeek, & Frings-Dresen, 2003 conducted a systematic review of job satisfaction measures, including the MMSS and reported adequate internal consistency for the total score (.89–.90).

Results

Descriptives

Pre-Existing Stress Exposure

Descriptive statistics for the total scores for pre-existing stress exposure, current stress exposure, compassion fatigue, compassion satisfaction, burnout, and job satisfaction are presented in Table 1. At the start of the study, eighty-nine percent of the participants reported that at least one stressful event happened to them, 83% reported that they witnessed at least one stressful event, and 86% reported that they

Table 1 Descriptive Statistics of Study Variables.

Variable	*M*	*SD*	Possible Range	*n*
Pre-existing stress exposure	8.79	4.12	0–16	251
Current stress exposure	5.61	4.85	0–16	231
Compassion fatigue	23.56	13.29	0–130	231
Compassion satisfaction	93.56	16.77	0–130	231
Burnout	24.01	11.67	0–80	231
Job satisfaction	68.69	10.05	23–115	216

learned about at least one stressful event. Additionally, no significant differences in age and gender were found for pre-existing stress exposure and all other variables examined. Age and gender did not correlate with study variables, see Table 2. Therefore, age and gender were not entered as control variables.

Current Stress Exposure

The vast majority of nurses continued to encounter stressful life events after entering nurse residency. During the first 3 months of bedside experience, 89.2% were exposed to a stressful event. Of these nurses, 65.8% experienced an event directly happening to them, 60.6% witnessed a stressful event, and 66.7% learned about a stressful event happening to someone close to them. During this time, a large percentage of nurses witnessed a number of particularly stressful life events such as a life-threatening illness or injury (34.5%), severe human suffering (26.75%), and unexpected death (13.4%).

Correlational Analyses Between Variables

A number of statistically significant correlations were identified in the preliminary analysis of study variables, see Table 2. Pre-existing stress exposure was positively correlated with current stress exposure ($r = 0.27$, $p < .001$), and compassion fatigue ($r = 0.17$, $p < .01$) 3 months after the start of residency. Current stress exposure was positively correlated with compassion fatigue ($r = 0.29$, $p < .01$), burnout ($r = 0.19$, $p < .01$) and negatively correlated with job satisfaction ($r = -0.26$, $p < .01$). Compassion fatigue was positively correlated with burnout ($r = 0.66$, $p < .01$) and negatively correlated with compassion satisfaction ($r = -0.33$, $p < .01$).

Analysis Plan

To examine whether compassion fatigue mediated the association between both direct and indirect current stress exposure and various outcomes (i.e., compassion satisfaction, burnout, and job satisfaction) while controlling for both direct and indirect pre-existing stress exposure, we conducted a non-parametric bootstrapping method (Hayes, 2009; Preacher, 2008; Preacher & Hayes, 2004), see Figure 1 for the theoretical model. This method estimates a sampling distribution by resampling the distribution 5,000 times to calculate an indirect effect at a 95% confidence interval. If a zero is not included in the confidence interval, the indirect effect is significant. Both point estimates of the indirect effects and the Monte Carlo confidence intervals are reported, see Table 3. Percentile bootstrap mediation is one of the most powerful tests of mediation because it can be used in non-normally distributed samples (Hayes, 2009) and has been suggested for nursing research (Krause et al., 2010). The benefit of examining mediation this way is to test for indirect effects without the need to determine a significant direct effect (Hayes, 2009). That is, significant direct effects are not needed to determine whether a mediation pathway exists (Rucker, Preacher, Tormala, & Petty, 2011). These tests enabled us to investigate whether compassion fatigue mediated the associations between stress exposure after 3 months of beside experience and compassion satisfaction, burnout, and job satisfaction after controlling for pre-existing stress. A total of six models were tested.

