Accepted: 9 June 2017

DOI: 10.1111/jan.13383

ORIGINAL RESEARCH:
EMPIRICAL RESEARCH—QUANTITATIVE

WILEY JAN Informing Practice and Policy Worldwide through Research and Scholarship

Resilience as a moderator of the indirect effects of conflict and workload on job outcomes among nurses

Julie Jean Lanz | Valentina Bruk-Lee

Department of Psychology, Florida International University, Miami, FL, USA

Correspondence
Julie Lanz, Department of Psychology, University of Nebraska at Kearney, Kearney, NE, USA.
Email: lanzjj@unk.edu

Funding information
This study was funded by Center for Disease Control and Prevention (CDC)/ National Institute of Occupational Safety and Health (NIOSH) through the Sunshine Education and Research Center (ERC) at USF (5T42OH008438-09). The opinions expressed are those of the authors and do not represent either NIOSH or USF

Abstract

Aim: To examine the relative effects of interpersonal conflict and workload on job outcomes (turnover intentions, burnout, injuries) and examine if resilience moderates the indirect effects of conflict and workload on job outcomes via job-related negative effect.

Background: There is interest in understanding resilience in the nursing profession. Placing resilience in the context of the Emotion-Centred Model of Occupational Stress (Spector, 1998) is a novel approach to understanding how resilience ameliorates the negative effects of workplace stressors.

Design: This study used a two-wave survey design to collect data from 97 nurses across medical units.

Methods: Nurses working in the US were recruited in June 2014 using Qualtrics Panels, an online survey platform service that secures participants for research. Nurses were contacted via email at two time points, two weeks apart and provided a link to an online survey. SPSS v. 23 and PROCESS v2.15 were used to analyse regressions and moderated mediation.

Results/Findings: Interpersonal conflict predicted turnover intentions and burnout; workload predicted injuries. Job-related negative affect mediated the relationships between stressors and job outcomes except for the direct effect of workload on injuries. Low resilience increased the magnitude of the indirect effects of conflict on job outcomes.

Conclusion: Job characteristics like workload predicted unique variability in self-reported physical injuries. Conflict at work, a social stressor, predicted well-being and job attitudes. Highly resilient nurses bounced back after experiencing conflict in the workplace. Resilience should be explored for its potential as a method to reduce the negative effects of social stressors.

KEYWORDS
burnout, conflict, injuries, job-related negative affect, Nurses, resilience, turnover, workload

1 | INTRODUCTION

There is a critical need to investigate factors that influence and mitigate the stressful work environment among nurses worldwide. According to Lafer (2005), "the stress, danger, exhaustion and frustration that have become built into the normal daily routine of hospital nurses constitute [the] single biggest factor driving nurses out of the industry" (p. 36). One report estimated that US employees spend 2.8 hr every week dealing with workplace conflict (Hayes, 2008). Conflict and workload put nurses at a high risk of turnover

intentions, burnout and injuries and should be evaluated further because of their impact on nurse, patient and organizational well-being (Dugan et al., 1996; OSHA, 2001; White, 2010).

1.1 | Background

Commonly reported stressors by nurses include the death and caring for dying patients, interpersonal conflict with staff, patients and families, fear of failure, workload, inadequate nursing staff and feeling unprepared to meet the emotional needs of patients (Glazer & Gyurak, 2008; Gray-Toft & Anderson, 1981a,b; LeSergent & Haney, 2005; Parkes, 1985). In a recent study, the two most frequently reported negative workplace events among a sample of nurses were interpersonal conflict at work and work role demands such as workload (Sinclair et al., 2009). However, we do not know much about the relative effects of conflict and workload together on job outcomes like turnover intentions, burnout and injuries.

Turnover in the nursing profession has a detrimental impact on the workplace because it forces hospitals and organizations to replace and train new employees, which has significant financial and time costs (Waldman, Kelly, Aurora, & Smith, 2004). Given that researchers have projected that there will be a significant shortage of 300,000 to 1 million Registered Nurses in the US by 2020 (Juraschek, Zhang, Ranganathan, & Lin, 2012), examining predictors of turnover intentions is valuable for healthcare organizations and patients (Chan, Tam, Lung, Wong, & Chau, 2013; Shields & Ward, 2001). Another commonly experienced outcome is burnout, which occurs when individuals are unable to meet demands, lose resources, or are unable to yield expected returns (Lee & Ashforth, 1996). Burnout in the health profession encompasses three dimensions: emotional exhaustion (how emotionally extended a person is due to work), depersonalization (detachment from patients) and decreased personal accomplishment (Maslach, Jackson, & Leiter, 1996). Given the emotional nature of their work, nurses are at high risk of burnout (Adriaenssens, De Gucht, & Maes, 2015). Lastly, the risk for work-related injuries among nurses is high due to the physical nature of their job (Stobbe, Plummer, Jensen, & Attfield, 1988). Of the 2,745,910 Registered Nurses in the US (Bureau of Labor Statistics [BLS], 2015), there were a reported 10,290 non-fatal occupational injuries that required a median of 9 days away from work in 2015 (BLS, 2016).

1.2 | Understanding stress in nursing: the emotion-centred model of occupational stress

A framework by which we can elucidate the stress process in nurses is the Emotion-Centred Model of Occupational Stress, which theorizes a causal flow from job conditions such as job-related stressors to job outcomes (i.e. strains, or reactions to a stressor; Spector, 1998; Spector & Goh, 2001). According to this model, a job stressor is a situation or condition that prompts a negative affective response. Individuals may perceive high levels of workload and conflict as sources of stress that present a potential threat to well-being (Lim, Bogossian, & Ahern, 2010; Spector & Bruk-Lee, 2008). The immediate response elicited by the stressor is one of the negative effects (i.e. negative emotions), such as anger or frustration. Emotions serve an adaptive function by allowing individuals to respond to the situation (Plutchik, 1989). Job-related affect is a context-specific measure of emotional responses experienced on the job (Van Katwyk, Fox, Spector, & Kelloway, 2000). In addition, these negative emotions serve as a mechanism through which conflict and workload exert their influence on the experience of job outcomes (i.e. burnout, turnover intent and injuries). Some variables, such as personality traits, may moderate the relationship between stressors and emotions (Spector & Goh, 2001). Though components of the Emotion-Centred Model of Occupational Stress have been tested in a nursing sample previously (Nixon et al., 2015), this study is the first to use a two-wave design to consider the effects of conflict and workload on turnover intentions, burnout and injuries through the experience of negative emotional states (e.g. feeling discouraged). It is also the first to examine the potential moderating effect of trait resilience on the relationship between stressors and negative emotional states in nurses.

Why is this research or review needed?

- Given the stressful work environment that nurses experience, the need to investigate characteristics that influence the stress process is critical.
- There is an urgent need to identify strategies that help reduce stressors and their impact on the nursing profession.

What are the key findings?

- We examined the relative effects of two common nursing stressors on job outcomes. Turnover intentions and burnout were predicted by interpersonal conflict while injuries were predicted by workload.
- Using the Emotion-Centred Model of Occupational Stress as a framework, resilience moderated the indirect effects of conflict on job outcomes via job-related negative affect.

How should the findings be used to influence policy/practice/research/education?

- Though researchers have agreed that fostering resilience may be important for nurses, this study demonstrated the value of resilience for nurses who experienced high levels of conflict in their workplace.
- We suggest that future interventions should use methods of fostering resilience as a way to reduce the negative effects of workplace conflict (i.e. retaining staff, reducing burnout).

1.2.1 | Interpersonal conflict as a stressor in nursing

Social interactions with other employees and patients are an important function of nurses' jobs. These interactions may include exchanging ideas, cooperating, communicating and maintaining a safe work environment. Negative social interactions are characterized by rude behaviour, yelling or disagreements; they give rise to conflict and produce negative emotional, physical and behavioural outcomes (Almost et al., 2016). Conflict at work is an undesirable dynamic process between parties that arises from perceived disagreements and interference with the parties' goals and results in negative emotional reactions (Barki & Hartwick, 2001). Interpersonal conflict is a routine feature of the workplace for nurses (Brinkert, 2010). Conflict among nurses is a persistent problem and one that is on the rise (Almost, 2006). Some have gone far enough to describe nurses as: "eating their young" (Baltimore, 2006, p. 28), a reference to the way experienced nurses treat new nurses. For example, 58% of nurses have reported being the target of verbal aggression in the past year (Spector, Coulter, Stockwell, & Matz, 2007). One qualitative study on types of nurse conflict included cases of disagreements, feeling unfairly treated, feelings of animosity and a lack of communication (Wright, Mohr, & Sinclair, 2014).

