

New Graduate Nurses' Professional Identification Awakened During COVID-19: A Dynamic Perspective of Identity Construction

Abstract

Although the COVID-19 pandemic has put health-care employees, especially nurses, under tremendous pressure, it may provide these workers with a chance to reassess their professional identification and break the “hangover” effect in socialization. Drawing on an identity construction process perspective, we explore the trajectory of professional identification among new graduate nurses, and propose that since the COVID-19 outbreak, new graduate nurses' professional identification increases. Furthermore, the increased professional identification is positively related to both sensegiving, as a top-down process, and moral elevation, as a bottom-up process of identity construction via work meaningfulness. Using nine-wave longitudinal data (five waves before and four after the COVID-19 outbreak) from 322 new graduate nurses at a public hospital in China, we conducted discontinuous growth modeling (DGM) analyses to test our hypotheses. We found that new graduate nurses' professional identification gradually fell during the initial months into professional practice (hangover effect), but rose significantly after the onset of COVID-19. Sensegiving and moral elevation, mediated by work meaningfulness, were positively associated with this increase in professional identification. Our findings shed light on professional identification dynamics in the crisis context and the disruptive socialization processes to overcome the hangover effect.

Keywords: COVID-19; professional identification; health-care workers; discontinuous growth model

Human beings are now fighting a big war against the COVID-19 pandemic. At the frontline of the battlefield are essential professionals like doctors, nurses, and public safety officers (Rudolph & Zacher, 2020), whose work determines the life or death of millions of people (World Health Organization, 2020) but meanwhile exposes them to considerably high risks (Maben & Bridges, 2020). Being in the spotlight of such crises, these professionals are not only fighting against the pandemic to save others' lives, but also wrestling with themselves in the search of who they are and what are the right things to do (Ashforth, 2020; Jeffrey, 2020). Such profession-spotlighting events might substantially change their visceral sense of what it means to be workers in those professions (Ashforth et al., 2013), or *professional identification* (defined as employees' sense of oneness with their professions, Hekman et al., 2009). For example, during the pandemic, although some nurses included in a small-sample interview reported to have a stronger professional identity during the pandemic (Sun et al., 2020), some anecdotal reports revealed that some others doubted their original choice of profession and even quit it (Ali, 2020). Ashforth (2020:3) commented that "nothing, after all, reveals identity more than how an actor chooses to respond to a painful crisis."

Nevertheless, our understanding of the dynamics of professional identification in the crisis context remains limited, which is unfortunate for two reasons. First, research has suggested that individuals are increasingly committed to their occupations and professions (Anteby et al., 2016) and tend to identify more strongly with their occupations than organizations (Ashforth et al., 2013; Johnson et al., 2006). Moreover, professional identification is consequential in shaping individual work attitudes and behaviors (Anteby et al., 2016; Ashforth et al., 2013; Dierdorff, 2019; Lee et al., 2000). Previous organization research, however, has mainly focused on organizational identification but neglected professional identification for a long time (Ashforth et al., 2013; Dierdorff, 2019). Given its

rising salience, it is crucial for us to explore what factors influence professional identification. Second, profession-spotlighting events, which call for certain professions to put themselves forward to resolve public crisis despite of high risks, provide a golden opportunity to examine the changes of professional identification (Ashforth, 2020). Although some theoretical discussions suggest that the formation of professional identification is a dynamic and ongoing process (Ashforth et al., 2008; Caza et al., 2018; Miscenko & Day, 2016), the field has yet to systematically examine how it waxes and wanes before, during, and after critical events. With little knowledge about how professionals respond to critical events, it is difficult for scholars and managers to provide useful suggestions to mitigate the possible negative influence or utilize the potential benefits of these events for those professionals. Therefore, scholars recently urge for more research on how major events (crises) would shift individuals' professional identification (Ashforth, 2020).

To directly address this call, in the current research we investigate the effects of the COVID-19 pandemic on the professional identification dynamics of new graduate nurses. The influence of disruptive events or crises on professional identification should be more salient and dramatic for new entrants in those occupations. First, prior research suggests that professional identity is mutable or malleable in the earlier stages of one's career (Ibarra, 1999). Some scholars argue that professional identity formation and change are most pronounced among new entrants (Ashforth et al., 2008; Pratt et al., 2006). Therefore, new graduate nurses are an ideal sample to examine the dynamics of professional identification. Second, the disruptive events or crises might provide a unique opportunity to overcome the "hangover" effect reported in the socialization research (Boswell et al., 2005) — newcomers usually experience a significant decline in job satisfaction (Boswell et al., 2009), organizational identification (Zhu et al., 2017), and hedonic tone (Kammeyer-Mueller et al., 2013). This is detrimental for new entrants to function effectively or for organizations to

retain new entrants. However, we still know little about how to overcome the hangover effect and bring new entrants back to a desirable work state. As a disruptive event in the entry process (Ashforth et al., 2014), the COVID-19 pandemic might reshape new graduate nurses' professional identification, thus, to overcome the “hangover” effect. Therefore, our research aims to investigate the influence of the COVID-19 pandemic on new graduate nurses' professional identification from a discontinuous dynamic perspective.

Drawing on the identity construction process model (Ashforth et al., 2008; Ashforth & Schinoff, 2016) to explore how new graduate nurses' professional identification develops before and after the COVID-19 pandemic, we aim to extend and contribute to the identification and socialization research in three important ways. First, the COVID-19 pandemic provides us a unique opportunity to examine how a crisis changes the professional identification of employees in essential professionals (i.e., nurses in our study). According to the identity construction process model, identity construction, including reconstruction, can be triggered by disruptive and critical events (Ashforth & Schinoff, 2016) — the more novel or surprising the event, the greater its potential influence, with dramatic changes following galvanizing events (Ashforth et al., 2014). The COVID-19 pandemic clearly represents such an event for the new graduate nurses who have been pushed to the frontline and spotlight of this unprecedented challenge to human beings. By doing this, we answer the call by Ashforth (2020) to shed light on how the pandemic and similar events affect individual identification with relevant professions. Furthermore, our research can advance the prior theoretical discussions on how disruptive events or crises can have a dramatic effect on work experiences and behaviors (Hällgren et al., 2018; Johns, 2018; Morgeson et al., 2015).

Second, we contribute to the existing socialization literature by exploring how disruptive events may transform the entry process into a discontinuous one. Previous socialization research on the entry process usually views time as continuous, with the implicit assumption

that change has occurred at a more or less steady pace (Chan & Schmitt, 2000; Jokisaari & Nurmi, 2009; Song et al., 2017). We challenge the traditional continuous socialization assumption, as the entry process is likely interrupted or shaken by unexpected events that precipitate new experiences, reflection, and perhaps reinterpretation of previous experience (Ashforth, 2012; Ashforth et al., 2014). Instead, we advocate a discontinuous dynamic perspective, and propose that the outbreak of COVID-19, as a salient disruptive event, can reverse the disappointing decreasing trend in new graduate nurses' professional identification driven by the "hangover" effect. By doing this, we blaze a trail for more empirical research on the discontinuous socialization process. We also contribute to practice by helping practitioners to facilitate the socialization process and help them to foster successful socialization through planned and managed disruptive experiences.