Direct Stress Exposure

Compassion Satisfaction

In the first model, we examined whether current stress that was directly experienced by the nurse was a significant predictor of compassion satisfaction after 3 months of bedside experience and if compassion fatigue mediated this association. Current stress was found to significantly predict higher levels of compassion fatigue ($b = 2.66$, $SE = 0.59$, $p < .001$) after controlling for pre-existing stress. Compassion fatigue was found to predict lower levels of compassion satisfaction after controlling for pre-existing stress exposure ($b = -0.18$, $SE = 0.08$, $p < .05$). Current stress did not predict nurses' compassion satisfaction scores. However, an indirect association was found; compassion fatigue was found to mediate the association between current stress exposure and compassion satisfaction, see Table 3. Therefore, higher levels of current stress exposure predicted higher levels of compassion fatigue, which then predicted lower levels of compassion satisfaction.

Burnout

In the second model, current stress exposure predicted higher levels of compassion fatigue ($b = 2.74$, $SE = 0.59$, $p < .001$). Compassion fatigue also predicted higher levels of burnout after controlling for pre-existing stress ($b = 0.60$, $SE = 0.05$, $p < .001$). Current stress exposure significantly predicted more burnout when controlling for pre-existing stress exposure ($b = 0.99$, $SE = 0.47$, $p < .05$). Compassion fatigue was also found to significantly mediate this association, see Table 3. That is, current stress exposure predicted higher levels of compassion fatigue, which then predicted higher levels of burnout after 3 months of bedside exposure.

Table 2 Correlation Analyses Among Study Variables.

	1	2	3	4	5	6	7
1. Pre-existing stress exposure	–						
2. Current stress exposure	.27**	–					
3. Compassion fatigue	.17**	.29**	–				
4. Compassion satisfaction	−.01	.005	−.16*	–			
5. Burnout	.08	.19**	.66**	−.33**	–		
6. Job satisfaction	−.15	−.26**	.003	.03	−.02	–	
7. Age	.05	.08	.03	.09	−.10	.13	–

* $p < .05$.
** $p < .01$.

Job Satisfaction

In the third model, higher levels of exposure to stressful events during the first 3 months of bedside experience did not predict job satisfaction after controlling for pre-existing stress exposure. Additionally, compassion fatigue did not significantly mediate the relationship between current stress exposure and job satisfaction.

Indirect Stress Exposure

Similar results were found for nurses that "witnessed" stressful events (indirect) to stressful events that were directly experienced, see Table 4.

Compassion Satisfaction

In the fourth model, current stress that was witnessed by the nurse was found to significantly predict higher levels of compassion fatigue ($b = 1.53$, $SE = 0.53$, $p < .05$) after controlling for pre-existing stress exposure. Compassion fatigue was found to predict lower levels of compassion satisfaction after controlling for pre-existing stress exposure ($b = -0.20$, $SE = 0.08$, $p < .05$). Current stress exposure did not predict compassion satisfaction. However, compassion fatigue was found to mediate the association between current stress exposure and compassion satisfaction, see Table 4. Therefore, higher levels of current stress exposure predicted higher levels of compassion fatigue, which then predicted lower levels of compassion satisfaction.

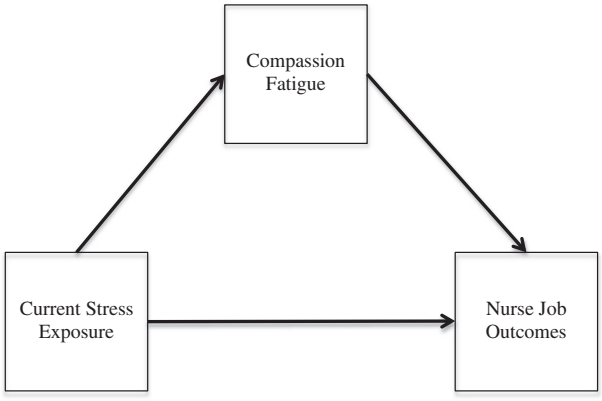

Figure 1 Theoretical model of compassion fatigue as the mediator between current stress exposure and nurse job outcomes (compassion satisfaction, job satisfaction, and burnout), controlling for pre-existing stress exposure.

