Surviving an infectious disease outbreak: How does nurse calling influence performance during the COVID - 19 fight?

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Abstract

Aim: To assess the performance of frontline nurses, who believed they were living out their calling, during the Coronavirus Disease 2019 (COVID-19) pandemic.

Background: Although as a profession nursing generally requires high levels of performance, the disruption arising from an infectious disease outbreak increases the work stress and decreases the performance of frontline nurses. How this situation can be improved has yet to be thoroughly examined.

Method: We used a snowball sampling technique to recruit 339 nurses who were originally from outside of Hubei but volunteered to join medical teams going to Hubei to tackle COVID-19.

Results: Drawing on the theory of work as a calling, we found that living a calling had a positive effect on frontline nurses' performance through the clinical and relational care they provided. Perceived supervisor support strengthened these mediated relationships.

Conclusion: Our findings indicate that despite the constraints associated with pandemics, frontline nurses who are living a calling are able to provide better clinical and relational care to infected patients, which in turn improves their performance.

Implications for Nursing Management: The findings of this study suggest that hospitals can introduce career education interventions to enhance nurses' ability to discern and live out their calling to improve their performance.

Keywords*: living a calling, COVID-19, perceived supervisor support, nursing performance, caring

1 | INTRODUCTION

Infectious disease outbreaks have recently become more common worldwide (Lam et al., 2018), such as the outbreaks of the Ebola virus disease (Chertow et al., 2014), severe acute respiratory syndrome (SARS), and the Middle East respiratory syndrome (Lam et al., 2018). The World Health Organization has confirmed a new pathogen, SARS-CoV-2, which causes a novel pneumonia called Coronavirus Disease 2019 (COVID-19; Mo et al., 2020). Medical personnel are in great demand during infectious disease outbreaks. Given that nurses constitute the largest human resource component in healthcare organizations, their services are often those in greatest demand in such situations (Al-Ahmadi, 2009; Baack & Alfred, 2013).

Nursing performance is defined as nurses' level of effectiveness in meeting their employers' goal of providing excellent patient care (Brady & Cummings, 2010). A high performing nurse pays attention to patients' physical and mental needs, masters technological skills, communicates effectively with colleagues, patients, and patients' family members, and handles multiple tasks properly (Cho & Han, 2018; Pai et al., 2017). As nursing performance is vital to quality patient care and safety, researchers have shown great interest in how to improve nursing performance (Amarat et al., 2019; Terzioglu et al., 2016). Unfortunately, as infectious disease outbreaks are unplanned, they are impossible or very difficult to prepare for. Several studies have articulated the enormous challenges such outbreaks bring (Fauci & Morens, 2012; Lam et al., 2018), such as the heavy workload on nursing staff (Alghamdi, 2016), the necessity for nurses to acquire the knowledge and skills required to handle new diseases (Liu & Liehr, 2009), and the elevated risk of infection for frontline nurses (Shih et al., 2009).

How do we maintain or even improve nursing performance in such critical situations? Recent management research has shown that employees who perceive their jobs as a calling are

resilient in the face of adversity (Praskova et al., 2014; Thompson & Bunderson, 2019). As such, we draw on work as calling theory (WCT; Duffy et al., 2018) and argue that frontline nurses who perceive themselves as living a calling through their nursing jobs are likely to demonstrate increased levels of nursing performance during the COVID-19 outbreak. A calling is defined as work that a person believes is inseparable from his/her life and that provides fulfillment (Wrzesniewski et al., 1997). Living a calling involves being engaged in activities or work that meet this calling (Duffy & Autin, 2013). Nurses who believe they are living a calling are likely to exhibit greater work effort and caring ability toward their patients (Praskova et al., 2014). Such nurses may view their profession as their responsibility to public service rather than a mere job (Koh et al., 2012). They may also be more willing to comply with infection control protocols (Qureshi et al., 2013) and less likely to compromise on their professional nursing values and integrity (Lam et al., 2018; Schluter et al., 2008). These characteristics are very important to the performance of frontline nurses in times of adversity, such as infectious disease outbreaks.