Third, based on the identity construction process model (Ashforth et al., 2008; Ashforth & Schinoff, 2016) we also aim to examine factors and mechanisms contributing to the changes of new graduate nurses' professional identification during the COVID-19 pandemic. Previous research on identity construction either focuses on individual active effort (Ibarra, 1999; Pratt et al., 2006) or organizational practices (Pratt, 2000). However, identity construction should reflect the dynamic interplay between the collectives and the individual (Ashforth et al., 2018). In the current paper, we argue that the COVID-19 pandemic trigger both the top-down identity construction process of *sensegiving* (referring to the attempts of management to "influence the sensemaking and meaning construction of others", Gioia & Chittipeddi, 1991, p. 442) and the bottom-up identity construction process of *moral elevation* (referring to a positive emotion of warmth and expansion when observing others' morally exemplary behaviors, Aquino et al., 2011; Haidt, 2003), which jointly modify new graduate nurses' professional identification. Moreover, we argue that *work meaningfulness*, referring to a sense of meaning and purpose from work (Pratt & Ashforth, 2003), mediates the effects of

sensegiving and moral elevation on the increase in new graduate nurses' professional identification after the outbreak of COVID-19. We focus on work meaningfulness because it serves as the consequence of sensemaking (Rosso et al., 2010), which is grounded in identity construction (Weick, 1995). In so doing, we present a comprehensive framework for understanding why professional identification can be reshaped by COVID-19, a salient disrupted event. Practitioners can also benefit from our research for suggestions about how to intervene employees' professional identification via fostering work meaningfulness by engaging sensegiving practices or arousing moral elevation.

Theoretical Foundations and Hypothesis Development

Identity Construction Process

Identity construction is a process through which actors come to define who they are by bringing attributes of the collective's (e.g., organization's, profession's, etc.) identity into their own (Ashforth et al., 2008). In this way, identification serves as both process and the key outcome of the identity construction process (Ashforth & Schinoff, 2016). Identity construction is a dynamic process (Miscenko & Day, 2016; Skorikov & Vondracek, 2011), and it is most salient in the earlier stage of one's career (Bullis & Bach, 1989; Ibarra, 1999; Pratt et al., 2006; Skorikov & Vondracek, 2011). Therefore, entrants who enter a profession experience a becoming process (Anteby et al., 2016; Ashforth et al., 2014), in which they construct their professional identity and form professional identification. For new graduate nurses who just start their professional practices, on their path to identify with the nursing profession they may experience new discoveries, surprises, and even shocks (Bullis & Bach, 1989; Louis, 1980). Thus, we expect that new graduate nurses' professional identification would go through changes before and after the outbreak of the COVID-19 pandemic.

Professional Identification Trajectory and Change

We first explore how new graduate nurses' professional identification changes after they start their professional practice. Previous research on organizational socialization provides a useful hint that newcomers often experience a "reality shock" (Chao et al., 1994; Louis, 1980), which leads to the "*hangover*" effect with the decline in job satisfaction (Boswell et al., 2005; Boswell et al., 2009) or organizational identification (Zhu et al., 2017). The shock occurs because organizations usually present their most favorable side to employees initially, leading newcomers to form a particularly positive picture of the organization. As a result, before newcomers enter the new organizations, they have inflated expectations that "set [them] up . . . for subsequent disappointment and disillusionment" (Boswell et al., 2009, p. 846). We propose the "hangover" effect will also apply to the entry process to a profession. New graduate nurses might have idealistic expectations about their profession at the very beginning of their professional practice. However, they would experience disappointment with large workloads, stress, insecurity, and even bullying or criticism (Pasila et al., 2017), all of which may lead to a decline in professional identification. Research has found that during the first six to eight months of residency, some residents experienced violations of work-identity integrity, which led to a devaluation of the identity (Pratt et al., 2006).

The outbreak of the COVID-19 pandemic, however, can shift the decreasing pattern of new graduate nurses' professional identification. Identity construction or reconstruction can be triggered by disruptive and critical events (Ashforth & Schinoff, 2016). The outbreak of the COVID-19 pandemic is a *profession-spotlighting* crisis, which requires certain professions to utilize their expertise to resolve the public crisis. Such crises would put frontline workers under the spotlight of public attention. For example, in the wake of the 9/11 terrorist attacks in New York in 2001, the public regard for firefighters and other first responders increased immediately (Ashforth, 2020). The COVID-19 pandemic has created a parallel situation that impacts frontline workers in relevant professions such as nurses.

We propose that the COVID-19 pandemic will cause an increase in new graduate nurses' professional identification for two reasons. First, it has increased the salience of nurses' professional identity. Salience is determined by "subjective importance and situational relevance" (Ashforth, 2001, p. 29). With the outbreak of COVID-19, new graduate nurses' professional identity as nurses might have become more relevant under this situation (Ashforth, 2020). Research has suggested that when professional identity is made salient, individuals identify more strongly with their professions (van Dick et al., 2005). Second, the increase of new graduate nurses' professional identification may be driven by their experiencing higher public regard. Healthcare workers are treated as "heroes" (Hennekam et al., 2020) and appreciated by patients and communities. As Ashforth (2020) suggests, the sense of social validation would foster the healthcare workers' greater identification with their professions. Thus, we hypothesize that:

Hypothesis 1: Professional identification of new graduate nurses decreases during the initial months into professional practices but increases after the outbreak of COVID-19.

The Role of Sensegiving and the Indirect Effect through Work Meaningfulness

We propose that sensegiving, as a top-down process in identity construction, can facilitate the boost of new graduate nurses' professional identification during the COVID-19 pandemic through work meaningfulness. Sensegiving is an effective attempt that organizations use to manage employees' identification process (Pratt, 2000). It is prevalent during critical events and changes, in which collectives usually provide interpretations to help shape the ongoing construction of individuals' identities (Ashforth & Schinoff, 2016). Sensegiving is effective in enhancing employees' work meaningfulness by influencing meaning construction or sensemaking processes (Carton, 2017). After the outbreak of the COVID-19 pandemic, new graduate nurses faced tremendous challenges at work due to the potential risk of infection and the significant stress and uncertainty surrounding this

unprecedented crisis. With more sensegiving from management, new graduate nurses are better able to make sense of their roles, which helps to facilitate their meaning construction. The meaning construction process addresses their importance, responsibilities, and missions, making them feel that their work as nurses has a meaning and purpose, leading to higher work meaningfulness. By contrast, in places where sensegiving is lacking, new graduate nurses may feel lost when combating against the COVID-19 pandemic. The work is not perceived meaningful, which leads to a lower level of work meaningfulness.

Furthermore, we expect that work meaningfulness can enhance professional identification. Meaningfulness is one of the strongest motivations of identity construction (Ashforth & Schinoff, 2016; Vignoles et al., 2006). When new graduate nurses experience work meaningfulness, it serves to psychologically connect them to the nursing profession (Kahn, 1990). Evidence has shown employees with stronger feelings of meaningfulness have higher organizational identification (Cohen-Meitar et al., 2009). Therefore, we hypothesize:

Hypothesis 2: Sensegiving is positively related to the increase in new graduate nurses' professional identification after the outbreak of COVID-19 through work meaningfulness.

The Role of Moral Elevation and the Indirect Effect through Work Meaningfulness

We propose that moral elevation, as a bottom-up process in identity construction, can promote the increase of new graduate nurses' professional identification during the COVID-19 pandemic through work meaningfulness. Throughout the pandemic, there have been many news reports and stories of nurses making exceptional sacrifices to fight the virus and save their patients' lives. These stories reveal human moral beauty, which can elicit moral elevation (Haidt, 2000). Moral elevation consists of a distinctive feeling of warmth and expansion that is accompanied by admiration, affection and inspiration (Aquino et al., 2011). Nurses with higher levels of moral elevation are more willing to emulate the moral exemplar

and enhance their affiliation with the nurse group (Algoe & Haidt, 2009; Haidt, 2003; Vianello et al., 2010), thereby strengthening their professional identification. As Ashforth and Schinoff (2016) suggest, individuals can “feel” their way to identification — when they feel elevated emotions, individuals feel positive about their membership and internalize the identity as a definition of self. Moreover, as an emotional response to witnessing acts of virtue or moral beauty (Algoe & Haidt, 2009), moral elevation can influence individual meaning construction or sensemaking, through which individuals search for meaningfulness (Aguinis & Glavas, 2017). Research has suggested that moral elevation positively leads to perceived meaning in life because it makes individuals positively appraise their basic beliefs in meaningfulness (Van Cappellen et al., 2013). With a more positive appraisal of basic beliefs in meaningfulness, new graduate nurses who experience more moral elevation would have higher perception of work meaningfulness. Moral elevation also motivates action tendencies to act pro-socially (Algoe & Haidt, 2009; Haidt, 2003). For new graduate nurses facing the COVID-19 pandemic, moral elevation turns their focus toward others and doing greater good. Therefore, they may feel that their work as nurses has greater meaning and purpose, because serving a greater good is an essential source of work meaningfulness (Steger et al., 2012). As we discussed before, work meaningfulness is an important source for professional identification. Hence, we hypothesize that:

Hypothesis 3: Moral elevation is positively related to the increase in new graduate nurses’ professional identification after the outbreak of COVID-19 through work meaningfulness.