Burnout

In the fifth model, current stress exposure predicted higher levels of compassion fatigue ($b = 1.53$, $SE = 0.54$, $p < .01$). Compassion fatigue also predicted higher levels of burnout after controlling for pre-existing stress exposure ($b = 0.57$, $SE = 0.04$, $p < .001$). Current stress exposure significantly predicted higher levels of burnout when controlling for pre-existing stress exposure ($b = 1.36$, $SE = 0.54$, $p < .05$). Compassion fatigue was also found to significantly mediate this association, see Table 4. That is, current stress exposure predicted higher levels of compassion fatigue, which then predicted higher levels of burnout after 3 months of bedside exposure.

Job Satisfaction

In the sixth model, higher levels of exposure to stressful events during the first 3 months of bedside experience did not predict job satisfaction after controlling for pre-existing stress exposure. Additionally, compassion fatigue did not significantly mediate the relationship between current stress exposure and job satisfaction.

Discussion

The purpose of this study was to examine the effects of nurse stress exposure on burnout, compassion satisfaction, and job satisfaction, and to investigate whether compassion fatigue mediated these associations. As hypothesized, exposure to stressful events during the first 3 months of bedside experience had implications for new graduate nurses. Exposure to stressful events as measured by the LEC was significantly related to more burnout. These results are in line with previous research findings that adult nurses' exposure to stress and trauma predicts higher levels of

Table 3 Compassion Fatigue as a Mediator of Indirect Effects of Current Trauma Exposure on Nurse Job Outcomes (5000 bootstrap samples): Directly Experienced Stressful Events.

	Point estimate	95% CI	
		LL	UL
Compassion satisfaction	−.49[a]	−.95	−.10
Burnout	1.65[a]	1.07	2.27
Job satisfaction	−.002	−.31	.30

CI = Monte Carlo confidence interval; LL = lower limit; UL = upper limit.
[a] Significant point estimate and mediation ($p < .05$).

burnout (Braithwaite, 2008; Oehler & Davidson, 1992) and lower levels of job satisfaction (Bratt et al., 2000; Ernst et al., 2004; McGowan, 2001). In all, the results suggest that the inevitable trauma to which new nurses bear witness may have lasting adverse implications for their emotional condition, and ultimately lower job satisfaction.

Additionally, we found that current stress exposure was significantly associated with increased compassion fatigue scores, confirming a previous study, which determined that stress predicts compassion fatigue (Meadors & Lamson, 2008). More importantly, compassion fatigue partially explained the relationships between current trauma exposure and burnout, and compassion satisfaction. That is, exposure to trauma was related to burnout and compassion satisfaction through experiences of compassion fatigue. These findings are important as they indicate the need for hospital administrations to address the consequences of newly acquired stressful experiences. This highlights the critical importance of developing and supporting programs that reinforce healthy job-related coping skills. Given that exposure to stressful life events are commonplace and central to the nursing profession, coping with compassion fatigue should be acknowledged as a vital part of the support and training of nurses.

We also found that current stress exposure did not predict less compassion satisfaction and job satisfaction. However, despite the fact that no direct link was found between stress exposure and compassion satisfaction, an indirect association was determined when examining compassion fatigue as a mediator. As stated earlier, it has been suggested that significant direct effects are not needed to examine mediation (Rucker et al., 2011) and therefore we consider these findings as significant in demonstrating the importance of recognizing the influence of compassion fatigue on nursing outcomes.

Given the high rate of exposure to particularly traumatizing experiences found within this nursing sample, it is important to acknowledge the resilience of these individuals choosing the nursing profession. Whether individuals who choose to enter the helping profession are potentially motivated by previous experiences of helping others has yet to be studied. Future studies should examine whether healthcare professionals become motivated to enter into these fields due to pre-existing stressful experiences, and explore how these experiences prepare them to work in a helping environment and/or how they provide additional stress. This information is integral to the development of programming in an effort to prevent the onset of compassion fatigue in nurses and other healthcare professionals.