For nurses, the costs of unmanaged interpersonal conflict affect healthcare providers, the organization and patients (see Gerardi, 2004 for review). Research has found that workplace conflict is positively related to distress and negative affect among working adults (Adams & Webster, 2012; Van Katwyk et al., 2000). Job-related negative affective states have also been associated with outcomes such as turnover intentions, injuries and burnout (Frone, 1998; Hillhouse, Adler, & Walters, 2000; Iverson & Erwin, 1997; Van Katwyk et al., 2000). Nurses who experience conflict report high levels of negative emotions, turnover intentions, physical symptoms, burnout and even injuries among a variety of shifts and wards (Almost, 2006; Hemingway & Smith, 1999; Payne, 2001; Spector et al., 2007). Based on these studies, it is likely that negative emotions mediate theses stressor–outcome relationships (Spector & Bruk-Lee, 2008).

1.2.2 | Workload as a stressor in nursing

Similarly, workload was identified as a major stressor for both urban (Dewe, 1987; Gottlieb, Kelloway, & Martin-Matthews, 1996) and rural nurses (Bigbee, 1991; Hodgson, 1982) with up to 46% of the latter having reported issues with their workload (LeSergent & Haney, 2005). Nursing workload has been conceptualized as physical exertion, nursing "intensity," patient "dependency," the complexity of patient care and the amount of time spent in patient care (Alghamdi, 2016; Morris, MacNeela, Scott, Treacy, & Hyde, 2007). Regardless of the metric used, workload assesses the amount of work a nurse carries out in direct and indirect patient care (Needham, 1997).

The excessive demands of workload (e.g. being busy or staffing ratios) negatively impact the well-being of patients, nurses and organizations. For instance, there are clinically significant differences in intensive care unit (ICU) mortalities when comparing nurses who reported median and high levels of workload (Kiekkas et al., 2008). When nurses perceive their workload to be high, they report feeling distressed, angry and cynical (Fiksenbaum, Marjanovic, Greenglass, & Coffey, 2006; Greenglass, Burke, & Moore, 2003). Fiksenbaum and colleagues reported that nurses working during the SARS outbreak experienced extreme working conditions, which contributed significantly to their state anger and emotional exhaustion. Workload is a common stressor across nursing specialties and is associated with health problems like high blood pressure and exhaustion (Lim et al., 2010). Workload also predicts job outcomes such as burnout and turnover intentions in direct care nurses and caregivers (Van Bogaert, Clarke, Willems, & Mondelaers, 2012) and musculoskeletal injury rates among care aides and licensed practical nurses (Cohen, Village, Ostry, Ratner, & Cvitkovich, 2004). It is possible that a similar mediating mechanism exists whereby the negative emotions resulting from the experience of high workloads produces job outcomes like physiological symptoms and intentions to quit (Spector & Goh, 2001).

1.2.3 | Resilience as a moderator in the emotion-centred model of occupational stress

Resilience facilitates "positive adaptation in the context of significant risk or adversity" (Ong, Bergeman, & Boker, 2009; p. 1777). Resilience connotes a level of emotional strength that allows individuals to avoid the detrimental effects of stress (Masten & O'Connor, 1989). This ability to adapt exists throughout a person's lifetime (Sigal & Weinfeld, 2001). Aburn, Gott, and Hoare (2016) identified common themes in the resilience literature for nurses: adapting, rising above adversity, a dynamic process, ordinary magic and as a marker for mental health. The broaden and build theory has been applied to the study of resilience (Fredrickson, 1998). This theory predicts that positive states of emotion, such as those that characterize highly resilient individuals, broaden one's cognition and attention and lead to an "upward spiral" towards higher emotional well-being (Fredrickson, 2004). According to the broaden and build theory, resilient individuals use protective factors like positive affect as a resource for "bouncing back" and finding positive meaning from stressful situations (Tugade & Fredrickson, 2004).

The last decade has seen a growing interest in identifying how resilience can influence healthcare workers (Gillespie, Chaboyer, Wallis, & Grimbeek, 2007; Hart, Brannan, & De Chesnay, 2014; Rushton, Batcheller, Schroeder, & Donohue, 2015; Warelow & Edward, 2007). Due to the stressful nature of the workplace, resilience has been put forth as an important ability for high-risk nurses to develop and train (Hart et al., 2014; Rushton et al., 2015) given their exposure to extreme demands every day. However, limited research exists examining the exact role resilience plays in the stress process for nurses. Drawing from longitudinal data supporting resilience's moderating role in the stressor–emotion relationship, our paper explores whether the indirect effect of workload and conflict on job outcomes is conditional on levels of resilience. Indeed, trait

resilience moderated the relationship between daily stress and negative emotions in one diary study, such that an increase in resilience reduced the slope of the stress–negative emotion relationship (Ong, Bergeman, Bisconti, & Wallace, 2006). Consistent with the Emotion-Centred Model of Occupational Stress and data supporting a broaden and build perspective on resilience, we anticipate that the role of negative emotions as the indirect mechanism by which workload and conflict have an impact on key outcomes (i.e. burnout, turnover intent and injuries) is more pronounced and perhaps only relevant, for nurses low in resilience (see Figure 1).

1.2.4 | Objectives

The first objective of this study was to assess the relative effects of conflict and workload on burnout, turnover intentions and injuries. Second, the mediating role of negative affect in the relationships between stressors and job outcomes was tested. Last, the study assessed resilience as a condition to the indirect effects of stressors on outcomes through the experience of negative emotional states. Using the Emotion-Centred Model of Occupational Stress and the existing empirical findings, we hypothesized that:

Hypothesis 1a-e: Interpersonal conflict at work and workload will both predict unique variance in turnover intentions (a), the burnout facets of emotional exhaustion (b), depersonalization (c), personal accomplishment (d) and injuries (e).

Hypothesis 2a-e: Job-related negative affect will mediate the relationship between interpersonal conflict and turnover intentions (a), burnout facets (b-d) and injuries (e).

Hypothesis 3a-e: Job-related negative affect will mediate the relationship between workload and turnover intentions (a), burnout facets (b-d) and injuries (e).

Hypothesis 4a-e: The indirect effect of conflict on turnover intentions (a), burnout facets (b-d) and injuries (e) through negative job-related affective states is conditional on levels of resilience. Specifically, the indirect effect is expected to be stronger for individuals low in resilience.

Hypothesis 5a-e: The indirect effect of workload on turnover intentions (a), burnout (b-d) and injuries (e) through negative job-related affective states is conditional on levels of resilience. Specifically, the indirect effect is expected to be stronger for individuals low in resilience.

2 | METHODS

2.1 | Study design

A quantitative self-report two-wave design whereby nurses were surveyed 2 weeks apart was used. Data from Time 1 and 2 were matched.

2.2 | Setting

Nurses were contacted via email in June 2014 and provided with a link to the Time 1 Qualtrics survey. At Time 1, participants were asked to complete a questionnaire with measures of stressors (interpersonal conflict at work and workload), resilience and demographic information. At Time 2, they were asked to complete a questionnaire including outcome measures (turnover intentions, burnout and injuries). Nurses were compensated between $8–10 for each survey they completed depending on the agreement specifications with Qualtrics.

2.3 | Participants

A sample of nurses employed in the US were randomly selected using Qualtrics Panels, an online service that gathered participants from a nationwide sample of working nurses from all types of units. Of the original 185 nurses who responded at Time 1, 20 participants were removed for not responding correctly to at least one of the two attention check items (e.g. "Please respond Agree"), or for having suspicious data (e.g. their age and tenure as a nurse were incompatible). This group was not surveyed at Time 2. At Time 2, 97 of the 165 participants contacted completed the survey for a response rate of 59%.