We further argue that frontline nurses who believe that they are living a calling through their work demonstrate high levels of nursing performance, that this positive effect is mediated by their clinical and relational caring abilities (Cossette et al., 2006), and that these indirect effects are conditional on the level of perceived supervisor support (PSS) that they receive (Eisenberger et al., 2002). Thus, frontline nurses who are living their calling are likely to exert more effort and show higher persistence when faced with the difficulties of COVID-19 (Thompson & Bunderson, 2019). Living a calling also makes frontline nurses conscious of their duties, leading to high clinical and relational care (Al-Hamdan et al., 2017) and subsequently to higher nursing performance. Lastly, we argue that the indirect effect of living a calling on nursing performance is influenced by the extent to which leaders value subordinates'

contributions (i.e., PSS; cf. Eisenberger et al., 2002). A high level of PSS makes nurses more

obligated to their work, thereby improving nursing performance. Considering that infectious

disease outbreaks have become prevalent worldwide, it is important to examine the factors that

can ensure that nursing performance remains high even in such trying times. Thus, examining the

effect of living a calling on the nursing performance of frontline nurses fighting against COVID-

19 and the underlying mechanism and boundary condition is both relevant and timely.

By examining these relationships, we make two main contributions to the nursing

management literature. First, we extend the theoretical perspective of WCT (Duffy et al., 2018)

from the fields of organizational behavior and counseling psychology to nursing management by

examining a unique group of nurses: those who took part in the fight against COVID-19. Second,

we propose that living a calling through work is a precursor for improved nursing performance

during critical situations, such as infectious disease outbreaks. It can determine nurses' level of

preparedness when responding to an epidemic event and is therefore significant (Lam et al.,

2018). Our theoretical model is shown in Figure 1.

Insert Figure 1 About Here

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2 | THEORY AND HYPOTHESIS DEVELOPMENT

2.1 | Living a calling and nursing performance

WCT (Duffy et al., 2018) conceptualizes a calling as involving three overlapping components: (a)

"a transcendent summons, experienced as originating beyond the self," (b) approaching "a

particular life role in a manner oriented toward demonstrating or deriving a sense of purpose or

meaningfulness," and (c) holding "other-oriented values and goals as primary sources of

motivation" (p. 425). The first component represents the extent to which a person perceives

his/her calling to a particular job to have come from an external source, the second represents the

extent to which the work is perceived as achieving a particular purpose and meaning in life (Dik

& Duffy, 2009), and the third represents the extent to which such work is perceived as a direct or

indirect contribution to the greater good of society.

Living a calling has a positive effect on task performance across several occupations. For

instance, in a sample of teachers, Rawat and Nadavulakere (2015) found that living a calling

influenced performance. Among the staff members of a church, Kim et al. (2018) also found that

living a calling was positively related to performance. The positive effect of living a calling on

performance has also been found in other samples, including NGO employees (Kim et al., 2018;

Lee et al., 2018). These favorable consequences of living a calling have been attributed to the

fact that it makes people self-motivated and ready to exert effort to achieve good performance

(Kim et al., 2018). Despite these important findings, the influence of living a calling has yet to be

explored in the nursing literature. We argue that the extent to which health organization goals in

a pandemic are achieved depends on the effective services frontline nurses provide to infected

patients, which are largely influenced by their effort and persistence when facing difficulties

(Thompson & Bunderson, 2019). Thus, frontline nurses who believe their nursing work during

the fight against COVID-19 meets their calling (Duffy & Autin, 2013) are likely to demonstrate

high levels of nursing performance.

H1: Living a calling has a positive effect on nursing performance.

2.2 | The mediating role of clinical and relational care

Caring is at the core of the nursing profession, with nurses often described as professional

caregivers (Simmons & Cavanaugh, 2000). Professional caregiving involves the deliberate goals

and processes of professionals in providing assistance to others to support their well-being and alleviate undue discomfort (Leininger, 1981). Cossette et al. (2006) identified the four caring dimensions of humanistic, relational, clinical, and comforting care. We focus on clinical and relational care as the two dominant dimensions (Cossette et al., 2006) in analyzing the mechanism through which living a calling influences frontline nurses' performance.