Method

Sample and Procedure

Our study is part of an ongoing, large-scale project on new nurses, which obtained ethical approval from a university located in northern China that one author is affiliated with.

We recruited newly hired nurses from a public hospital located in Northern China. Two authors introduced this project to them and obtained their participation consensus and demographic information in the orientation sessions in July 2019. Online instruments were used afterwards, and the consensus was obtained every time before they responded. One month after the participants started their professional practice in their assigned departments, we collected the first wave data (T1). Thereafter, the data was collected at an average of a one-month interval (T2-T5). When we collected the fifth wave of data (T5) in December 2019, the COVID-19 pandemic had not attracted significant attention; however, by the time we collected the sixth wave of data (T6) in late February 2020, COVID-19 had spread widely in China and this hospital became one of two designated hospitals in that city for the treatment of patients infected with COVID-19. In other words, the sixth (T6), seventh (T7, late April 2020), eighth (T8, late June 2020), and ninth (T9, late July 2020) waves of data were collected after the outbreak of COVID-19.

A total of 390 newly hired nurses were invited to participate in this study. Among them 388 completed at least one survey.¹ Because our focus is on new graduate nurses, we excluded 66 participants who had previous work experience as nurses. Therefore, a total of 322 new graduate nurses were included in the final sample, of whom 88.20% were women, and 28.60% possessed a bachelor's degree or higher. Participants' average age was 21.80 years ($SD = 1.07$). On average, the sample completed eight (8.72) out of nine surveys, with 88.20% (284 participants) completing all nine surveys.

Measures

Table 1 provides details about each of the measures used in the current study. All items are presented in *Appendix A*. We controlled for new graduate nurses' age, gender, education,

¹ Response rates were 98.21% for T1 (383 participants), 98.21% for T2 (383 participants), 97.69% for T3 (381 participants), 96.92% for T4 (378 participants), 96.41% for T5 (376 participants), 96.15% for T6 (375 participants), 96.67% for T7 (377 participants), 95.13% for T8 (371 participants), and 90.51% for T9 (353 participants).

work experience, and department.² We also controlled for *workload increase* after the outbreak of COVID-19 because it may adversely influence professional identification.

Results

Table 2 presents the means, standard deviations, and correlations among the study variables. To test our hypotheses, we used discontinuous growth modeling (DGM) (Bliese et al., 2016; Bliese & Lang, 2016) because we expect the COVID-19 pandemic represents a disruption in the professional identification process (please see *Appendix B* for details on our analytic approach, measurement invariance and discriminant validity of the measures).

Identifying Trajectories of Professional Identification

We first identified whether professional identification changed following a discontinuous growth trajectory. We compared the discontinuous growth trajectory with other possible trajectories, for example, linear change trajectory, non-change trajectory, and quadric trajectory. We found that discontinuous growth trajectory fit the data best ($\chi^2(39, N = 322) = 77.04, p < .001, RMSEA = .06, CFI = 0.98, TLI = 0.98, SRMR = .06$).³ The results suggest that it is appropriate to consider the trajectory as a discontinuous growth trajectory. Table 3 provides details for the coding and interpretation of changes in professional identification. According to Bliese and Lang (2016), our coding defines TRANS change and RECOV slope in relative terms compared to the slope of professional identification before the outbreak of the COVID-19 pandemic. The alternative coding and results are presented in *Appendix C*. We also tested for autocorrelation and heteroscedasticity (Bliese & Ployhart, 2002). There was no evidence for autocorrelation ($\Delta\chi^2(\Delta df = 1) = 1.55, p = .22, \Delta CFI = .00$), but there was

² There are seven departments, with imbalanced department size (maximum = 133, minimum = 17, average = 46). As our research interest is at the individual level, we use individual-level analyses. We also checked the ICC1s for all variables, including identification_T1 (.001), identification_T2 (.040), identification_T3 (.016), identification_T4 (.012), identification_T5 (.007), identification_T6 (.036), identification_T7 (.002), identification_T8 (.000), identification_T9 (.006), sensegiving (.015), moral elevation (.001), and meaningfulness (.000). The results supported our choice of individual-level analyses.

³ The discontinuous growth model fitted the data significantly better than the linear growth model ($\Delta\chi^2(\Delta df = 9) = 51.83, p < .001, \Delta CFI = .026$) and the quadric growth model ($\Delta\chi^2(\Delta df = 5) = 26.17, p < .001, \Delta CFI = .013$). The no-change model did not converge.

evidence of significant heteroscedasticity ($\Delta\chi^2 (\Delta df = 8) = 24.06, p = .002, \Delta CFI = .01$) for professional identification. Therefore, we controlled for heteroscedasticity when testing hypotheses.

Hypothesis Testing

Hypothesis 1 posited that professional identification decreases during the initial months but increased after the outbreak of COVID-19. As shown in Table 4, new graduate nurses' professional identification declined (TIME mean = $-.04, p = .001$) before the outbreak of the COVID-19 pandemic⁴ but increased (TRANS mean = $.15, p = .001$) from before to after the COVID-19 pandemic. Therefore, Hypothesis 1 was supported. Figure 1 depicts the general change trajectory of professional identification. Moreover, the variance of the TRANS change was significantly different from zero (TRANS variance = $.13, p = .01$), indicating that there were interindividual differences in the professional identification increase after the outbreak of COVID-19. In other words, new graduate nurses differed in terms of how much professional identification increased after the outbreak of COVID-19.

Hypothesis 2 posited that sensegiving is positively related to the increase in professional identification after the COVID-19 outbreak through work meaningfulness. As shown in Table 5⁵, sensegiving was positively related to the increase in professional identification ($\gamma = .15, p = .004$). Sensegiving was positively related to work meaningfulness ($\gamma = .65, p < .001$) and work meaningfulness was positively related to the increase in professional identification ($\beta = .20, p < .001$). There was a significant indirect effect of sensegiving on the increase in professional identification via work meaningfulness (Bootstrap = 1000, indirect effect = $.13, 95\% CI = [.05, .22]$). Thus, Hypothesis 2 was supported.

⁴ We also compare the linear growth model of professional identification from T1 to T5 to a quadric growth model. The results show there is no difference in model fit between the two models, $\Delta\chi^2 (\Delta df = 4) = 4.56, p = .34$. For the sake of parsimony, we retained the linear growth model.

⁵ Among all the control variables, only education, department, and workload increase had a significant effect on our parameters. We also examined the model only controlling for education, department, and workload increase; the results remained the same after excluding other control variables like age and gender.

Hypothesis 3 posited that moral elevation is positively related to the increase in professional identification after the COVID-19 outbreak through work meaningfulness. As shown in Table 5, moral elevation was positively related to the increase in professional identification ($\gamma = .11, p < .001$). Moral elevation was positively related to work meaningfulness ($\gamma = .10, p < .001$) and work meaningfulness was positively related to the increase in professional identification ($\beta = .20, p < .001$). There was a significant indirect effect of moral elevation on the increase in professional identification via work meaningfulness (Bootstrap = 1000, indirect effect = .02, 95% CI = [.004, .04]). Thus, Hypothesis 3 was supported.