2.4 | Variables

The four-item Interpersonal Conflict at Work Scale (Spector & Jex, 1998) measured conflict with others at work (α = .86). Items such as "how often do you get into arguments with others at work?" were measured on a 1–5 scale from "never" - "very often". Higher scores indicate more frequent interpersonal conflict.

The five-item quantitative workload inventory (Spector & Jex, 1998) measured nurse workload (α = .83). Items such as "How often does your job require you to work very hard?" were measured on a

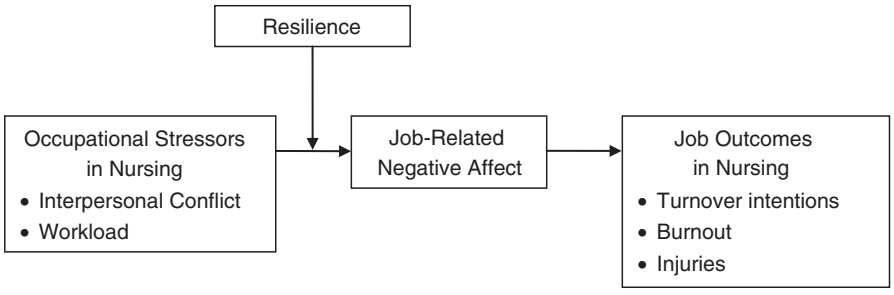

FIGURE 1 The proposed role of resilience in the emotion-centred model of occupational stress

1–5 scale from "less than once per month or never" - "several times per day". Higher scores indicate a higher workload.

The 14-item Resilience Scale (Wagnild, 2011) measured an individual's level of resilience (α = .97). Items such as "I feel that I can handle many things at a time" were measured on a 1–7 Likert scale from "strongly disagree" - "strongly agree". Higher scores indicate higher levels of resilience.

Job-related negative affect was measured with a 15-item subscale of the Job-related Affective Well-being Scale (Van Katwyk et al., 2000; α = .92). Participants were asked how often their job made them experience emotional states such as "annoyed" or "frustrated" over the past 2 weeks. Participants responded on a 5-point scale from "never" - "extremely often or always." Higher scores indicate higher levels of negative affect regarding the workplace.

The three-item turnover intentions subscale of the Michigan Organizational Assessment Questionnaire (Cammann, Fichman, Jenkins, & Klesh, 1983) measured employees' intent to leave their job (α = .95). Items such as "it is very possible that I will look for a new job next year," assessed employees' intentions of staying at their current organization. Participants rated each response on a scale of 1–5 from "strongly disagree" - "strongly agree." Higher scores indicate greater intent to leave the job.

The 22-item Maslach Burnout Inventory—Human Services Survey (Maslach et al., 1996) measured three facets: emotional exhaustion (α = .93), depersonalization (α = .80) and reduced personal accomplishment (α = .82). Items such as "I feel depressed at work" are measured on a 0–6 scale from "never" - "every day". Higher scores on emotional exhaustion and depersonalization indicate higher levels of burnout; low scores on personal accomplishment indicate high levels of burnout.

Physical injuries were measured using the nine-item Standardized Nordic Questionnaire (Kuorinka et al., 1987). Nurses were shown a picture of nine locations on the body, including the lower back, neck and shoulders. Participants indicated whether they had experienced any injuries in these areas within the past 2 weeks and each injury was summed to create a total score on injures. Higher scores indicate more self-reported injuries.

2.5 | Bias

To consider differences in nurses who participated at Time 1 only (n = 68) and those who participated at both time points (n = 97), independent-samples t tests were conducted to compare sociodemographic differences and differences in conflict, workload and resilience. There were no significant differences in age, tenure, conflict, workload or resilience between the groups (all p values were >.05). Data were collected using standardized and reliable measures of workplace stressors and outcomes. A 2-week time period was used in an attempt to draw causal conclusions about the relationship between stressors and outcomes and to mitigate the effects of common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

2.6 | Ethical considerations

IRB committee approval was obtained from the university. Before seeing the surveys, participants read information about the study and provided informed consent to participate.

2.7 | Statistical methods

Correlations and regressions were analysed using SPSS v. 23. Hypotheses 2 and 3 were tested using a sample bias-corrected bootstrapping procedure to estimate direct and indirect effects (Model 4; Preacher & Hayes, 2008). Confidence intervals that do not include zero support the presence of indirect effects. As shown in Tables 3 and 4, indirect effects are indicated by the *ab* path, which results from the multiplication of the a_1 and b_1 paths also noted in the tables. A standardized effect size for the indirect effect, kappa-squared, was also calculated (Preacher & Kelley, 2011). The recommended bootstrapping procedure outlined by Preacher, Rucker, and Hayes (2007) was used to assess the moderated mediation proposed in hypotheses 4 and 5. The magnitude of the conditional indirect effect was examined at low (25th percentile), medium (50th percentile) and high (75th percentile) levels. The index of moderated-mediation served as a formal test of conditional indirect effects, providing evidence that indirect effects defined by varying values of resilience are statistically different (Hayes, 2015). Moderated mediations results are shown with 90% confidence intervals around conditional indirect effects given the one-tailed nature of hypotheses 4 and 5 where negative emotions are likely to serve as a relevant mediating mechanism for those low in resilience. Bootstrapping procedures used are ideal for use with non-normal distributions and shown to have greater statistical power than the Baron and Kenny method or Sobel test (Preacher & Hayes, 2008; Shrout & Bolger, 2002). The SPSS PROCESS macro version 2.15 was used to conduct these analyses (Hayes, 2013).

3 | RESULTS

3.1 | Participants

The majority of nurses were female (88.7%) and Caucasian (79.4%). Participants' ages ranged from 22 to 82 years, with an average of 46.5 years (*SD* 12.7). Nurse tenure averaged 10.7 years (*SD* 9.6). Nurses across a wide variety of units were represented, including outpatient clinics and laboratories (n = 27; 27.8%), assisted living/rehabilitation (n = 26; 26.8%), emergency department (n = 13; 13.4%), critical care (n = 7; 7.2%), medical-surgical (n = 6; 6.2%), maternal-newborn (n = 6; 6.2%), as well as a variety of other units such as telemetry, orthopaedics, oncology, OB/GYN, school nurses and nurse managers (n = 12; 12.4%).

3.2 | Main results

Means, standard deviations and correlations among study variables are shown in Table 1. Hypotheses 1(a–e) examined the relative

TABLE 1 Means, standard deviations and correlations among study variables

	M	*SD*	1	2	3	4	5	6	7	8
1. Conflict (T1)	2.00	.81								
2. Workload (T1)	4.21	.74	.37**							
3. Resilience (T1)	6.14	.87	.09	.14						
4. Job-related negative affect (T2)	2.22	.62	.50**	.31**	.10					
5. Turnover intentions (T2)	2.44	1.24	.35**	.17	.02	.66**				
6. Emotional exhaustion (T2)	3.33	1.45	.44**	.32**	.08	.80**	.80**			
7. Depersonalization (T2)	2.34	1.19	.50**	.29**	.01	.71**	.53**	.69**		
8. Personal accomplishment (T2)	5.56	.95	−.31**	.02	−.02	−.44**	−.38**	−.34**	−.38**	
9. Injuries (T2)	1.23	1.82	.10	.26**	.20	.23*	.16	.30**	.32**	−.09

N = 96–97. *$p \leq .05$. **$p < .01$. T1 = Time 1; T2 = Time 2. Conflict, workload, job-related negative affect, and turnover intentions ranged from a score of 1–5; resilience and facets of burnout ranged from 1–7. Injuries were reported on a frequency scale with a range of 0–9.

effects of interpersonal conflict at work and workload on turnover intentions, burnout and injuries (Table 2). Multiple regression analyses indicated that only interpersonal conflict at work explained significant unique variance in turnover intentions ($\beta = .33$, $p < .001$), emotional exhaustion ($\beta = .37$, $p < .001$), depersonalization ($\beta = .45$, $p < .001$) and personal accomplishment ($\beta = -.37$, $p < .001$). Injuries were significantly predicted by workload only ($\beta = .26$, $p = .02$). Hypothesis 1(a–e) was partially supported, as both stressors did not make significant independent contributions to the prediction of all the study's outcome variables.