The fact that similar results were found for both direct (i.e., happened to) and indirect (i.e., witnessed) stress exposure indicates the importance of the possible negative impact of vicarious trauma. Support for novice nurses should focus on the education and the development of coping strategies (e.g., mindfulness) for decreasing the negative effects of witnessing repetitive traumatic medical events with their patients. Previous research on the differences in impact between types of trauma exposure remains unclear (Kulkarni, Graham-Bermann, Rauch, & Seng, 2011). For example, Kulkarni et al. (2011) found that witnessing domestic violence alone was not correlated with current and lifetime PTSD diagnoses, but child abuse alone and the combination of experiencing child abuse and witnessing domestic violence did. Therefore, the combination of both witnessing and experiencing traumatic events on-the-job and the difference between witnessing and directly experiencing medical trauma should be further examined in a hospital setting. By identifying ways to cope with medical specific traumatic events occurring in medical settings, witnessed or directly experienced, we may decrease stress responses in healthcare providers. Future studies should determine mechanisms to improve support programs that effectively prevent poor job satisfaction and burnout in healthcare providers.

A limitation of this study is that stressful life event exposure was measured generally and not specifically related to job stress. Therefore, it was not feasible to determine whether on-the-job stress was experienced more than stress experienced outside of work. For example, the stressful life events such as "life-threatening illness or injury," "severe human suffering," and "unexpected death" may or may have not occurred at the hospital. This may serve to explain why stress did not predict job satisfaction in our findings. Additionally, job satisfaction was measured at a 6-month follow-up, not 3 months. Therefore, it is not clear how job satisfaction is related to compassion satisfaction and burnout contemporaneously. Future studies may benefit from

Table 4 Compassion Fatigue as a Mediator of Indirect Effects of Current Trauma Exposure on Nurse Job Outcomes (5000 bootstrap samples): Indirectly Experienced Stressful Events.

	Point estimate	95% CI	
		LL	UL
Compassion satisfaction	−.30[a]	−.62	−.06
Burnout	.87[a]	.37	1.39
Job satisfaction	−.02	−.15	.11

CI = Monte Carlo confidence interval; LL = lower limit; UL = upper limit.
[a] Significant point estimate and mediation ($p < .05$).

implementing a nursing-specific job stress measure to look specifically at job-related stress. To further explore whether a relationship exists between job stress and job satisfaction, the future studies may benefit from using an alternative job satisfaction measure or multiple measures and adding additional time points.

There have been limited studies examining the effectiveness of preventive stress-reduction programs for healthcare providers. Few studies have empirically tested and demonstrated significant decreases in stress, which have included job stress awareness, assertiveness training, time management, muscle relaxation (Light & Bincy, 2012), and mindfulness-based stress reduction interventions (Beddoe & Murphy, 2004; Cohen-Katz, Wiley, Capuano, Baker, & Shapiro, 2005; Cohen-Katz, Wiley, Capuano, Baker, & Shapiro, 2004; Cohen-Katz et al., 2005; Mackenzie, Poulin, & Seidman-Carlson, 2006; Pipe et al., 2009; Young, Bruce, Turner, & Linden, 2001). Journaling may also be helpful, which can help monitor stress levels, precursors of stress, and keep track of how they cope with stress (Richardson & Rothstein, 2008). Reflective journaling has been used in nursing education (Garrity, 2013; Kessler & Lund, 2004). However, few studies have empirically tested how reflective journaling can help nurses cope with stress on-the-job.

Novice nurses should be aware of the negative impact of medical traumatic events and compassion fatigue on-the-job. Potter, Deshields, and Rodriguez (2013) evaluated a systemic program for compassion fatigue at a hospital and found declines in secondary traumatic stress and burnout. Their feasibility study in oncology nurses demonstrated significant declines in secondary traumatization at a 6-month follow-up (Potter, Desields, et al., 2013). This 5-week program focused on educating participants on compassion fatigue, self-regulation, intentionality, perceptual maturation, social connection and self-care (Potter, Desields, et al., 2013). Future research is needed to examine the feasibility and efficacy of implementing stress-reducing preventive programs with larger samples in a medical center. Once determined to be efficacious, the stress-reducing programs (e.g., reflection, relaxation) should be institutionally supported and available to nurses throughout their career.