Moreover, we conducted simple slope tests for high and low values of sensegiving, moral elevation and work meaningfulness ($\pm 1 SD$). This procedure can be seen as equivalent to a usual simple slope test (Curran et al., 2004). The results show there was a significant increase in professional identification for high values of sensegiving (+1 *SD*, slope = .29, $p < .001$), but no significant increase in professional identification for low values of sensegiving (-1 *SD*, slope = .002, $p = .99$). There was a more significant increase in professional identification for high values of moral elevation (+1 *SD*, slope = .18, $p = .002$) than that for low values of moral elevation (-1 *SD*, slope = .11, $p = .06$). There was a more significant increase in professional identification for high values of work meaningfulness (+1 *SD*, slope = .25, $p < .001$), but no significant increase in professional identification for low values of work meaningfulness (-1 *SD*, slope = .04, $p = .46$). Figures 2-4 depict the results of these tests.

Supplementary Analysis

To provide additional insights into how new graduates were impacted by the outbreak of COVID-19, we also explored how new graduates' turnover intention and job satisfaction changed. We collected data of turnover intention using a single item ("I want to change my

job”) and job satisfaction using three items (“in general, I like my job”, “in general, I dislike my job”, “in general, I am satisfied with my job”, Seashore et al., 1982) from Time 1 to Time 9. We first analyzed the discontinuous growth trajectory of turnover intention and job satisfaction with the same procedure and using the same code of timing in Table 3. The results show that new graduate nurses’ turnover intention increased (Slope mean = .03, $p = .06$, Slope variance = .04, $p < .001$) and that their job satisfaction decreased (Slope mean = -.05, $p < .001$, Slope variance = .01, $p = .002$) before the outbreak of the COVID-19 pandemic. Moreover, new graduate nurses’ turnover intention decreased significantly (Slope mean = -.26, $p < .001$, Slope variance = .29, $p = .004$) and their job satisfaction increased significantly (Slope mean = .17, $p < .001$, Slope variance = .04, $p = .44$) from before to after the outbreak of COVID-19 pandemic. Please see Figure 5 and Figure 6 for the general change trajectory of turnover intention and job satisfaction respectively.

Then we analyzed how slopes of professional identification will influence slopes of turnover intention and job satisfaction. The results showed that the trend in professional identification before the COVID-19 pandemic was negatively associated with the trend in turnover intention before the pandemic ($\gamma = -1.21$, $p < .001$). Moreover, the increase in professional identification after the outbreak of the COVID-19 pandemic was negatively associated with the increase in turnover intention after the outbreak of the COVID-19 pandemic ($\gamma = -1.04$, $p < .001$). As the variance of the increase in job satisfaction was not significant, we did not test the effect of the increase in professional identification on the increase in job satisfaction.

We also tested the serial indirect effect of sensegiving and moral elevation on the decrease

in turnover intention via work meaningfulness and the increase in professional identification. The results show there was a significant serial indirect effect (Bootstrap = 1000, indirect effect = -.15, 95% CI = [-.33, -.04]). There was also a significant serial indirect effect of moral elevation on decrease in turnover intention via work meaningfulness and the increase in professional identification (Bootstrap = 1000, indirect effect = -.02, 95% CI = [-.06, -.004]).

These results suggest that professional identification is one of the important factors to retain new graduate nurses. More importantly, although the COVID-19 pandemic has brought unprecedented challenges to new graduate nurses, it also provides a chance for them to reassess their professional identification, which helped to retain them.

Discussion

Drawing on the identity construction process perspective, our study set out to examine how the COVID-19 pandemic has affected new graduate nurses' professional identification dynamics. Our data showed that new graduate nurses' professional identification decreased during the initial months into practice, but significantly increased in light of the COVID-19 outbreak. The increase in professional identification might be attributed to sensegiving and moral elevation via work meaningfulness.

Theoretical Implications

We conceptualize the COVID-19 pandemic as a profession-spotlighting event, which has strongly affected frontline workers in essential professions. Our results showed that new graduate nurses experienced an increase in professional identification right after the outbreak of the COVID-19 pandemic. Our research answers the call for research on how the pandemic or similar events affect identification with relevant professions (Ashforth, 2020). Our supplementary analysis also showed that along with an increase in professional identification, new graduate nurses also experienced an increase in job satisfaction and a decrease in turnover

intention after the outbreak of the COVID-19 pandemic. Taken together, our results revealed how such profession-spotlighting events influence frontline employees' work experience.

Our work also contributes to the socialization literature by tracking how entrants socialize into a new profession. We also advance the socialization literature by showing the impact of disruptive events and depicting a discontinuous pattern of socialization. Most socialization research takes the implicit assumption that changes occur gradually at a steady pace (Chan & Schmitt, 2000; Song et al., 2017). However, our findings showed that after a decreasing pattern driven by the "hangover" effect, new graduate nurses' professional identification significantly increased after the outbreak of COVID-19, suggesting the discontinuity in the socialization process. Thus, our study answers the call by Ashforth (2012) to explore the impact of disruptive events in socialization dynamics.

Finally, we contribute to the identity construction process model (Ashforth et al., 2008; Ashforth & Schinoff, 2016) by investigating the importance of both top-down and bottom-up processes to form identification and identifying work meaningfulness as the key mechanism. We also provide an understanding that how and why identification can be re-shaped by events.

Practical Implications

Although the COVID-19 pandemic has introduced unprecedented challenges for health-care workers, especially nurses, our research suggests that it may also provide an opportunity to reshape their professional identification. Such profession-spotlighting events could be managed well, even leading to some positive outcomes experienced by employees in these professions. Hospitals can use strategies like sensegiving to foster health-care workers' work meaningfulness, which further increases professional identification. The media and society can openly salute health-care workers to inspire them. Fostering work meaningfulness and enhancing professional identification can not only increase health-care workers' commitment to their work, which is beneficial to winning the battle against the COVID-19 pandemic but

also help these health-care workers to cope with the challenges because the search for meaning plays a key role in successfully coping with negative events (Vignoles et al., 2006).

Our research also has important practical implications for managing successful socialization processes for new entrants. Although new entrants are likely to experience the hangover effect (with decreased professional identification and job satisfaction and increased turnover intention from T1 to T5 as shown in our research), our results also revealed that the hangover effect could be broken down in the wake of a profession-spotlighting event. Practitioners can bring new entrants back to a desirable work state through planned or managed profession-spotlighting events. For example, managers could use simulations to mock such events which could foster work meaningfulness or call out professional identification.

Study Limitations and Directions for Future Research

Our research has some limitations. First, we cannot rigorously discern the causality between sensegiving, moral elevation, work meaningfulness, and the increase in professional identification because they were collected at the same time. For example, researchers have suggested that one's identity also contributes to meaningfulness (Steger & Dik, 2010), and how one interprets an event. Thus, future research is needed to address the reciprocal relationship between these related constructs. Second, we did not measure sensegiving, moral elevation and work meaningfulness before the outbreak of the COVID-19 pandemic. Thus, we cannot examine the change of sensegiving, moral elevation, and work meaningfulness. Future research is needed to capture the change of these variables under a similar disrupted event. Third, we only conducted research in one organization. Although this helped us to exclude the influence of different organizations, it constrained the generalizability of our results. Finally, we cannot investigate whether the enhanced professional identification will last for a longer time. More evidence is needed to testify whether the increased professional identification would foster a resilience in the face of future crises (Ashforth, 2020).