Hypotheses 2(a,b and d) were supported. A mediated model accounted for 43.84% of variance in turnover intentions, 63.62% in emotional exhaustion, 53.33% in depersonalization, 20.33% in personal accomplishment and only 5.32% of the variance in injuries. The confidence intervals of all indirect effects (*ab* paths) excluded zero (see Table 3), indicating support for a mediated process. Job-related negative affect was a full mediator for all conflict-outcome models except for in the case of depersonalization, which was partially mediated as indicated by a significant direct effect of conflict (c'_1 effect = 0.27, *SE* = 0.12) and injuries, where the overall model was not significant ($p = .08$).

Similarly, hypotheses 3a–d were supported (see Table 4). The mediated models accounted for 43.89% of the variance in turnover intentions, 64.10% in emotional exhaustion, 51.24% in depersonalization, 21.93% in personal accomplishment and 9.61% of the variance in injuries. The indirect effect of workload on turnover intentions (indirect ab effect = 0.35, *SE* = 0.11), emotional exhaustion (indirect ab effect = 0.47, *SE* = 0.15), depersonalization (indirect ab effect = 0.34, *SE* = 0.11) and personal accomplishment (indirect ab effect = −0.20, *SE* = 0.07) all had confidence intervals that excluded zero. However, job-related negative affect did not mediate the workload-injury model (indirect ab effect = 0.12, *SE* = 0.09, LLCI = −0.02, ULCI = 0.34); there was only a direct relationship (c'_1 effect = 0.55, $p = .04$) such that the higher workload nurses experienced, the more injuries they reported two weeks later.

Hypotheses 4a–e proposed that the indirect effects of conflict on job strains through negative emotions would be stronger and, perhaps only present, for nurses low in resilience. There was a significant negative interaction between conflict and resilience (a_3 effect = −0.22, $p = .03$), such that nurses low in resilience reported higher levels of negative emotions under high conflict. Across outcome variables, conflict had a stronger indirect effect through negative emotions in nurses who reported lower levels of resilience (see Table 3). For example, in the case of turnover intentions, the effect was greater (conditional indirect effect = 0.58, $CI_{.90}$ = 0.42, 0.83) for nurses low in resilience compared with those high in resilience, (conditional indirect effect = 0.40, $CI_{.90}$ = 0.24, 0.72). Nonetheless, the emotion-centred mechanism was present across all three levels of resilience (i.e. low, medium and high resilience). Hypothesis 4a–e was supported. As shown in Table 4, the interaction between workload and resilience was not significant (a_3 effect = −0.05, $p = .50$) and as such hypotheses 5a–e were not supported.

4 | DISCUSSION

To retain nurses and reduce organizational costs, there is a critical need to investigate factors that influence and mitigate the stressful work environment of nurses. This study contributed to the literature by applying an Emotion-Centred Model of Occupational Stress in identifying social- and work-based stressors that predicted burnout, turnover intentions and injuries. Given the high costs for organizations associated with these strain outcomes in terms of litigation costs, training new staff, regulatory fines, employee morale and even theft (Gerardi, 2004), the findings also support practical implications. Our study also makes a timely contribution as evidenced by recent interest in how resilience can positively affect nursing students (Reyes, Andrusyszyn, Iwasiw, Forchuk, & Babenko-Mould, 2015) and nurses (Cusack et al., 2016). The results, thus, have implications for understanding the conditions that resilience places on the strain nurses experience on the job.

Examining the relative effects of interpersonal conflict at work and workload allowed us to address a gap in the literature (Sinclair et al., 2009) and to assess the unique variability in outcomes explained by conflict and workload. The multiple regression results indicated that interpersonal conflict at work predicted turnover

TABLE 2 Regression with standardized and unstandardized coefficients of nurse stressors on job outcomes

	Turnover intentions				Emotional exhaustion				Depersonalization				Personal accomplishment				Injuries			
	B (*SE* B)	β	F	R^2	B (*SE* B)	β	F	R^2	B (*SE* B)	β	F	R^2	B (*SE* B)	β	F	R^2	B (*SE* B)	β	F	R^2
Constant	1.07 (.70)		6.61**	.12	.46 (.77)		13.31**	.22	.20 (.62)		16.25**	.26	5.56 (.54)		6.34**	.12	−1.58 (1.08)		3.48*	.07
Conflict	.51 (.16)	.33**			.66 (.18)	.37**			.66 (.14)	.45**			−.44 (.12)	−.37**			.01 (.24)	.00		
Workload	.09 (.18)	.05			.37 (.19)	.19			.19 (.16)	.12			.21 (.14)	.16			.66 (.27)	.26*		

N = 96–97. **p* < .01. ***p* < .05. B = unstandardized coefficient; *SE* = standard error; β = standardized coefficient; F = F-ratio; R^2 = proportion of variance accounted for in job outcomes by predictors.

intentions and burnout, while workload predicted self-reported nurse injuries. While previous research suggests that conflict produces burnout and turnover intentions in nurses (Hemingway & Smith, 1999; Payne, 2001) and workload predicts injuries (Cohen et al., 2004), our study presented evidence for the differential impact of these stressors on critical strain outcomes when taken into account at the same time. This has practical implications (discussed below) for interventions focused on the social environment vs. workload management.

Emotions are central in understanding the effects of conflict and workload on nurses' outcomes. Specifically, job-related negative affect was a key process variable by which stressors influenced burnout and turnover intentions. Other studies have mostly looked at cross-sectional data (Adriaenssens, De Gucht, Van Der Doef, & Maes, 2011), hence our findings address the process behind these associations. Emotions were a mediating mechanism for most of the studied relationships consistent with Emotion-Centred Model of Occupational Stress, but not for workload and injuries, for which a direct relationship was found. The effects of workload on injuries may be a function of cognitive load rather than emotions such that nurses with a high workload may be susceptible to errors (e.g. medication errors or injuries) because of reduced attention (Holden et al., 2011).

Resilience is a condition of the mediated stressor–outcome relationships studied. Regarding conflict, the mediating role of job-related negative affect on outcomes was stronger for nurses who had low resilience and weaker for highly resilient nurses. Highly resilient nurses appeared to have more control over the emotional experiences they have and this may allow them to bounce back from stressful events by using positive emotions as a vehicle or resource for coping (Ong et al., 2006). Conflict is a social stressor that leads to negative emotions and it is likely that resilient nurses use positive emotions to deflect the negative effects of conflict (Bruk-Lee & Spector, 2012; Fredrickson, 2004). The amount of long-term stress healthcare professionals experience because of demanding jobs requires practitioners to find beneficial strategies that will enhance their levels of resilience (Skovholt & Trotter-Mathison, 2011). Resilience may be a valuable trait for nurses to develop over time to reduce the negative job outcomes caused by conflict. This pattern was not seen for workload, indicating that other constructs may be more relevant in moderating its effect. Using human factors (i.e. ergonomic) approach to understanding the negative effects of workload might be more valuable (Holden et al., 2011). For example, different types of workload (individual- or unit-level tasks) may affect nurse injuries differentially.