The clinical care given by nurses is the expertise required for clinical assessment and monitoring and for treatment and symptom management. Relational care involves nurses respecting patients' perceptions and assisting them in coming to terms with their health situations (Watson, 2008). Although caring is always an important component of a nurse's job, it becomes particularly important during infectious disease outbreaks (Chung et al., 2005). In an epidemic situation, nurses who can offer high levels of clinical and relational care are likely to perform well in their jobs, as such situations often involve nurses being frequently assigned new roles that may be beyond the scope of their usual clinical practice (Gebbie & Qureshi, 2002). Liu and Liehr (2009) found that clinical knowledge of infectious diseases led to improved service delivery during the SARS outbreak. Similarly, nurses' relational care behavior has been found to improve communication with critically ill patients (Expósito et al., 2018), thereby helping to improve the services delivered. Frontline nurses' ability to accomplish work goals, meet job expectations, and achieve organizational goals is affected by their ability to deliver clinical and relational care to infected patients (Al-Hamdan et al., 2017). Being able to provide such clinical and relational care has a direct effect on infected patients' experience and health outcomes and determines the nursing performance of frontline nurses (Henderson & Prescott, 2020; Lee & Ko, 2010).

To effectively utilize their clinical and relational care abilities, nurses must first believe that the activities in which they are engaging fulfill a personal need or contribute to the greater

good of society. Thus, we argue that living a calling can have a positive influence on nurses'

clinical and relational care abilities. Research suggests that those who believe they are living a

calling have clarity about themselves and their career choices (Thompson & Bunderson, 2019).

As such, nurses who are living a calling are continually aware of their career choices and are

willing to seek knowledge when faced with novel situations, such as the COVID-19 pandemic

(Dobrow & Tosti-Kharas, 2011). They may also exhibit the relational behavior necessary for

improved service delivery. Thus, we argue that clinical and relational care are the mechanisms

through which living a calling influences nursing performance.

      H2: Clinical care mediates the positive relationship between living a calling and nursing

performance.

      H3: Relational care mediates the positive relationship between living a calling and

nursing performance.

2.3 | The moderating role of perceived supervisor support

As the nurse-patient ratio increases during an epidemic, frontline nurses are frequently assigned

new roles, duties, and responsibilities with which they may not be familiar (Gebbie & Qureshi,

2002). They may also be required to make crucial decisions concerning infection control, triage,

and the treatment of infected patients. PSS is the extent to which a supervisor appears to value

his/her subordinates' contributions (Eisenberger et al., 2002). PSS may be important in

determining how frontline nurses conduct their clinical and relational care duties during an

epidemic. Supervisors act as the agents of an organization and are responsible for directing and

evaluating subordinates' performance (Shanock & Eisenberger, 2006). Research has shown that

under high levels of PSS, employees feel obligated to help their organization achieve its

objectives and may engage in extra role behaviors, such as helping colleagues (Eisenberger et al., 2001).

We argue that under high levels of PSS, frontline nurses will treat infected patients better, help other nurses when their workloads increase, and assist colleagues with their duties. When PSS levels are high, nurses also perceive that their supervisors treat them favorably (Shanock & Eisenberger, 2006). This positive treatment is likely to have a trickle-down effect on infected patients. However, under low levels of PSS, nurses perceive their treatment by supervisors as unfavorable. The associated perception of negative treatment may similarly be transferred to patients. Thus, under high levels of PSS, we expect the positive effect of living a calling on clinical and relational care to be stronger than when PSS levels are low.

H4: PSS strengthens the positive relationship between living a calling and clinical care.

H5: PSS strengthens the positive relationship between living a calling and relational care.

By linking the mediating effects of clinical and relational care (H2 and H3) to the moderating effects of PSS (H4 and H5), we propose the following moderated mediation effects:

H6: PSS moderates the positive relationship between living a calling and nursing performance through clinical care, such that the relationship is stronger when PSS is high.

H7: PSS moderates the positive relationship between living a calling and nursing performance through relational care, such that the relationship is stronger when PSS is high.