References

- Aguinis, H., & Glavas, A. (2017). On Corporate Social Responsibility, Sensemaking, and the Search for Meaningfulness Through Work. *Journal of management*, 45, 1057-1086. <https://doi.org/10.1177/0149206317691575>
- Algoe, S. B., & Haidt, J. (2009). Witnessing excellence in action: the 'other-praising' emotions of elevation, gratitude, and admiration. *Journal of Positive Psychology*, 4, 105-127. <https://doi.org/10.1080/17439760802650519>
- Ali, S. S. (2020). Why some nurses have quit during the coronavirus pandemic. *NBC News*. <https://www.nbcnews.com/news/us-news/why-some-nurses-have-quit-during-coronavirus-pandemic-n1201796>
- Anteby, M., Chan, C. K., & DiBenigno, J. (2016). Three Lenses on Occupations and Professions in Organizations: Becoming, Doing, and Relating. *The Academy of Management Annals*, 10, 183-244. <https://doi.org/10.1080/19416520.2016.1120962>
- Aquino, K., McFerran, B., & Laven, M. (2011). Moral identity and the experience of moral elevation in response to acts of uncommon goodness. *Journal of Personality and Social Psychology*, 100, 703-718. <https://doi.org/10.1037/a0022540>
- Ashforth, B. E. (2001). *Role transitions in organizational life: An identity-based perspective*. Erlbaum.
- Ashforth, B. E. (2012). The role of time in socialization. In C. Wanberg (Ed.), *The Oxford handbook of organizational socialization* (Vol. 161). Oxford University Press.
- Ashforth, B. E. (2020). Identity and Identification During and After the Pandemic: How Might COVID-19 Change the Research Questions we Ask? *Journal of Management Studies*. <https://doi.org/10.1111/joms.12629>
- Ashforth, B. E., Harrison, S. H., & Corley, K. G. (2008). Identification in Organizations: An Examination of Four Fundamental Questions. *Journal of management*, 34, 325-374. <https://doi.org/10.1177/0149206308316059>
- Ashforth, B. E., Harrison, S. H., & Sluss, D. M. (2014). Becoming: The interaction of socialization and identity in organizations over time. In A. J. Shipp & Y. Fried (Eds.), *Current issues in work and organizational psychology: Time and work. Vol. 1. How time impacts individuals* (pp. 11-39). Psychology Press.
- Ashforth, B. E., Harrison, S. H., & Sluss, D. M. (2018). Becoming: The interaction of socialization and identity in organizations over time. In C. Cooper (Ed.), *Current issues in Work and Organizational Psychology* (pp. 316-339). Routledge.
- Ashforth, B. E., Joshi, M., Anand, V., & O'Leary-Kelly, A. M. (2013). Extending the expanded model of organizational identification to occupations. *Journal of Applied Social Psychology*, 43, 2426-2448. <https://doi.org/10.1111/jasp.12190>
- Ashforth, B. E., & Schinoff, B. S. (2016). Identity Under Construction: How Individuals Come to Define Themselves in Organizations. *Annual Review of Organizational Psychology and Organizational Behavior*, 3, 111-137. <https://doi.org/10.1146/annurev-orgpsych-041015-062322>
- Bliese, P. D., Adler, A. B., & Flynn, P. (2016). Transition Processes: A Review and Synthesis Integrating Methods and Theory. *Annual Review of Organizational Psychology & Organizational Behavior*, 4, 263-286. <https://doi.org/10.1177/1094428116633502>

- Bliese, P. D., & Lang, J. W. B. (2016). Understanding Relative and Absolute Change in Discontinuous Growth Models. *Organizational research methods*, 19, 562-592. <https://doi.org/10.1177/1094428116633502>
- Bliese, P. D., & Ployhart, R. E. (2002). Growth Modeling Using Random Coefficient Models: Model Building, Testing, and Illustrations. *Organizational research methods*, 5, 362-387. <https://doi.org/10.1177/109442802237116>
- Boswell, W. R., Boudreau, J. W., & Tichy, J. (2005). The relationship between employee job change and job satisfaction: the honeymoon-hangover effect. *Journal of Applied Psychology*, 90, 882-892. <https://doi.org/10.1037/0021-9010.90.5.882>
- Boswell, W. R., Shipp, A. J., Payne, S. C., & Culbertson, S. S. (2009). Changes in newcomer job satisfaction over time: examining the pattern of honeymoons and hangovers. *Journal of Applied Psychology*, 94, 844-858. <https://doi.org/10.1037/a0014975>
- Bullis, C., & Bach, B. W. (1989). Socialization turning points: An examination of change in organizational identification. *Western Journal of Speech Communication*, 53, 273-293. <https://doi.org/10.1080/10570318909374307>
- Carton, A. M. (2017). "I'm Not Mopping the Floors, I'm Putting a Man on the Moon": How NASA Leaders Enhanced the Meaningfulness of Work by Changing the Meaning of Work. *Administrative Science Quarterly*, 63, 323-369. <https://doi.org/10.1177/0001839217713748>
- Caza, B. B., Vough, H., & Puranik, H. (2018). Identity work in organizations and occupations: Definitions, theories, and pathways forward. *Journal of Organizational Behavior*, 39, 889-910. <https://doi.org/10.1002/job.2318>
- Chan, D. (1998). The conceptualization and analysis of change over time: An integrative approach incorporating longitudinal mean and covariance structures analysis (LMACS) and multiple indicator latent growth modeling (MLGM). *Organizational research methods*, 1, 421-483. <https://doi.org/10.1177/109442819814004>
- Chan, D., & Schmitt, N. (2000). Interindividual differences in intraindividual changes in proactivity during organizational entry: a latent growth modeling approach to understanding newcomer adaptation. *Journal of Applied Psychology*, 85, 190-210. <https://doi.org/10.1037/0021-9010.85.2.190>
- Chao, G. T., O'Leary-Kelly, A. M., Wolf, S., Klein, H. J., & Gardner, P. D. (1994). Organizational socialization: Its content and consequences. *Journal of Applied Psychology*, 79, 730-743. <https://doi.org/10.1037/0021-9010.79.5.730>
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating Goodness-of-Fit Indexes for Testing Measurement Invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, 9, 233-255. https://doi.org/10.1207/s15328007sem0902_5
- Cohen-Meitar, R., Carmeli, A., & Waldman, D. A. (2009). Linking Meaningfulness in the Workplace to Employee Creativity: The Intervening Role of Organizational Identification and Positive Psychological Experiences. *Creativity Research Journal*, 21, 361-375. <https://doi.org/10.1080/10400410902969910>
- Curran, P. J., Bauer, D. J., & Willoughby, M. T. (2004). Testing main effects and interactions in latent curve analysis. *Psychological Methods*, 9, 220-237. <https://doi.org/10.1037/1082-989X.9.2.220>
- De Vos, A., & Freese, C. (2011). Sensemaking during organizational entry: Changes in

- newcomer information seeking and the relationship with psychological contract fulfilment. *Journal of Occupational and Organizational Psychology*, 84, 288-314. <https://doi.org/10.1111/j.2044-8325.2011.02024.x>
- Dierdorff, E. C. (2019). Toward Reviving an Occupation with Occupations. *Annual Review of Organizational Psychology and Organizational Behavior*, 6, 397-419. <https://doi.org/10.1146/annurev-orgpsych-012218-015019>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, 18, 39-50. <https://doi.org/10.1177/002224378101800104>
- Gioia, D. A., & Chittipeddi, K. (1991). Sensemaking and sensegiving in strategic change initiation. *Strategic Management Journal*, 12, 433-448. <https://doi.org/10.1002/smj.4250120604>
- Graham, J. W. (2009). Missing data analysis: making it work in the real world. *Annual Review of Psychology*, 60, 549-576. <https://doi.org/10.1146/annurev.psych.58.110405.085530>
- Haidt, J. (2000). The Positive emotion of elevation. *Prevention & Treatment*, 3, Article 3.
- Haidt, J. (2003). The moral emotions. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith (Eds.), *Handbook of affective sciences* (pp. 852-870). Oxford University Press.
- Hällgren, M., Rouleau, L., & de Rond, M. (2018). A Matter of Life or Death: How Extreme Context Research Matters for Management and Organization Studies. *Academy of Management Annals*, 12, 111-153. <https://doi.org/10.5465/annals.2016.0017>
- Hennekam, S., Ladge, J., & Shymko, Y. (2020). From zero to hero: An exploratory study examining sudden hero status among nonphysician health care workers during the COVID-19 pandemic. *Journal of Applied Psychology*, 105, 1088-1100. <https://doi.org/10.1037/apl0000832>
- Ibarra, H. (1999). Provisional selves: Experimenting with image and identity in professional adaptation. *Administrative Science Quarterly*, 44, 764-791. <https://doi.org/10.2307/2667055>
- Jeffrey, J. (2020). Coronavirus: Why healthcare workers are at risk of moral injury. *BBC News*. <https://www.bbc.com/news/world-us-canada-52144859>
- Johns, G. (2018). Advances in the Treatment of Context in Organizational Research. *Annual Review of Organizational Psychology and Organizational Behavior*, 5, 21-46. <https://doi.org/10.1146/annurev-orgpsych-032117-104406>
- Johnson, M. D., Morgeson, F. P., Ilgen, D. R., Meyer, C. J., & Lloyd, J. W. (2006). Multiple professional identities: examining differences in identification across work-related targets. *Journal of Applied Psychology*, 91, 498-506. <https://doi.org/10.1037/0021-9010.91.2.498>
- Jokisaari, M., & Nurmi, J.-E. (2009). Change in newcomers' supervisor support and socialization outcomes after organizational entry. *Academy of Management Journal*, 52, 527-544. <https://doi.org/10.5465/amj.2009.41330971>
- Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33, 692-724. <https://doi.org/10.5465/256287>
- Kammeyer-Mueller, J. D., Wanberg, C. R., Rubenstein, A., & Song, Z. (2013). Support, undermining, and newcomer socialization: Fitting in during the first 90 days. *Academy of Management Journal*, 56, 1104-1124. <https://doi.org/10.5465/amj.2010.0791>