4.1 | Limitations and future research

Though no hypotheses were made, it is notable that resilience yielded no significant correlations with outcome variables. Resilience is correlated with outcomes like affect (Hu, Zhang, & Wang, 2015), so there may be power issues in this study. However, in a study on

TABLE 3 Mediation estimates for interpersonal conflict at work and job strains

Mediation																				
	Turnover intentions				**Emotional exhaustion**				**Depersonalization**				**Personal accomplishment**				**Injuries**			
Direct effects	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***
JRNA as DV																				
Constant	1.45	.15	9.80	<.001	1.45	.15	9.80	<.001	1.45	.15	9.80	<.001	1.45	.15	9.80	<.001	1.46	.15	10.04	<.001
Conflict (a_1)	.38	.07	5.60	<.001	.38	.07	5.60	<.001	.38	.07	5.60	<.001	.38	.07	5.60	<.001	.38	.07	5.70	<.001
Model R^2	.25**				.25**				.25**				.25**				.26**			
Job strain as DV																				
Constant	−.51	.36	−1.40	.16	−.85	.34	−2.47	.02	−.84	.32	−2.63	.01	7.13	.33	21.48	<.001	−.26	.70	−.37	.71
JRNA (b_1)	1.30	.18	7.29	<.001	1.80	.17	10.73	<.001	1.18	.15	7.62	<.001	−.58	.16	−3.55	<.001	.70	.34	2.04	.04
Conflict (c'_1)	.04	.14	.27	.79	.09	.13	.73	.46	.27	.12	2.29	.02	−.14	.13	−1.16	.25	−.04	.26	−.15	.88
Model R^2	.44**				.64**				.53**				.20**				.05†			
Indirect effect	**Effect**	***SE***	***LLCI***	***ULCI***	**Effect**	***SE***	***LLCI***	***ULCI***	**Effect**	***SE***	***LLCI***	***ULCI***	**Effect**	***SE***	***LLCI***	***ULCI***	**Effect**	***SE***	***LLCI***	***ULCI***
Conflict on strain (*ab*)	.50	.14	.30	.86	.69	.18	.44	1.14	.45	.11	.28	.74	−.22	.10	−.47	−.08	.27	.17	.01	.74
K^2 for indirect effect	.32	.06	.21	.44	.41	.06	.30	.56	.32	.05	.23	.42	.17	.06	.07	.31	.11	.06	.01	.23
Moderated mediation																				
	Turnover intentions				**Emotional exhaustion**				**Depersonalization**				**Personal accomplishment**				**Injuries**			
Direct effects	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***
JRNA as DV																				
Constant	2.24	.05	41.02	<.001	2.24	.05	41.02	<.001	2.24	.05	41.02	<.001	2.24	.05	41.02	<.001	2.25	.05	41.77	<.001
Conflict (a_1)	.42	.07	6.00	<.001	.42	.07	6.00	<.001	.42	.07	6.00	<.001	.42	.07	6.00	<.001	.42	.07	6.11	<.001
Resilience (a_2)	−.05	.07	−.65	.52	−.05	.07	−.65	.52	−.05	.07	−.65	.52	−.05	.07	−.65	.52	−.05	.07	−.65	.52
Conflict × Resilience (a_3)	−.22	.10	−2.25	.03	−.22	.10	−2.25	.03	−.22	.10	−2.25	.03	−.22	.10	−2.25	.03	−.22	.10	−2.31	.02
Model R^2	.29**				.29**				.29**				.29**				.30**			
Job strain as DV																				
Constant	−.44	.41	−1.07	.29	−.66	.38	−1.71	.09	−.29	.35	−.81	.42	6.84	.37	18.46	<.001	−.34	.79	−.43	.67
JRNA (b_1)	1.30	.18	7.29	<.001	1.80	.17	10.73	<.001	1.18	.15	7.62	<.001	−.58	.16	−3.55	<.001	.70	.34	2.04	.04
Conflict (c'_1)	.04	.14	.27	.79	.09	.13	.73	.46	.27	.12	2.29	.02	−.14	.13	−1.16	.25	−.04	.26	−.15	.88
Model R^2	.44**				.64**				.53**				.20**				.05†			

(Continues)

TABLE 3 (Continued)

Moderated mediation																			
	Turnover intentions				Emotional exhaustion				Depersonalization				Personal accomplishment				Injuries			
Conditional indirect effect	Effect	*SE*	*LLCI*	*ULCI*	Effect	*SE*	*LLCI*	*ULCI*	Effect	*SE*	*LLCI*	*ULCI*	Effect	*SE*	*LLCI*	*ULCI*	Effect	*SE*	*LLCI*	*ULCI*
Low resilience	.58	.12	.40	.78	.81	.15	.56	1.06	.53	.12	.36	.76	−.26	.10	−.43	−.13	.32	.20	.05	.72
Medium resilience	.52	.12	.36	.73	.72	.15	.50	.96	.47	.11	.33	.68	−.23	.10	−.42	−.11	.28	.18	.04	.67
High resilience	.40	.15	.24	.69	.55	.19	.34	.93	.36	.12	.22	.59	−.18	.11	−.40	−.07	.22	.16	.04	.61
Index of moderated mediation	Index −.29	*SE* .18	*LLCI* −.58	*ULCI* −.02	Index −.40	*SE* .26	*LLCI* −.85	*ULCI* −.03	Index −.26	*SE* .17	*LLCI* −.58	*ULCI* −.03	Index .13	*SE* .08	*LLCI* .03	*ULCI* .26	Index −.16	*SE* .13	*LLCI* −.49	*ULCI* −.02

N = 96–97. †$p < .10$. *$p < .05$. **$p < .01$. C = Coefficient. *SE* = standard error. JRNA = job-related negative affect. DV = dependent variable. LLCI/ULCI = bias corrected lower/upper limit confidence intervals. K^2 = kappa squared. R^2 = proportion of variance accounted for in job outcomes by predictors. All analyses used 1,000 bootstrap samples.

oncology nurses (Kutluturkan, Sozeri, Uysal, & Bay, 2016), Spearman's correlations between resilience subscales and burnout subscales ranged from small to medium, suggesting that our results were consistent with previous research. The costs of longitudinal research (payment, attrition, time) are higher than cross-sectional research and one must weigh the cost of a small sample size against the benefit of understanding the temporal order of the constructs (Menard, 2002). Given this study was only conducted on a small sample of US nurses, generalizing the results of this study should be done with caution.

While using a short time frame allows for more accurate recollections of injuries by respondents (Kuorinka et al., 1987), future research should consider collecting objective and near-miss data of a broader nature, including for example, needlestick injuries rather than self-report data. Further, workload was collected via a self-report measure; however, staffing data could provide another useful indicator of workload in future research. Finally, as our measures were distributed across the two time periods, it was not possible to account for the stability of our constructs over time. However, our findings are consistent with previous research (e.g. Nixon et al., 2015; Ong et al., 2006), which lends confidence to our results.

Future research should also consider if resilience differentially affects some nurses more than others. Some specialties are at a higher risk of job outcomes such as burnout (Adriaenssens et al., 2015) and different models of resilience have recently been developed for nursing students (Reyes et al., 2015) and nurses in the workplace (Cusack et al., 2016). It would be valuable to examine the differential effects of resilience on nurses across specialties as well as countries to provide guidance for nursing schools, practitioners and nurse managers (Potter et al., 2013; Vanhove, Herian, Perez, Harms, & Lester, 2016).

Given the interest in interventions designed to reduce burnout, there should be a nuanced focus on the social conditions of the work environment (e.g. person-directed interventions) to decrease burnout and turnover intentions (Westermann, Kozak, Harling, & Nienhaus, 2014). Passive conflict management strategies have been shown to amplify the effects of conflict on outcomes, including exhaustion, among healthcare workers (Dijkstra, De Dreu, Evers, & van Dierendonck, 2009). Hence, developing effective conflict management skills can prove helpful in reducing the impact of conflict on nurses' job outcomes. Regarding workload, interventions aimed at reducing physical injuries should focus on job characteristics. For example, the structure of work may be modified by providing readily accessible patient lifting and transfer devices (American Nurses Association, 2011; Vieira, Kumar, Coury, & Narayan, 2006) and ensuring adequate workload demands. Indeed, organizational characteristics related to staffing demands and climate have also been shown to relate to bloodborne pathogen exposure and near misses (Clarke, Sloane, & Aiken, 2002). For organizations seeking to reduce costs associated with injuries, reducing nurse workload and increasing support for safe patient handling are critical factors.