3 | METHOD

3.1 | Study design

This study was designed to examine the effect of living a calling on frontline nurses' performance during the fight against COVID-19. The study was conducted in China among

frontline nurses who were involved in the fight against COVID-19 in Hubei. We used a

descriptive, cross‑sectional and survey design.

3.2 | Participants

The author team used a snowball sampling technique to recruit nurses who were originally from

outside Hubei but who had joined medical teams going to Hubei to tackle COVID-19. Thus, they

had all been on the medical front line and treated patients with COVID-19. Their participation

was voluntary and their confidentiality was ensured. Approximately 400 nurses were invited to

participate in this study and ultimately 345 surveys were received. Six surveys with incomplete

data were removed, yielding an effective response rate of 84.75%.

3.3 | Measures

The surveys were initially written in English and translated into Chinese, in accordance with

Brislin's (1986) back-translation procedure. Specifically, all translators were blind to the study's

hypotheses, and two bilingual individuals independently translated the survey from English into

Chinese. These two individuals discussed and solved any conflicts between their translations; a

third person then translated the survey back into English. For all of the measures, the participants

were instructed to recall their work attitudes or performance during the COVID-19 fight in Hubei.

3.3.1. | Living a calling

Living a calling was measured using a six-item scale adapted from Duffy et al. (2012).

The following instruction was used: "During the COVID-19 fight in Hubei…" An example item

is, "I was working in a job that closely aligns with my calling" (1 = *strongly disagree* to 7 =

strongly agree; α = .91).

3.3.2. | Clinical care

Clinical care was assessed using the nine-item clinical care subdimension of the Caring Nurse-Patient Interaction Scale (Cossette et al., 2006). The nurses were asked to complete the following sentence: "When providing care for patients with COVID-19 in Hubei…" An example item is, "I knew how to operate specialized equipment (e.g., pumps, monitors, etc.)" (1 = *strongly disagree* to 7 = *strongly agree*; α = .94).

3.3.3. | Relational care

Relational care was measured using the seven-item relational care subdimension of the Caring Nurse-Patient Interaction Scale (Cossette et al., 2006). The following instruction was used: "When providing care for patients with COVID-19 in Hubei…" An example item is, "I helped patients to look for a certain equilibrium/balance in their lives" (1 = *strongly disagree* to 7 = *strongly agree*; α = .95).

3.3.4. | PSS

PSS was assessed using a nine-item measure adapted from Wayne et al. (1997). The nurses were asked to complete the following sentence: "During the COVID-19 fight in Hubei…" An example item is, "My supervisor cared about my general satisfaction at work" (1 = *strongly disagree* to 7 = *strongly agree*; α = .98).

3.3.5. | Nursing performance

Nursing performance was measured using a seven-item measure adapted from Fitzpatrick et al. (1997). The following stem was used: "Please evaluate your performance during the COVID-19 fight in Hubei." An example item is, "Attention to patients' activity in accordance with their current and potential health status" (1 = *unsatisfactory* to 5 = *superior*; α = .95).

3.3.6. | Control Variables

Previous research (Terzioglu et al., 2016; Walpita & Arambepola, 2020) has suggested

that age, sex, and nursing tenure are associated with nursing performance. As such, these factors

were controlled for. Age and nursing tenure were measured in years, and sex was measured as

female = 0 and male = 1. In addition, work meaning (Ghislieri et al., 2019) was controlled to

avoid confounding the mediation results. Meaningful work was measured using a 10-item scale

(Steger et al., 2012) scored on a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*;

$\alpha = .97$).

3.4 | Data collection

In early April 2020, data were collected through a Chinese online survey system. At this time, all

of the nurses who had gone to Hubei from other provinces had finished their missions and were

either quarantined in Hubei or their home cities. The survey information was sent to several head

nurses who had led medical teams to Hubei, who forwarded it to all of the nurses on their teams

using the most popular instant messenger smartphone application in China. The participants

could access the survey using a web link or a Quick Response code. The purpose, anonymity,

and confidentiality of the online survey were first briefly introduced, and consent was obtained

by asking the participants whether they agreed to participate. If the response was negative, the

survey ended immediately. Although head nurses helped with sample recruitment, participation

was voluntary, and the participants were at liberty to stop the survey at any time. Ethical

approval for this study was obtained from the first author's institute.