- Lee, K., Carswell, J. J., & Allen, N. J. (2000). A meta-analytic review of occupational commitment: relations with person-and work-related variables. *Journal of Applied Psychology*, 85, 799. <https://doi.org/10.1037/0021-9010.85.5.799>
- Louis, M. R. (1980). Surprise and sense making: What newcomers experience in entering unfamiliar organizational settings. *Administrative Science Quarterly*, 226-251. <https://doi.org/10.2307/2392453>
- Maben, J., & Bridges, J. (2020). Covid-19: Supporting nurses' psychological and mental health. *Journal of Clinical Nursing*, 29, 2742-2750. <https://doi.org/10.1111/jocn.15307>
- Miscenko, D., & Day, D. V. (2016). Identity and identification at work. *Organizational Psychology Review*, 6, 215-247. <https://doi.org/10.1177/2041386615584009>
- Morgeson, F. P., Mitchell, T. R., & Liu, D. (2015). Event System Theory: An Event-Oriented Approach to the Organizational Sciences. *Academy of Management Review*, 40, 515-537. <https://doi.org/10.5465/amr.2012.0099>
- Pasila, K., Elo, S., & Kaariainen, M. (2017). Newly graduated nurses' orientation experiences: A systematic review of qualitative studies. *International Journal of Nursing Studies*, 71, 17-27. <https://doi.org/10.1016/j.ijnurstu.2017.02.021>
- Pratt, M. G. (2000). The good, the bad, and the ambivalent: Managing identification among Amway distributors. *Administrative Science Quarterly*, 45, 456-493. <https://doi.org/10.2307/2667106>
- Pratt, M. G., & Ashforth, B. E. (2003). Fostering meaningfulness in working and at work. In K. S. Cameron, J. E. Dutton, & R. E. Quinn (Eds.), *Positive organizational scholarship: Foundations of a new discipline* (pp. 309-327). Berrett-Koehler Publishers.
- Pratt, M. G., Rockmann, K. W., & Kaufmann, J. B. (2006). Constructing professional identity: The role of work and identity learning cycles in the customization of identity among medical residents. *Academy of Management Journal*, 49, 235-262. <https://doi.org/10.5465/amj.2006.20786060>
- Rosso, B. D., Dekas, K. H., & Wrzesniewski, A. (2010). On the meaning of work: A theoretical integration and review. *Research in Organizational Behavior*, 30, 91-127. <https://doi.org/10.1016/j.riob.2010.09.001>
- Rudolph, C. W., & Zacher, H. (2020). "The COVID-19 Generation": A Cautionary Note. *Work, Aging and Retirement*, 6, 139-145. <https://doi.org/10.1093/workar/waaa009>
- Seashore, S. E., Lawler, E. E., Mirvis, P., & Cammann, C. (1982). *Observing and measuring organizational change: A guide to field practice*. Wiley.
- Skorikov, V. B., & Vondracek, F. W. (2011). Occupational Identity. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of Identity Theory and Research* (pp. 693-714). Springer New York. https://doi.org/10.1007/978-1-4419-7988-9_29
- Song, Y., Liu, Y., Shi, J., & Wang, M. (2017). Use of Proactive Socialization Tactics and Socialization Outcomes: A Latent Growth Modeling Approach to Understanding Newcomer Socialization Process. *Academy of Management Discoveries*, 3, 42-63. <https://doi.org/10.5465/amd.2014.0142>
- Steger, M. F., & Dik, B. J. (2010). Work as Meaning: Individual and Organizational Benefits of Engaging in Meaningful Work. In P. A. Linley, S. Harrington, & N. Page (Eds.), *Oxford handbook of positive psychology and work* (pp. 131-142). Oxford University Press.

- Steger, M. F., Dik, B. J., & Duffy, R. D. (2012). Measuring Meaningful Work. *Journal of Career Assessment*, 20, 322-337. <https://doi.org/10.1177/1069072711436160>
- Van Cappellen, P., Saroglou, V., Iweins, C., Piovesana, M., & Fredrickson, B. L. (2013). Self-transcendent positive emotions increase spirituality through basic world assumptions. *Cognition & Emotion*, 27, 1378-1394. <https://doi.org/10.1080/02699931.2013.787395>
- van Dick, R., Wagner, U., Stellmacher, J., & Christ, O. (2005). Category salience and organizational identification. *Journal of Occupational and Organizational Psychology*, 78, 273-285. <https://doi.org/10.1348/096317905x25779>
- Van Knippenberg, D., Van Knippenberg, B., Monden, L., & de Lima, F. (2002). Organizational identification after a merger: A social identity perspective. *British Journal of Social Psychology*, 41, 233-252. <https://doi.org/10.1348/014466602760060228>
- Vianello, M., Galliani, E. M., & Haidt, J. (2010). Elevation at work: The effects of leaders' moral excellence. *The Journal of Positive Psychology*, 5, 390-411. <https://doi.org/10.1080/17439760.2010.516764>
- Vignoles, V. L., Regalia, C., Manzi, C., Golledge, J., & Scabini, E. (2006). Beyond self-esteem: influence of multiple motives on identity construction. *Journal of Personality and Social Psychology*, 90, 308-333. <https://doi.org/10.1037/0022-3514.90.2.308>
- Weick, K. E. (1995). *Sensemaking in organizations*. Sage.
- World Health Organization. (2020, Nov, 25th). *Report of Novel Coronavirus (COVID-19) Situation*. World Health Organization Retrieved Nov, 25th from <https://covid19.who.int/>
- Zhu, J., Tatachari, S. R., & Chattopadhyay, P. (2017). Newcomer Identification: Trends, Antecedents and Consequences. *Academy of Management Journal*, 60, 855-879. <https://doi.org/10.5465/amj.2015.0466>

Table 1
Measures Used in the Study

Variable	Number of items	Measure	Sample item	Cronbach's α	Measured Time
Professional identification	3	Van Knippenberg et al. (2002)	“When someone criticizes professions of nurses, it feels like a personal insult.”	.82 – .96 ^a	T1-T9
Sensegiving	3	Self-developed	“The department facilitates our understanding of nurses’ responsibility during the COVID-19 pandemic.”	.98	T6
Moral elevation	3	Aquino et al. (2011)	“Inspired”	.98	T6
Work meaningfulness	3	Steger et al. (2012)	“The work I do serves a greater purpose”	.98	T6
Control: workload increase	2	Self-developed	“The workload has increased since the outbreak of COVID-19”	.82	T6

Notes:

^a The range of Cronbach's α from T1 to T9.

T1 = Time 1, T2 = Time 2, T3 = Time 3, T4 = Time 4, T5 = Time 5, T6 = Time 6, T7 = Time 7, T8 = Time 8, T9 = Time 9.