Results from the present study indicate a need for hospitals and healthcare providers to be aware of the negative effects of job stress, particularly compassion fatigue, on nurse outcomes relevant to their daily practice. Healthcare systems should emphasize a supportive workplace culture to assist novice nurses' transition into the work force (Medland, Howard-Ruben, & Whitaker, 2004). An extended orientation program or a 1-year residency program has been suggested to alleviate these negative outcomes (Casey & Hancock, 2004). Ultimately, all healthcare professionals, in both the medical and mental health fields, personally experience and are exposed to a variety of stressful and potentially stressful experiences in a hospital setting. Therefore, the current findings, while specific to novice nurses, may have significant implications for a diversity of healthcare professionals' personal and professional job outcomes.

References

Adams, R. E., Boscarino, J. A., & Figley, C. R. (2006). Compassion fatigue and psychological distress among social workers: A validation study. *The American Journal of Orthopsychiatry*, *76*, 103–108, http://dx.doi.org/10.1037/0002-9432.76.1.103.

Alacacioglu, A., Yavuzsen, T., Dirioz, M., Oztop, I., & Yilmaz, U. (2009). Burnout in nurses and physicians working at an oncology department. *Psycho-Oncology*, *18*, 543–548.

Beddoe, A. E., & Murphy, S. O. (2004). Does mindfulness decrease stress and foster empathy among nursing students? *The Journal of Nursing Education*, *43*, 305–312.

Blegen, M. A., & Mueller, C. W. (1987). Nurses' job satisfaction: A longitudinal analysis. *Research in Nursing & Health*, *10*, 227–237.

Braithwaite, M. (2008). Nurse burnout and stress in the NICU. *Advances in Neonatal Care: Official Journal of the National Association of Neonatal Nurses*, *8*, 343–347.

Bratt, M. M., Broome, M., Kelber, S., & Lostocco, L. (2000). Influence of stress and nursing leadership on job satisfaction of pediatric intensive care unit nurses. *American Journal of Critical Care: An Official Publication, American Association of Critical-Care Nurses*, *9*, 307–317.

Casey, K., & Hancock, K. (2004). The graduate nurse experience. *Journal of Nursing Adiministration*, *34*, 303–311.

Cohen-Katz, J., Wiley, S., Capuano, T., Baker, D. M., Deitrick, L., & Shapiro, S. (2005). The effects of mindfulness-based stress reduction on nurse stress and burnout: A qualitative and quantitative study, part III. *Holistic Nursing Practice*, *19*, 78–86.

Cohen-Katz, J., Wiley, S. D., Capuano, T., Baker, D. M., & Shapiro, S. (2004). The effects of mindfulness-based stress reduction on nurse stress and burnout: A quantitative and qualitative study. *Holistic Nursing Practice*, *18*, 302–308.

Cohen-Katz, J., Wiley, S. D., Capuano, T., Baker, D. M., & Shapiro, S. (2005). The effects of mindfulness-based stress reduction on nurse stress and burnout, Part II: A quantitative and qualitative study. *Holistic Nursing Practice*, *19*, 26–35.

Conrad, D., & Kellar-Guenther, Y. (2006). Compassion fatigue, burnout, and compassion satisfaction among Colorado child protection workers. *Child Abuse & Neglect*, *30*, 1071–1080, http://dx.doi.org/10.1016/j.chiabu.2006.03.009.

Duchscher, J. E. (2009). Transition shock: The initial stage of role adaptation for newly graduated registered nurses. *Journal of Advanced Nursing*, *65*, 1103–1113, http://dx.doi.org/10.1111/j.1365-2648.2008.04898.x.

Emery, J. E. (1993). Perceived sources of stress among pediatric oncology nurses. *Journal of Pediatric Oncology Nursing: Official Journal of the Association of Pediatric Oncology Nurses*, *10*, 87–92.

Ernst, M. E., Messmer, P. R., Franco, M., & Gonzalez, J. L. (2004). Nurses' job satisfaction, stress, and recognition in a pediatric setting. *Pediatric Nursing*, *30*, 219–227.