Resilience interventions may be a promising avenue to ameliorate the negative effects of conflict on nurses' job attitudes and

TABLE 4 Mediation estimates for workload and job strains

Mediation																				
	Turnover intentions				**Emotional exhaustion**				**Depersonalization**				**Personal accomplishment**				**Injuries**			
Direct effects	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***
JRNA as DV																				
Constant	1.12	.35	3.17	<.001	1.12	.35	3.17	<.001	1.12	.35	3.17	<.001	1.12	.35	3.17	<.001	1.22	.36	3.36	<.001
Workload (a_1)	.26	.08	3.15	<.001	.26	.08	3.15	<.001	.26	.08	3.15	<.001	.26	.08	3.15	<.001	.24	.08	2.82	.01
Model R^2	.09**				.09**				.09**				.09**				.08*			
Job strain as DV																				
Constant	−.30	.59	−.51	.61	−1.38	.55	−2.51	.01	−1.10	.52	−2.09	.04	6.28	.53	11.84	<.001	−2.19	1.13	−1.94	.05
JRNA (b_1)	1.34	.16	8.27	<.001	1.79	.15	11.85	<.001	1.31	.14	9.10	<.001	−.75	.15	−5.13	<.001	.50	.30	1.65	.10
Workload (c'_1)	−.06	.14	−.40	.69	.17	.13	1.35	.18	.12	.12	1.00	.32	.22	.12	1.81	.07	.55	.26	2.11	.04
Model R^2	.44**				.64**				.51**				.22**				.10*			
Indirect effect	**Effect**	***SE***	***LLCI***	***ULCI***	Effect	***SE***	***LLCI***	***ULCI***	**Effect**	***SE***	***LLCI***	***ULCI***	**Effect**	***SE***	***LLCI***	***ULCI***	**Effect**	***SE***	***LLCI***	***ULCI***
Workload on strain (*ab*)	.35	.11	.15	.59	.47	.15	.16	.77	.34	.11	.14	.57	−.20	.07	−.37	−.07	.12	.09	−.01	.37
K^2 for indirect effect	.23	.06	.11	.36	.29	.08	.11	.42	.24	.06	.10	.35	.16	.05	.06	.27	.05	.03	.01	.14
Moderated mediation																				
	Turnover intentions				**Emotional exhaustion**				**Depersonalization**				**Personal accomplishment**				**Injuries**			
Direct Effects	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***	**C**	***SE***	***t***	***p***
JRNA as DV																				
Constant	2.23	.06	36.32	<.001	2.23	.06	36.32	<.001	2.23	.06	36.32	<.001	2.23	.06	36.32	<.001	2.24	.06	36.40	<.001
Workload (a_1)	.25	.08	2.96	<.001	.25	.08	2.96	<.001	.25	.08	2.96	<.001	.25	.08	2.96	<.001	.23	.09	2.60	.01
Resilience (a_2)	.03	.07	.44	.66	.03	.07	.44	.66	.03	.07	.44	.66	.03	.07	.44	.66	.03	.07	.46	.65
Workload × Resilience (a_3)	−.05	.08	−.67	.50	−.05	.08	−.67	.50	−.05	.08	−.67	.50	−.05	.08	−.67	.50	−.06	.08	−.72	.47
Model R^2	.10*				.10*				.10*				.10*				.09*			
Job strain as DV																				
Constant	−.53	.37	−1.43	.16	−.65	.35	−1.87	.06	−.58	.33	−1.76	.08	7.23	.34	21.51	.00	.11	.70	.16	.87
JRNA (b_1)	1.34	.16	8.27	.00	1.79	.15	11.85	.00	1.31	.14	9.10	.00	−.75	.15	−5.13	.00	.50	.30	1.65	.10
Workload (c'_1)	−.06	.14	−.40	.69	.17	.13	1.35	.18	.12	.12	1.00	.32	.22	.12	1.81	.07	.55	.26	2.11	.04
Model R^2	.44**				.64**				.51**				.22**				.10*			

(Continues)

TABLE 4 (Continued)

Moderated mediation																			
	Turnover intentions				Emotional exhaustion				Depersonalization				Personal accomplishment				Injuries			
Conditional indirect effect	Effect	*SE*	*LLCI*	*ULCI*	Effect	*SE*	*LLCI*	*ULCI*	Effect	*SE*	*LLCI*	*ULCI*	Effect	*SE*	*LLCI*	*ULCI*	Effect	*SE*	*LLCI*	*ULCI*
Low resilience	.34	.14	.11	.54	.46	.18	.15	.72	.34	.14	.10	.52	−.19	.08	−.33	−.07	.12	.10	−.00	.32
Medium resilience	.33	.12	.12	.52	.44	.16	.13	.64	.32	.12	.10	.48	−.18	.08	−.30	−.06	.11	.09	−.00	.30
High resilience	.30	.16	.07	.60	.40	.22	.09	.80	.29	.16	.07	.57	−.17	.10	−.37	−.04	.10	.10	.00	.37
Index of moderated mediation	Index −.07	*SE* .27	*LLCI* −.60	*ULCI* .32	Index −.09	*SE* .38	*LLCI* −.78	*ULCI* .47	Index −.07	*SE* .27	*LLCI* −.57	*ULCI* .34	Index .04	*SE* .16	*LLCI* −.19	*ULCI* .33	Index −.03	*SE* .12	*LLCI* −.32	*ULCI* .09

N = 96–97. *$p < .05$. **$p < .01$. C = coefficient. *SE* = standard error. JRNA = job-related negative affect. DV = dependent variable. LLCI/ULCI = bias corrected lower/upper limit confidence intervals. K^2 = kappa squared. R^2 = proportion of variance accounted for in job outcomes by predictors. All analyses used 1,000 bootstrap samples.

well-being (Almost et al., 2016; Potter et al., 2013). In units where conflict is experienced more frequently and which pose highly stressful environments (e.g. psychiatric units; Adriaenssens, De Gucht, & Maes, 2012), resilience is likely to be more salient in buffering the nurses from the negative effects of workplace stress.

5 | CONCLUSION

The social context and workload demands of nurses give rise to important stressors. However, burnout, turnover intentions and physical injuries displayed differential relationships with conflict and workload. Furthermore, emotions mediated this conflict-outcome process. Our study also identified resilience an important condition of the stress process, such that negative emotions played a stronger mediating effect for nurses who were low in resilience.

AUTHOR CONTRIBUTIONS

All authors have agreed on the final version and meet at least one of the following criteria [recommended by the ICMJE (http://www.icmje.org/recommendations/)]:

- substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
- drafting the article or revising it critically for important intellectual content.

CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

REFERENCES

Aburn, G., Gott, M., & Hoare, K. (2016). What is resilience? An integrative review of the empirical literature. *Journal of Advanced Nursing*, *72*, 980–1000.

Adams, G. A., & Webster, J. R. (2012). Emotional regulation as a mediator between interpersonal mistreatment and distress. *European Journal of Work and Organizational Psychology*, *22*, 697–710.

Adriaenssens, J., De Gucht, V., & Maes, S. (2012). The impact of traumatic events on emergency room nurses: Findings from a questionnaire survey. *International Journal of Nursing Studies*, *49*(11), 1411–1422.

Adriaenssens, J., De Gucht, V., & Maes, S. (2015). Determinants and prevalence of burnout in emergency nurses: A systematic review of 25 years of research. *International Journal of Nursing Studies*, *52*, 649–661.

Adriaenssens, J., De Gucht, V., Van Der Doef, M., & Maes, S. (2011). Exploring the burden of emergency care: Predictors of stress-health outcomes in emergency nurses. *Journal of Advanced Nursing*, *67*, 1317–1328.

Alghamdi, M. G. (2016). Nursing workload: A concept analysis. *Journal of Nursing Management*, *24*, 449–457.

Almost, J. (2006). Conflict within nursing work environments: Concept analysis. *Journal of Advanced Nursing*, *53*, 444–453.

Almost, J., Wolff, A. C., Stewart-Pyne, A., McCormick, L. G., Strachan, D., & D'Souza, C. (2016). Managing and mitigating conflict in healthcare

teams: An integrative review. *Journal of Advanced Nursing*, *72*, 1490–1505.

American Nurses Association. (2011). ANA health and safety survey: Hazards of the RN work environment. [WWW document]. Retrieved from http://www.nursingworld.org/MainMenuCategories/WorkplaceSafety/Healthy-Work-Environment/Work-Environment/2011-HealthSafetySurvey.html [accessed on 6 April 2017].

Baltimore, J. J. (2006). Nurse collegiality: Fact or fiction? *Nursing Management*, *37*, 28–36.

Barki, H., & Hartwick, J. (2001). Interpersonal conflict and its management in information systems development. *MIS Quaterly*, *25*, 217–250.

Bigbee, J. L. (1991). The concept of hardiness as applied to rural nursing. In A. Bushy (Ed.), *Rural nursing* (pp. 39–59). London: Sage Publications.