Professional identification, sensegiving, and work meaningfulness were measured with six-point Likert-type responses (1 = strongly disagree; 6 = strongly agree).

Moral elevation was measured with seven-point Likert-type responses (1 = never; 7 = always).

Table 2
Descriptive Statistics and Correlations of Study Variables

Variables	N	M	SD	1	2	3	4	5	6	7	8	9
1. Age	322	21.80	1.07									
2. Gender ^a	322	.12	.32	-.08								
3. Education ^b	322	.29	.45	.53**	-.04							
4. Department_1 ^c	322	.07	.25	.05	-.06	.10						
5. Department_2 ^d	322	.13	.34	.10	-.11*	.18**	-.11					
6. Department_3 ^e	322	.05	.22	-.02	-.09	.00	-.06	-.09				
7. Department_4 ^f	322	.17	.38	.17**	.45**	.26**	-.12*	-.18**	-.11			
8. Department_5 ^g	322	.07	.25	-.08	.02	-.06	-.07	-.11	-.06	-.12*		
9. Department_6 ^h	322	.41	.49	-.27**	-.29**	-.49**	-.23**	-.33**	-.20**	-.38**	-.23**	
10. Department_7 ⁱ	322	.10	.30	.16**	.14*	.24**	-.09	-.13*	-.08	-.15**	-.09	-.27**

Table 2
(Continued)

Variables	N	M	SD	1	2	3	4	5	6	7	8	9	10
11. Professional identification (T1)	319	4.74	.82	-.15**	-.01	-.23**	-.03	-.07	.01	-.04	-.06	.09	.04
12. Professional identification (T2)	320	4.74	.78	-.18**	-.08	-.29**	-.02	-.13*	.11*	-.12*	-.03	.19**	-.05
13. Professional identification (T3)	317	4.74	.80	-.11	-.07	-.18**	-.04	-.12*	.09	-.09	-.01	.12*	.01
14. Professional identification (T4)	315	4.61	.76	-.10	-.11*	-.13*	-.05	-.06	.05	-.11	.00	.14*	-.04
15. Professional identification (T5)	313	4.63	.77	-.08	-.07	-.11	-.06	-.07	.13*	-.07	-.01	.02	.09
16. Professional identification (T6)	313	4.74	.87	-.08	-.15**	-.14*	-.02	-.06	.12*	-.14*	-.11	.14*	.02
17. Professional identification (T7)	315	4.70	.83	-.08	-.10	-.10	-.04	-.05	.12*	-.09	-.03	.03	.09
18. Professional identification (T8)	308	4.69	.82	.01	-.04	-.06	-.02	-.02	.08	-.03	-.02	.01	.02
19. Professional identification (T9)	294	4.69	.84	.08	-.06	-.12*	.03	-.09	.09	-.06	-.10	.08	.03
20. Workload_change (T6)	313	2.93	1.10	.06	.10	.02	-.02	-.03	-.07	.03	-.11*	.07	.05
21. Sensegiving (T6)	313	5.13	.83	-.04	-.11	-.10	-.02	.08	.16**	-.10	-.01	-.04	.01
22. Moral elevation (T6)	313	4.79	1.27	-.02	-.03	-.02	-.03	.01	.16**	.02	.00	-.03	-.10
23. Work meaningfulness (T6)	313	4.91	.81	-.12*	-.03	-.13*	-.01	-.03	.09	-.08	-.02	.02	.05

Table 2
(Continued)

Variables	11	12	13	14	15	16	17	18	19	20	21	22	23
11. Professional identification (T1)	.82												
12. Professional identification (T2)	.52**	.89											
13. Professional identification (T3)	.53**	.65**	.92										
14. Professional identification (T4)	.47**	.51**	.63**	.91									
15. Professional identification (T5)	.45**	.56**	.62**	.63**	.93								
16. Professional identification (T6)	.43**	.49**	.60**	.55**	.56**	.93							
17. Professional identification (T7)	.47**	.49**	.59**	.56**	.67**	.68**	.93						
18. Professional identification (T8)	.47**	.53**	.59**	.58**	.66**	.56**	.65**	.94					
19. Professional identification (T9)	.44**	.59**	.60**	.54**	.65**	.60**	.64**	.71**	.96				
20. Workload_change (T6)	-.15*	-.13*	-.10	-.14*	-.17**	-.18**	-.18**	-.22**	-.16**	.82			
21. Sensegiving (T6)	.33**	.35**	.38**	.38**	.39**	.57**	.47**	.45**	.51**	-.32**	.98		
22. Moral elevation (T6)	.29**	.32**	.42**	.40**	.45**	.50**	.48**	.43**	.50**	-.17**	.32**	.98	
23. Work meaningfulness (T6)	.35**	.40**	.45**	.42**	.44**	.60**	.53**	.49**	.52**	-.25**	.71**	.36**	.98

Notes: T1 = Time 1, T2 = Time 2, T3 = Time 3, T4 = Time 4, T5 = Time 5, T6 = Time 6, T7 = Time 7, T8 = Time 8, T9 = Time9.

Cronbach's alphas are on the diagonal.

^a 0 = female, 1 = male. ^b 0 = college and below, 1 = bachelor's degree and above. ^c 0 = not in department of internal medicine, 1 = in department of internal medicine. ^d 0 = not in department of surgery, 1 = in department of surgery.

^e 0 = not in department of obstetrics, gynecology and pediatrics, 1 = in department of obstetrics, gynecology and pediatrics.

^f 0 = not in intensive care unit, 1 = in intensive care unit. ^g 0 = not in operating room, 1 = in operating room.

^h 0 = not in department of outpatients, 1 = in department of outpatients. ⁱ 0 = department of emergency, 1 = in department of emergency.

* p < .05

** p < .01

Table 3
Coding and Interpretation of Change Variables in the Discontinuous Growth Models for the Study

Measurement	Coding		
occasion	TIME	TRANS	RECOV
T1	0	0	0
T2	1	0	0
T3	2	0	0
T4	3	0	0
T5	4	0	0
T6	5	1	0
T7	6	1	1
T8	7	1	2
T9	8	1	3
Interpretation	Linear change of professional identification during socialization process before the outbreak of COVID-19 pandemic	Professional identification's change from before to after the outbreak of COVID-19 pandemic ^a	Relative linear change of professional identification after the outbreak of COVID-19 pandemic ^b

Notes. ^a The TRANS change is based on the linear model if the outbreak of COVID-19 had not occurred.

^b The RECOV change is compared to the linear model before the outbreak of COVID-19.

Table 4
Summary of Discontinuous Growth Model based on Relative Coding for the Professional Identification without Any Predictor

	TIME	TRANS	RECOV
Intercept_mean		4.76***	
Intercept_variance		.39***	
Slope_mean	-.04**	.15**	.02
Slope_variance	.01***	.13**	.03**
Cov (I, S)	-.02**	.04	.03*

Notes. $N = 322$.