3.5. | Data analysis

We used the Statistical Package for Social Science (SPSS) version 25.0 software (IBM Corp.,

2017) for descriptive, correlation, and regression analysis. To test our Hypotheses, we used the

PROCESS macro software package (Hayes, 2013). The seven hypotheses were analyzed using

Model 7 of the PROCESS macro. This allowed us to examine our direct, mediation, and

moderation Hypotheses in one model simultaneously.

4 | RESULTS

The personal and work characteristics of the study participants are presented in Table 1. Their

average age was 32.32 years, 76.70% were female, their average nursing experience was 9.27

years, and all had completed an associate degree or above.

Insert Table 1 About Here

The means, standard deviations, reliabilities, and correlations of the variables are shown

in Table 2. Model 7 of the PROCESS macro (Hayes, 2013) was used for the substantive analyses.

The results are presented in Table 3. H1 proposes that living a calling has a positive effect on

nursing performance. Results show that living a calling was not significantly related to nursing

performance ($B = .05$, $p > .10$). Thus, H1 was not supported. Results also revealed that living a

calling was significantly related to clinical care ($B = .60$, $p < .01$) and relational care ($B = .57$, $p

< .01$). Clinical care ($B = .16$, $p < .01$) and relational care ($B = .11$, $p < .01$) were also

significantly related to nursing performance. H2 and H3 state that clinical care and relational

care each mediate the positive relationship between living a calling and nursing performance. As

shown in Table 4, clinical care (indirect effect = .10, 95% bias-corrected confidence interval [BC

CI] = [.001, .208]) and relational care (indirect effect = .08, 95% BC CI = [.018, .149]) both

mediated the relationship between living a calling and nursing performance. The BC CIs were

calculated with 5,000 bootstrap samples. Thus, H2 and H3 were supported.

Insert Tables 2–4 About Here

H4 proposes that PSS strengthen the positive relationship between living a calling and clinical care, H5 proposed that PSS would strengthen the positive relationship between living a calling and relational care. As shown in Table 3, statistically significant interactions were found between PSS and living a calling on clinical care ($B = .11$, $p < .01$) and relational care ($B = .14$, $p < .01$). Thus, H4 and H5 were supported. These interaction effects are plotted in Figure 2 at high and low values of PSS, defined as 1 standard deviation above and below the mean value, respectively (Cohen et al., 2003).

Insert Figure 2 About Here

H6 proposes that PSS moderates the indirect relationship between living a calling and nursing performance through clinical care. As shown in Table 4, the index of moderated mediation (Hayes, 2015)—that is, the product term of the interaction effect between PSS and living a calling on clinical care and the direct effect of clinical care on nursing performance—was statistically significant (index = .02, 95% BC CI = [.001, .054]). Thus, H6 was supported. H7 proposes that PSS moderates the indirect relationship between living a calling and nursing performance through relational care. The conditional indirect effect of living a calling on nursing performance through relational care was statistically significant (index = .02, 95% BC CI = [.001, .044]). Thus, H7 was also supported.

5 | DISCUSSION

In this study, we used a moderated mediation model to examine the effect of living a calling on

nursing performance during the fight against COVID-19 via clinical care and relational care.

Using Model 7 of the SPSS PROCESS macro, the analyses revealed evidence that strongly

supported our hypotheses. Living a calling had a positive indirect relationship with nursing

performance through clinical and relational care. PSS moderated the direct relationships of living

a calling on both clinical care and relational care as well as the positive indirect effects of living

a calling on nursing performance. These findings may have important implications for nurses.

First, our study provides theoretical clarification of and empirical evidence for

understanding how and when living out a calling affects nursing performance during the fight

against COVID-19. Considering that nursing performance is vital to quality patient care and

safety (Terzioglu et al., 2016), it is important to examine the factors that lead to high nursing

performance. Although infectious disease outbreaks present enormous challenges (Fauci &

Morens, 2012), our study found that frontline nurses who live out their calling in their work

performed effectively during such outbreaks. This extends the research on living a calling, which

has focused mostly on stable environments (Cardador et al., 2011; Duffy et al., 2011; Yim &

Fock, 2013).