BLS. (2015). *Occupational employment statistics and wages*. [WWW document]. Retrieved from https://www.bls.gov/oes/current/oes291141.htm [accessed on 2 March 2017].

BLS. (2016). *Nonfatal occupational injuries and illnesses requiring days away from work, 2015*. [WWW document]. Retrieved from http://www.bls.gov/news.release/pdf/osh2.pdf [accessed on 2 March 2017].

Brinkert, R. (2010). A literature review of conflict communication causes, costs, benefits and interventions in nursing. *Journal of Nursing Management*, *18*, 145–156.

Bruk-Lee, V., & Spector, P. E. (2012). Interpersonal conflict and stress at work: Implications for employee health and well-being. In A. M. Rossi, P. L. Perrewé, & J. A. Meurs (Eds.), *Coping and prevention* (pp. 3–22). Charlotte, NC: IAP Information Age Publishing.

Cammann, C., Fichman, M., Jenkins, G. D., & Klesh, J. R. (1983). The Michigan Organizational Assessment Questionnaire: Assessing the attitudes and perceptions of organizational members. In S. E. Seashore, E. E. Lawler, P. H. Mirvis, & C. Cammann (Eds.), *Assessing organizational change: A guide to methods, measures and practices* (pp. 71–138). New York: Wiley.

Chan, Z. C., Tam, W. S., Lung, M. K., Wong, W. Y., & Chau, C. W. (2013). A systematic literature review of nurse shortage and the intention to leave. *Journal of Nursing Management*, *21*, 605–613.

Clarke, S. P., Sloane, D. M., & Aiken, L. H. (2002). Effects of hospital staffing and organizational climate on needlestick injuries to nurses. *American Journal of Public Health*, *92*, 1115–1119.

Cohen, M., Village, J., Ostry, A. S., Ratner, P. A., & Cvitkovich, Y. (2004). Workload as a determinant of staff injury in intermediate care. *International Journal of Occupational and Environmental Health*, *10*, 375–383.

Cusack, L., Smith, M., Hegney, D., Rees, C. S., Breen, L. J., & Witt, R. R., … Cheung, K. (2016). Exploring environmental factors in nursing workplaces that promote psychological resilience: Constructing a unified theoretical model. *Frontiers in Psychology*, *7*(600), 1–8.

Dewe, P. J. (1987). Identifying the causes of nurses' stress: A survey of New Zealand nurses. *Work & Stress*, *1*, 15–24.

Dijkstra, M. T. M., De Dreu, C. K. W., Evers, A., & van Dierendonck, D. (2009). Passive responses to interpersonal conflict at work amplify employee strains. *European Journal of Work and Organizational Psychology*, *18*, 405–423.

Dugan, J., Lauer, E., Bouquot, Z., Dutro, B., Smith, M., & Widmeyer, G. (1996). Stressful nurses: The effect on patient outcomes. *Journal of Nursing Care Quality*, *10*(3), 46–58.

Fiksenbaum, L., Marjanovic, Z., Greenglass, E. R., & Coffey, S. (2006). Emotional exhaustion and state anger in nurses who worked during the SARS outbreak: The role of perceived threat and organizational support. *Canadian Journal of Community Mental Health*, *25*, 89–103.

Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology*, *2*, 300–319.

Fredrickson, B. L. (2004). Gratitude, like other positive emotions, broadens and builds. In R. A. Emmons, & M. E. McCullough (Eds.), *The psychology of gratitude* (pp. 145–166). New York: Oxford University Press.

Frone, M. R. (1998). Predictors of work injuries among employed adolescents. *Journal of Applied Psychology*, *83*, 565–576.

Gerardi, D. (2004). Using mediation techniques to manage conflict and create healthy work environments. *AACN Clinical Issues*, *15*, 182–195.

Gillespie, B. M., Chaboyer, W., Wallis, M., & Grimbeek, P. (2007). Resilience in the operating room: Developing and testing of a resilience model. *Journal of Advanced Nursing*, *59*, 427–438.

Glazer, S., & Gyurak, A. (2008). Sources of occupational stress among nurses in five countries. *International Journal of Intercultural Relations*, *32*, 49–66.

Gottlieb, B. H., Kelloway, E. K., & Martin-Matthews, A. (1996). Predictors of work-family conflict, stress and job satisfaction among nurses. *The Canadian Journal of Nursing Research = Revue Canadienne De Recherche En Sciences Infirmières*, *28*, 99–117.

Gray-Toft, P., & Anderson, J. G. (1981a). Stress among hospital nursing staff: Its causes and effects. *Social Science & Medicine*, *15A*, 639–647.

Gray-Toft, P., & Anderson, J. G. (1981b). The nursing stress scale. *The Journal of Behavioral Assessment*, *3*, 11–23.

Greenglass, E. R., Burke, R. J., & Moore, K. A. (2003). Reactions to increased workload: Effects on professional efficacy of nurses. *Applied Psychology*, *52*, 580–597.

Hart, P. L., Brannan, J. D., & De Chesnay, M. (2014). Resilience in nurses: An integrative review. *Journal of Nursing Management*, *22*, 720–734.

Hayes, J. (2008). Workplace conflict and how businesses can harness it to thrive [WWW document]. Retrieved from https://www.cpp.com/pdfs/CPP_Global_Human_Capital_Report_Workplace_Conflict.pdf [accessed on 2 March 2017].

Hayes, A. F. (2013). *Introduction to mediation, moderation and conditional process analysis*. New York: Guilford Press.

Hayes, A. F. (2015). An index and test of linear moderated mediation. *Multivariate Behavioral Research*, *50*, 1–22.

Hemingway, M. A., & Smith, C. S. (1999). Organizational climate and occupational stressors as predictors of withdrawal behaviours and injuries in nurses. *Journal of Occupational and Organizational Psychology*, *72*, 285–299.

Hillhouse, J. J., Adler, C. M., & Walters, D. N. (2000). A simple model of stress, burnout and symptomatology in medical residents: A longitudinal study. *Psychology, Health & Medicine*, *5*, 63–73.

Hodgson, C. (1982). Ambiguity and paradox in outpost nursing. *International Nursing Review*, *29*(108–11), 117.

Holden, R. J., Scanlon, M. C., Patel, N. R., Kaushal, R., Escoto, K. H., & Brown, R. L., … Karsh, B. T. (2011). A human factors framework and study of the effect of nursing workload on patient safety and employee quality of working life. *BMJ Quality & Safety*, *20*, 15–24.

Hu, T., Zhang, D., & Wang, J. (2015). A meta-analysis of the trait resilience and mental health. *Personality and Individual Differences*, *76*, 18–27.

Iverson, R. D., & Erwin, P. J. (1997). Predicting occupational injury: The role of affectivity. *Journal of Occupational and Organizational Psychology*, *70*, 113–128.

Juraschek, S. P., Zhang, X., Ranganathan, V., & Lin, V. W. (2012). United States registered nurse workforce report card and shortage forecast. *American Journal of Medical Quality*, *27*, 241–249.

Kiekkas, P., Sakellaropoulos, G. C., Brokalaki, H., Manolis, E., Samios, A., Skartsani, C., & Baltopoulos, G. I. (2008). Association between nursing workload and mortality of intensive care unit patients. *Journal of Nursing Scholarship*, *40*, 385–390.

Kuorinka, I., Jonsson, B., Kilbom, A., Vinterberg, H., Biering-Sørensen, F., Andersson, G., & Jørgensen, K. (1987). Standardised Nordic questionnaires for the analysis of musculoskeletal symptoms. *Applied Ergonomics*, *18*, 233–237.

Kutluturkan, S., Sozeri, E., Uysal, N., & Bay, F. (2016). Resilience and burnout status among nurses working in oncology. *Annals of General Psychiatry*, *15*(33), 1–9.

Lafer, G. (2005). Hospital speedups and the fiction of a nursing shortage. *Labor Studies Journal*, *30*, 27–46.

Lee, R. T., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, *81*, 123–133.

LeSergent, C. M., & Haney, C. J. (2005). Rural hospital nurse's stressors and coping strategies: A survey. *International Journal of Nursing Studies*, *42*, 315–324.

Lim, J., Bogossian, F., & Ahern, K. (2010). Stress and coping in Australian nurses: A systematic review. *International Nursing Review*, *57*, 22–31.

Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach burnout inventory* (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.

Masten, A. S., & O'Connor, M. J. (1989). Vulnerability, stress and resilience in the early development of a high risk child. *Journal of the American Academy of Child and Adolescent Psychiatry*, *28*, 274–278.

Menard, S. (2002). *Longitudinal research* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Morris, R., MacNeela, P., Scott, A., Treacy, P., & Hyde, A. (2007). Reconsidering the conceptualization of nursing workload: Literature review. *Journal of Advanced Nursing*, *57*, 463–471.

Needham, J. (1997). Accuracy in workload measurement: A fact or fallacy? *Journal of Nursing Management*, *5*, 83–87.

Nixon, A. E., Lanz, J. J., Manapragada, A., Bruk-Lee, V., Schantz, A., & Rodriguez, J. F. (2015). Nurse safety: How is safety climate related to affect and attitude? *Work & Stress*, *29*, 401–419.

Ong, A. D., Bergeman, C. S., Bisconti, T. L., & Wallace, K. (2006). Psychological resilience, positive emotions and successful adaptation to stress in later life. *Journal of Personality and Social Psychology*, *91*, 730–749.

Ong, A. D., Bergeman, C. S., & Boker, S. M. (2009). Resilience comes of age: Defining features in later adulthood. *Journal of Personality*, *77*, 1777–1804.

OSHA. (2001). *General Recording Criteria* (1904.7). [WWW document]. Retrieved from https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9638&p_table=STANDARDS [accessed on 6 April 2017].

Parkes, K. R. (1985). Stressful episodes reported by first-year student nurses: A descriptive account. *Social Science & Medicine*, *20*, 945–953.

Payne, N. (2001). Occupational stressors and coping as determinants of burnout in female hospice nurses. *Journal of Advanced Nursing*, *33*, 396–405.

Plutchik, R. (1989). *Measuring emotions and their derivatives*. San Diego, CA: Academic Press.

Podsakoff, P. M., MacKenzie, S. B., Lee, J., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*, 879–903.

Potter, P., Deshields, 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.

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

Preacher, K. J., & Kelley, K. (2011). Effect size measures for mediation models: Quantitative strategies for communicating indirect effects. *Psychological Methods*, *16*, 93–115.

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods and prescriptions. *Multivariate Behavioral Research*, *42*, 185–227.

Reyes, A. T., Andrusyszyn, M. A., Iwasiw, C., Forchuk, C., & Babenko-Mould, Y. (2015). Nursing students' understanding and enactment of resilience: A grounded theory study. *Journal of Advanced Nursing*, *71*, 2622–2633.

Rushton, C. H., Batcheller, J., Schroeder, K., & Donohue, P. (2015). Burnout and resilience among nurses practicing in high-intensity settings. *American Journal of Critical Care*, *24*, 412–420.

Shields, M. A., & Ward, M. (2001). Improving nurse retention in the National Health Service in England: The impact of job satisfaction on intentions to quit. *Journal of Health Economics*, *20*, 677–701.

Shrout, P., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Bulletin*, *7*, 422–445.

Sigal, J. J., & Weinfeld, M. (2001). Do children cope better than adults with potentially traumatic stress? A 40-year follow-up of Holocaust survivors. *Psychiatry*, *64*, 69–80.

Sinclair, R. R., Mohr, C. P., Davidson, S., Sears, L. E., Deese, M. N., & Wright, R. R., ... Cadiz, D. (2009). The Oregon Nurse Retention Project: Final Report to the Northwest Health Foundation [WWW document]. Retrieved from c.ymcdn.com/sites/www.oregonrn.org/resource/resmgr/imported/2010OregonNurseRetentionProjectReport.pdf [accessed on 6 April 2017].

Skovholt, T. M., & Trotter-Mathison, M. (2011). *The resilient practitioner: Burnout prevention and self-care strategies for counselors, therapists, teachers and health professionals* (2nd ed.). New York, NY: Routledge/Taylor & Francis Group.

Spector, P. E. (1998). A control theory of the job stress process. In C. Cooper (Ed.), *Theories of organizational stress* (pp. 153–169). London: Oxford University Press.

Spector, P. E., & Bruk-Lee, V. (2008). Conflict, health and well-being. In C. K. W. De Dreu, & M. J. Gelfand (Eds.), *The psychology of conflict and conflict management in organizations* (pp. 267–288). New York: Taylor & Francis Group.

Spector, P. E., Coulter, M. L., Stockwell, H. G., & Matz, M. W. (2007). Perceived violence climate: A new construct and its relationship to workplace physical violence and verbal aggression and their potential consequences. *Work and Stress*, *21*, 117–130.

Spector, P. E., & Goh, A. (2001). The role of emotions in the occupational stress process. In P. L. Perrewé, & D. C. Ganster (Eds.), *Exploring theoretical mechanisms and perspectives (research in occupational stress and well-being, Volume 1)* (pp. 195–232). Bingley: Emerald Group Publishing Limited.

Spector, P. E., & Jex, S. M. (1998). Development of four self-report measures of job stressors and strain: Interpersonal Conflict at Work Scale, Organizational Constraints Scale, Quantitative Workload Inventory and Physical Symptoms Inventory. *Journal of Occupational Health Psychology*, *3*, 356–367.

Stobbe, T. J., Plummer, R. W., Jensen, R. C., & Attfield, M. D. (1988). Incidence of low back injuries among nursing personnel as a function of patient lifting frequency. *Journal of Safety Research*, *19*, 21–28.

Tugade, M. M., & Fredrickson, B. L. (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality and Social Psychology*, *86*, 320–333.

Van Bogaert, P., Clarke, S., Willems, R., & Mondelaers, M. (2012). Nurse practice environment, workload, burnout, job outcomes and quality of care in psychiatric hospitals: A structural equation model approach. *Journal of Advanced Nursing*, *69*, 1515–1524.

Van Katwyk, P. T., Fox, S., Spector, P. E., & Kelloway, E. K. (2000). Using the Job-Related Affective Well-Being Scale (JAWS) to investigate affective responses to work stressors. *Journal of Occupational Health Psychology*, *5*, 219–230.

Vanhove, A. J., Herian, M. N., Perez, A. L., Harms, P. D., & Lester, P. B. (2016). Can resilience be developed at work? A meta-analytic review of resilience-building programme effectiveness. *Journal of Occupational and Organizational Psychology*, *89*, 278–307.

Vieira, E. R., Kumar, S., Coury, H. G., & Narayan, Y. (2006). Low back problems and possible improvements in nursing jobs. *Journal of Advanced Nursing*, *55*, 79–89.

Wagnild, G. M. (2011). *The resilience scale user's guide: For the US English version of the Resilience Scale and the 14-item Resilience Scale (RS-14)*. P. E. Guinn (Ed.). Worden, MT: The Resilience Center.

Waldman, J. D., Kelly, F., Aurora, S., & Smith, H. L. (2004). The shocking cost of turnover in health care. *Healthcare Management Review*, *29*, 2–7.

Warelow, P., & Edward, K. (2007). Caring as a resilient practice in mental health nursing. *International Journal of Mental Health Nursing*, *16*, 132–135.

Westermann, C., Kozak, A., Harling, M., & Nienhaus, A. (2014). Burnout intervention studies for inpatient elderly care nursing staff: Systematic literature review. *International Journal of Nursing Studies*, *51*, 63–71.

White, E. (2010). The elephant in the room: Huge rates of nursing and healthcare worker injury. *New Hampshire Nursing News*, *34*(3), 18. [WWW document]. Retrieved from http://nursingald.com/uploads/publication/pdf/422/NH7_10.pdf [accessed on 6 April 2017].

Wright, R. R., Mohr, C. D., & Sinclair, R. R. (2014). Conflict on the treatment floor: An investigation of interpersonal conflict experienced by nurses. *Journal of Research in Nursing*, *19*, 26–37.

How to cite this article: Lanz JJ, Bruk-Lee V. Resilience as a moderator of the indirect effects of conflict and workload on job outcomes among nurses. *J Adv Nurs*. 2017;73:2973–2986. https://doi.org/10.1111/jan.13383