Figley, C. R. (Ed.). (1995). *Compassion fatigue: Coping with secondary traumatic stress disorder in those who treat the traumatized. Brunner/Mazel psychological stress series, No. 23*. Philadelphia, PA, US: Brunner/Mazel.

Figley, C. R. (2002). Compassion fatigue: Psychotherapists' chronic lack of self care. *Journal of Clinical Psychology*, *58*, 1433–1441, http://dx.doi.org/10.1002/jclp.10090.

Figley, C.R., & Stamm, B.H. (1996). Psychometric Review of Compassion fatigue Self Test http://www.isu.edu/ bhstamm/pdf/figleystamm.pdf. In B.H. Stamm (Ed), Measurement of Stress, Trauma and Adaptation. Lutherville, MD: Sidran Press. http://www.sidran.org/catalog/stms.html.

Garrity, M. (2013). Developing nursing leadership skills through reflective journaling: A nursing professor's personal reflection. *Reflective Practice*, *14*, 118–130, http://dx.doi.org/10.1080/14623943.2012.732940.

Garrosa, E., Rainho, C., Moreno-Jimenez, B., & Monteiro, M. J. (2010). The relationship between job stressors, hardy personality, coping resources and burnout in a sample of nurses: A correlational study at two time points. *International Journal of Nursing Studies*, *47*, 205–215, http://dx.doi.org/10.1016/j.ijnurstu.2009.05.014.

Gray, M. J., Litz, B. T., Hsu, J. L., & Lombardo, T. W. (2004). Psychometric properties of the life events checklist. *Assessment*, *11*, 330–341.

Hayes, A. A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, *76*, 408–420.

Hinds, P. S., Quargnenti, A. G., Hickey, S. S., & Mangum, G. H. (1994). A comparison of the stress–response sequence in new and experienced pediatric oncology nurses. *Cancer Nursing*, *17*, 61–71.

Hinshaw, A. S., Atwood, J. R., Gerber, R. M., & Erickson, J. R. (1985). Testing a theoretical model for job satisfaction and anticipated turnover in nursing staff. *Nursing Research*, *34*, 384.

Jacobson, J. M. (2012). Risk of compassion fatigue and burnout and potential for compassion satisfaction among employee assistance professionals protecting the workforce. *Traumatology*, *18*, 64–72.

Jenkins, S. R., & Baird, S. (2002). Secondary traumatic stress and vicarious trauma: A validational study. *Journal of Traumatic Stress*, *15*, 423–432.

Kessler, P. D., & Lund, C. H. (2004). Reflective journaling: Developing an online journal for distance education. *Nurse Education*, *29*, 20–24.

Krause, M. R., Serlin, R. C., Ward, S. E., Rony, R. Y., Ezenwa, M. O., & Naab, F. (2010). Testing mediation in nursing research: Beyond Baron and Kenny. *Nursing Research*, *59*, 288–294.

Kulkarni, M. R., Graham-Bermann, S., Rauch, S. M., & Seng, J. (2011). Witnessing versus experiencing direct violence in childhood as correlates of adulthood PTSD. *Journal of Interpersonal Violence*, *26*, 1264–1281, http://dx.doi.org/10.1177/0886260510368159.

Kutney-Lee, A., Wu, E. S., Sloane, D. M., & Aiken, L. H. (2013). Changes in hospital nurse work environments and nurse job outcomes: An analysis of panel data.. *International Journal of Nursing Studies*, *50*, 195–201, http://dx.doi.org/10.1016/j.ijnurstu.2012.07.014.

Laschinger, H. K., & Grau, A. L. (2012). The influence of personal dispositional factors and organizational resources on workplace violence, burnout, and health outcomes in new graduate nurses: A cross-sectional study. *International Journal of Nursing Studies*, *49*, 282–291, http://dx.doi.org/10.1016/j.ijnurstu.2011.09.004.