In addition, our study extends the nomological network of living a calling by

demonstrating its associations with nurses' caring abilities. In particular, we demonstrate the

associations between living a calling and clinical and relational care, which have not been

previously hypothesized or shown. This finding is not surprising, because caring is central to the

nursing profession (Simmons & Cavanaugh, 2000) and even more important during infectious

disease outbreaks. Nurses with intense callings push themselves to provide clinical and relational

care, which are two important caring abilities that determine their performance (Feo et al., 2020).

Quality clinical and relational care also improves patient satisfaction (Calong & Soriano, 2018).

Our finding that PSS strengthens the relationships between living a calling and clinical

and relational care is also important. Frontline nurses who believe they are living a calling in

their nursing profession are likely to be engaged in activities such as clinical and relational care

(Cardador et al., 2011; Duffy et al., 2011). We found the effect to be stronger when nurses

perceive adequate support from their supervisors. When supervisors show that they care about

and value their frontline nurses, they initiate social exchange processes, which instill a sense of

obligation among subordinates and motivate them to reciprocate (Goussinsky & Livne, 2016;

Sarwar et al., 2020). In an outbreak situation, such an obligation to reciprocate may be expressed

by exhibiting a high degree of clinical and relational care for infected patients (Lam et al., 2018).

Thus, frontline nurses who perceive favorable treatment from their supervisors (Shanock &

Eisenberger, 2006) are likely to pass on the same treatment to their patients.

5.1 | Implications for nursing management

As COVID-19 has shown, infectious disease outbreaks can be intense and long-lasting.

As such, it is important for nurse managers to recruit individuals who believe they have a

mission and calling to fulfill. Training such people to be nurses is easier; and when they are

deployed, they will be willing to make sacrifices and work long hours to succeed, despite any

obstacles they encounter. Therefore, surveys measuring calling values should be administered

when nurses are being recruited. For frontline nurses who are already employed, intervention

programs could be developed to enhance the meaning they attach to their nursing job to help

them live their calling (Duffy & Dik, 2013). Career development workshops and career

education interventions could be established to enhance nurses' ability to discern and live out

their calling (Dik & Steger, 2008; Duffy & Dik, 2013) and to improve their performance. Studies have found that when employees are satisfied with their jobs (Thompson & Bunderson, 2019), have higher vocational self-clarity (Dik & Duffy, 2009), and are free to make career choices (work volition; Dik & Duffy, 2009), they are able to live out their calling. As such, we suggest that by reducing nurses' burnout (Jager et al., 2017), giving them autonomy, and making them happy with their job, nurse managers can increase nurses' ability to discern and live out their calling. Last, our results showed that leaders were essential in outbreak situations, as PSS enhanced the indirect relationship between living a calling and nursing performance through clinical and relational care. Therefore, supervisors should receive ongoing training so they can support nurses in trying times.

5.2 | Limitations and directions for future research

We used a cross-sectional study design. Thus, we cannot draw any conclusions about a causal relationship between living a calling and nursing performance. In addition, the data collection process was based on self-reporting. In future research, a longitudinal and multiple source design should be applied to test our model. Finally, although participation in the study was voluntary, head nurses were involved in the sample recruitment, raising concerns about convenient sampling. This should be addressed in future studies.

5.3 | Conclusion

Infectious disease outbreaks have become prevalent worldwide in recent times. Although nursing requires high levels of performance, outbreaks such as COVID-19 bring daunting challenges that can increase stress levels and decrease the performance of frontline nurses. Drawing on WCT, we show that the frontline nurses who perceive themselves as living a calling in their jobs

exhibited superior nursing performance during the COVID-19 outbreak through the mediating effects of clinical and relational care.

6 | ETHICAL APPROVAL

The present study was approved by the Medical Ethics Committee at Sir Run Run Shaw Hospital, School of Medicine, Zhejiang University (approval number: Research 20200522-30).