Leibowitz, R. Q., Jeffreys, M. D., Copeland, L. A., & Noël, P. H. (2008). Veterans' disclosure of trauma to healthcare providers. *General Hospital Psychiatry*, *30*, 100–103, http://dx.doi.org/10.1016/j.genhosppsych.2007.11.004.

Leiter, M. P., Harvie, P., & Frizzel, C. (1998). The correspondence of patient satisfaction and nurse burnout. *Social Science & Medicine*, *47*, 1611–1617.

Leveck, M. L., & Jones, C. B. (1996). The nursing practice environment, staff retention, and quality of care. *Research in Nursing and Health*, *19*, 331–343.

Li, B., Bruyneel, L., Sermeus, W., Van den Heede, K., Matawie, K., Aiken, L., & Lesaffre, E. (2013). Group-level impact of work environment dimensions on burnout experiences among nurses: A multivariate multilevel probit model. *International Journal of Nursing Studies*, *50*, 281–291, http://dx.doi.org/10.1016/j.ijnurstu.2012.07.001.

Light, I. C., & Bincy, R. (2012). Effect of stress management interventions on job stress among nurses working in critical care units. *The Nursing Journal of India*, *103*, 269.

Mackenzie, C. S., Poulin, P. A., & Seidman-Carlson, R. (2006). A brief mindfulness-based stress reduction intervention for nurses and nurse aides. *Applied Nursing Research*, *19*, 105–109.

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, *52*, 397–422.

McCann, I. L., & Pearlman, L. A. (1990). Vicarious traumatization: A framework for understanding the psychological effects of working with victims. *Journal of Traumatic Stress*, *3*, 131–149.

McGowan, B. (2001). Self-reported stress and its effects on nurses. *Nursing Standard (Royal College of Nursing (Great Britain): 1987)*, *15*, 33–38.

Meadors, P., & Lamson, A. (2008). Compassion fatigue and secondary traumatization: Provider self care on intensive care units for children. *Journal of Pediatric Health Care*, *35*, 303–311.

Medland, J., Howard-Ruben, J., & Whitaker, E. (2004). Fostering psychosocial wellness in oncology nurses: Addressing burnout and social support in the workplace. *Oncology Nursing Forum*, *31*, 47–54.

Mueller, C. W., & McCloskey, J. C. (1990). Nurses' job satisfaction: A proposed measure. *Nursing Research*, *39*, 113.

Oehler, J. M., & Davidson, M. G. (1992). Job stress and burnout in acute and nonacute pediatric nurses. *American Journal of Critical Care: An Official Publication, American Association of Critical-Care Nurses*, *1*, 81–90.

Piko, B. F. (2006). Burnout, role conflict, job satisfaction and psychosocial health among Hungarian health care staff: A questionnaire survey. *International Journal of Nursing Studies*, *43*, 311–318.

Pipe, T. B., Bortz, J. J., Dueck, A., Pendergast, D., Buchda, V., & Summers, J. (2009). Nurse leader mindfulness meditation program for stress management: A randomized controlled trial. *Journal of Nursing Administration*, *39*, 130–137.

Potter, P., Deshields, T., & Rodriguez, S. (2013). Developing a systemic program for compassion fatigue. *Nurse Administration Quarterly*, *37*, 326–332, http://dx.doi.org/10.1097/NAQ.0b013e3182a2f9dd.

Potter, P., Desields, T., Berger, J. A., Clarke, M., Olsen, S., & Chen, L. (2013). Evaluation of a compassion fatigue resiliency program for oncology nurses. *Oncology Nursing Forum*, *40*, 180–187, http://dx.doi.org/10.1188/13.ONF.180-187.

Preacher, K. K. J. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*, 879–891.

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers: A Journal of the Psychonomic Society, Inc*, *36*, 717–731.

Richardson, K. M., & Rothstein, H. R. (2008). Effects of occupational stress management intervention programs: A meta-analysis. *Journal of Occupational Health Psychology*, *13*, 69–93, http://dx.doi.org/10.1037/1076-8998.13.1.69.