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TABLE 1

Personal and work-related characteristics

Variable	Mean (SD)	N (%)
Gender		
Female		260 (76.70)
Male		79 (.23.30)
Age	32.32 (7.25)	
Tenure	9.27 (6.94)	
Marital status		
Unmarried		105 (31.00)
Married		234 (69.00)
Parenthood		
Nonparent		125 (36.90)
Parent		214 (63.10)

Note. $N = 339$.

TABLE 2

Descriptive statistics, reliabilities, and correlations

	Range	Mean	SD	1	2	3	4	5	6	7	8	9
1. Age	18–60	32.32	7.25	1								
2. Sex [a]	0–1	0.23	.42	.08	1							
3. Nurse tenure	1–36	9.27	6.94	.84**	.00	1						
4. Work meaning	1–7	6.24	.94	.11*	.14*	.06	.97					
Focal variables												
5. Living a calling	1–7	6.48	.70	.08	.00	.08	.66**	.91				
6. Clinical care	1–7	6.58	.59	.11	-.07	.16**	.53**	.75**	.94			
7. Relational care	1–7	6.42	.75	.14*	.02	.13*	.62**	.67**	.79**	.95		
8. Perceived supervisor support	1–7	6.25	.96	.07	.09	.06	.69**	.69**	.59**	.62**	.98	
9. Nursing performance	1–5	4.65	.47	.14*	.08	.12*	.72**	.65**	.64**	.67**	.62**	.95

Note. N = 339. Cronbach's alpha coefficients are shown in boldface on the diagonal.

[a] Sex: 1 = male; 0 = female.

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

TABLE 3

Moderated mediation path model

	Clinical care	Relational care	Work meaning	Nursing performance
Control variables				
Age	-.01* (.01)	.003 (.01)	.01 (.01)	.002 (.004)
Sex	-.10* (.05)	-.003 (.07)	.20* (.08)	.03 (.04)
Nurse tenure	.02** (.01)	.01 (.01)	-.01 (.01)	.00 (.004)
Independent variable				
Living a calling	.60** (.05)	.57** (.06)	.60** (.08)	.05 (.04)
Mediators				
Clinical care				.16** (.05)
Relational care				.11** (.04)
Work meaning				.22** (.02)
Moderating effects				
Perceived supervisor support (PSS)	.11** (.03)	.25** (.05)	.44** (.05)	
Living a calling X PSS	.11** (.04)	.14** (.04)	.18** (.06)	
R^2	.60	.51	.56	.62

Note. $N = 339$. Unstandardized regression coefficients are reported with standard errors in parentheses.

The coding of the dummy variables is presented in Table 1.

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

TABLE 4

Mediation and moderated mediation effects

	Indirect effects (SE)	95% BC CI
Mediation effects		
Living a calling → Clinical care → Nursing performance	.10 (.05)	.001, .208
Living a calling → Relational care → Nursing performance	.08 (.03)	.018, .149
Moderated mediation effects		
Living a calling → Clinical care → Nursing performance		
Moderated mediation index	.02 (.01)	.001, .054
Perceived supervisor support (low)	.08 (.04)	.001, .175
Perceived supervisor support (high)	.11 (.05)	.005, .221
Living a calling → Relational care → Nursing performance		
Moderated mediation index	.02 (.01)	.001, .044
Perceived supervisor support (low)	.05 (.02)	.012, .107
Perceived supervisor support (high)	.07 (.03)	.020, .159

Note. $N = 339$. Unstandardized regression coefficients are reported, with standard errors in

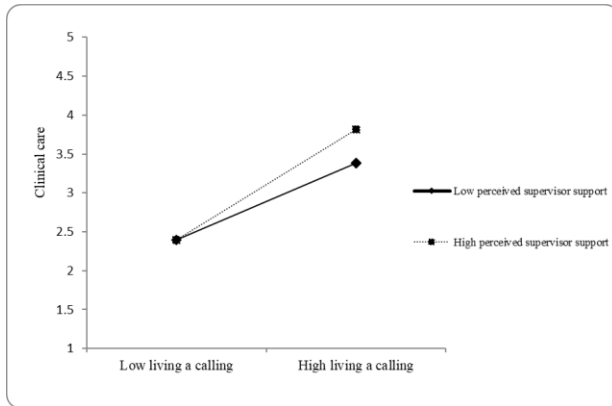parentheses. Bootstrap sample size = 5,000.