Rossi, A., Cetrano, G., Pertile, R., Rabbi, L., Donisi, V., Grigoletti, L., & Amaddeo, F. (2012). Burnout, compassion fatigue, and compassion satisfaction among staff in community-based mental health services. *Psychiatry Research*, *200*, 933–938, http://dx.doi.org/10.1016/j.psychres.2012.07.029.

Rucker, D. D., Preacher, K. J., Tormala, Z. L., & Petty, R. E. (2011). Mediation analysis in social psychology: Current practices and new recommendations. *Social and Personality Psychology*, *5*, 359–371.

Schaufeli, W. B., Leiter, M. P., & Maslach, C. (2009). Burnout: 35 years of research and practice. *The Career Development International*, *14*, 204–220, http://dx.doi.org/10.1108/13620430910966406.

Scott, E. S., Engelke, M. K., & Swanson, M. (2008). New graduate nurse transition: Necessary or nice? *Applied Nursing Research*, *21*, 75–83.

Shader, K., Broome, M. E., Broome, C. D., West, M. E., & Nash, M. (2001). Factors influencing satisfaction and anticipated turnover for nurses in an academic medical center. *Journal of Nursing Adminstration*, *31*, 210–216.

Slocum-Gori, S., Hemsworth, D., Chan, W. W., Carson, A., & Kazanjian, A. (2013). Understanding compassion satisfaction, compassion fatigue and burnout: A survey of the hospice palliative care workforce. *Palliative Medicine*, *27*, 172–178, http://dx.doi.org/10.1177/0269216311431311.

Stamm, B. H. (2002). Measuring compassion satisfaction as well as fatigue: Developmental history of the compassion satisfaction and fatigue test. In

C. R. Figley (Ed.), *Treating compassion fatigue* (pp. 107–119). New York: Brunner-Routledge.

Stamm, B. H. (2010). *The concise ProQOL manual.* Pocatello, ID: ProQOL org.

Tourangeau, A. E., Hall, L. M., Doran, D. M., & Petch, T. (2006). Measurement of nurse job satisfaction using the McCloskey/Mueller Satisfaction Scale. *Nursing Research*, *55*, 128–136.

Vahey, D. C., Aiken, L. H., Sloane, D. M., Clarke, S. P., & Vargas, D. (2010). Nurse burnout and patient satisfaction. *Medical Care*, *42*, 57–66.

Valent, P. (2002). *Diagnosis and treatment of helper stresses, traumas, and illnesses. In C. R. Figley (Ed.), (pp. 17–37).* New York, NY, US: Brunner-Routledge.

Van den Heede, K., Florquin, M., Bruyneel, L., Aiken, L., Diya, L., Lesaffre, E., & Sermeus, W. (2013). Effective strategies for nurse retention in acute hospitals: A mixed method study. *International Journal of Nursing Studies*, *50*, 185–194, http://dx.doi.org/10.1016/j.ijnurstu.2011.12.001.

Van Saane, N., Sluiter, J. K., Verbeek, J. H. A. M., & Frings-Dresen, M. H. W. (2003). Reliability and validity of instruments measuring job satisfaction—a systematic review. *Occupational Medicine*, *53*, 191–200.

Yoder, E. A. (2010). Compassion fatigue in nurses. *Applied Nursing Research: ANR*, 191–197, http://dx.doi.org/10.1016/j.apnr.2008.09.003.

Young, L. E., Bruce, A., Turner, L., & Linden, W. (2001). Evaluation of mindfulness-based stress reduction intervention. *The Canadian Nurse*, *97*, 23.

Young, J. L., Derr, D. M., Cicchillo, V. J., & Bressler, S. (2011). Compassion satisfaction, burnout, and secondary traumatic stress in heart and vascular nurses. *Critical Care Nursing Quarterly*, *34*, 227–234.

Zimering, R., Gulliver, S. B., Knight, J., Munroe, J., & Keane, T. M. (2006). Posttraumatic stress disorder in disaster relief workers following direct and indirect trauma exposure to ground zero. *Journal Of Traumatic Stress*, *19*, 553–557, http://dx.doi.org/10.1002/jts.20143.