FIGURE 1

Conceptual model
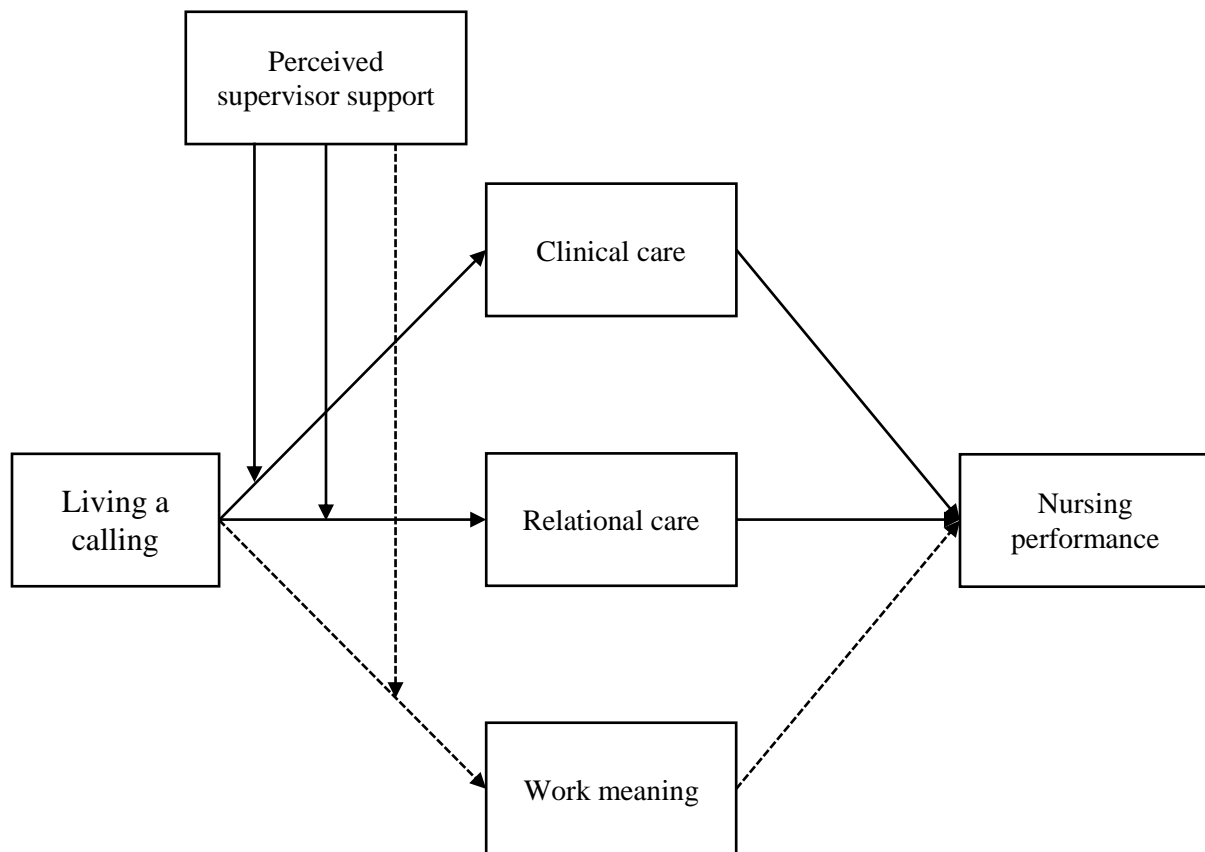
Note. Age, sex, and nursing tenure are included as demographic controls. Work meaning is

included as a control mediator.

FIGURE 2a

 The interaction effect of living a calling and perceived supervisor support on clinical care

FIGURE 2b

The interaction effect of living a calling and perceived supervisor support on relational care