Cov (I, S) = the covariance between intercept and slope.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 5***Unstandardized Coefficients in the Discontinuous Growth Model with Predictors and Control Variables***

Predictors	Intercept		TIME		Sensegiving		Moral elevation		Work meaningfulness		TRANS		RECOV	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Control variables														
Age	-.04	.04	.001	.01	.01	.05	-.002	.08	-.06	.04	.02	.05	.01	.02
Gender ^a	-.17	.15	-.05	.04	-.26	.17	-.14	.28	.11	.13	.07	.17	.08	.06
Education ^b	-.47***	.12	.08*	.03	-.30*	.13	-.06	.21	.01	.10	-.07	.13	-.01	.05
Department_1 ^c	-.16	.20	-.05	.04	-.22	.23	.16	.37	-.10	.16	.07	.23	.07	.08
Department_2 ^d	-.28†	.17	-.05	.06	.02	.19	.34	.31	-.29*	.14	.004	.19	-.004	.07
Department_3 ^e	-.04	.22	.05	.06	.29	.24	1.11**	.39	-.27	.18	-.29	.24	.02	.08
Department_4 ^f	-.10	.16	-.01	.04	-.17	.18	.48	.29	-.19	.13	-.08	.18	.02	.06
Department_5 ^g	-.35†	.20	.04	.05	-.31	.23	.25	.36	-.21	.16	-.30	.23	.03	.08
Department_6 ^h	-.18	.16	-.003	.04	-.27	.18	.29	.29	-.12	.13	.01	.18	.004	.06
Workload increase					-.23***	.04	-.19**	.07	-.01	.03	-.001	.03	-.002	.01
Predictors														
Sensegiving									.65***	.04	.15**	.05	-.01	.03
Moral elevation									.10***	.03	.11***	.03	-.01	.01
Work meaningfulness											.20***	.05	-.05†	.03
R ²	.14		.15		.14		.06		.54		.46		.18	

Notes. $N = 322$. ^a 0 = female, 1 = male. ^b 0 = college and below, 1 = bachelor's degree and above. ^c 0 = not in department of internal medicine, 1 = in department of internal medicine.

^d 0 = not in department of surgery, 1 = in department of surgery. ^e 0 = not in department of obstetrics, gynecology and pediatrics, 1 = in department of obstetrics, gynecology and pediatrics.

^f 0 = not in intensive care unit, 1 = in intensive care unit. ^g 0 = not in operating room, 1 = in operating room. ^h 0 = not in department of outpatients, 1 = in department of outpatients.

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

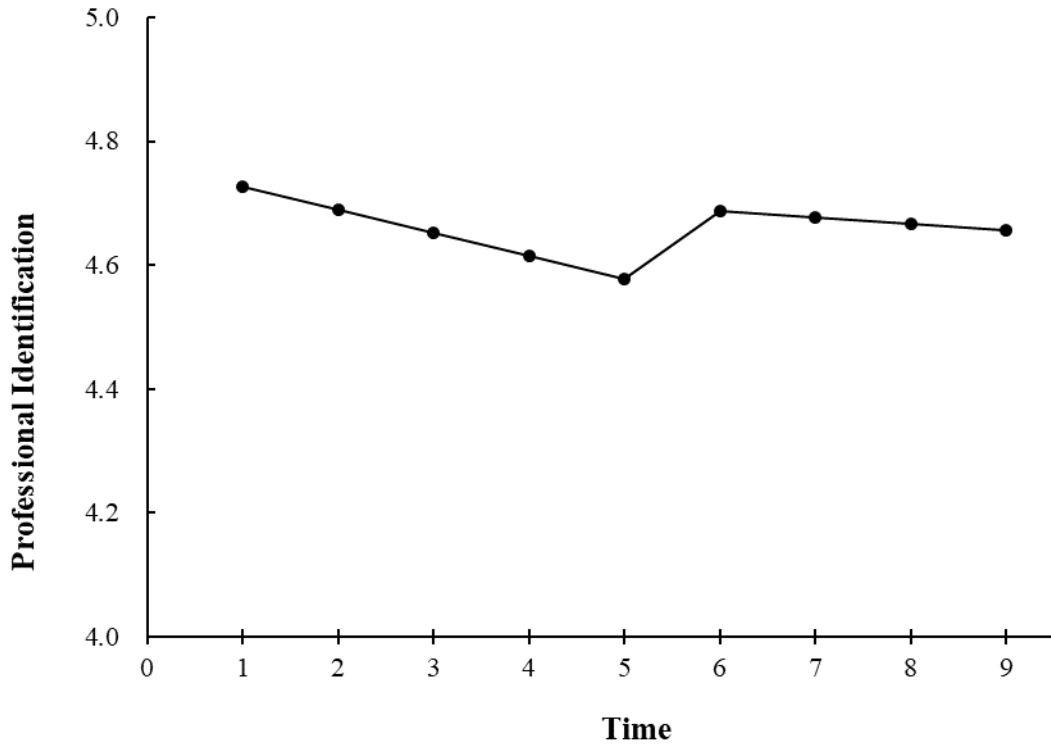


Figure 1. The general trajectory of professional identification from Time 1 to Time 9 (without any predictor).

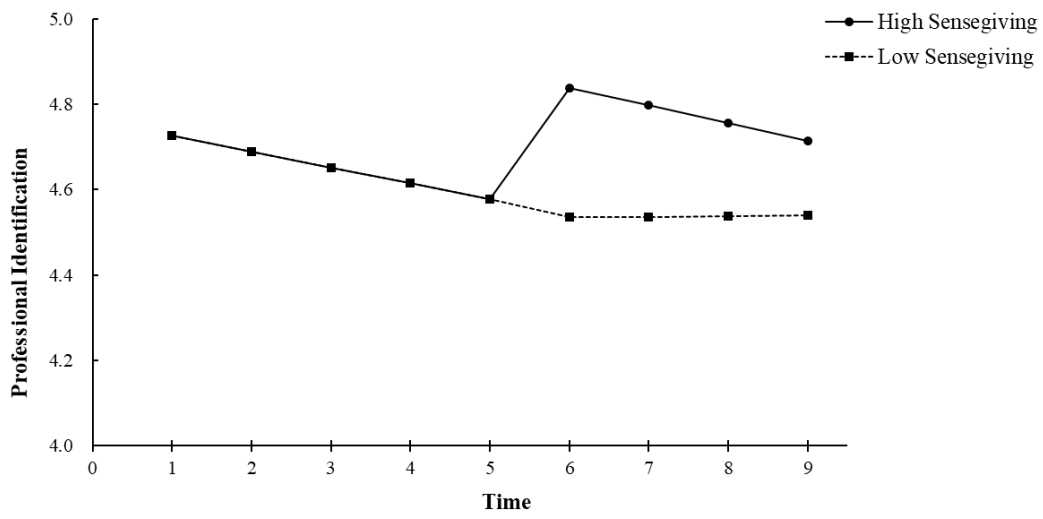


Figure 2. Trajectory of professional identification as a function of sensegiving.

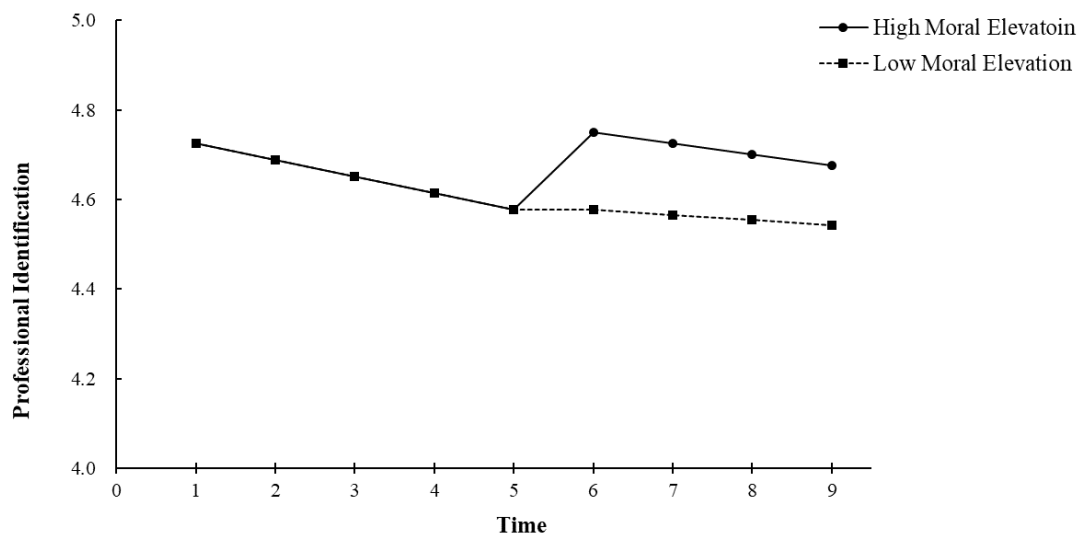


Figure 3. Trajectory of professional identification as a function of moral elevation.

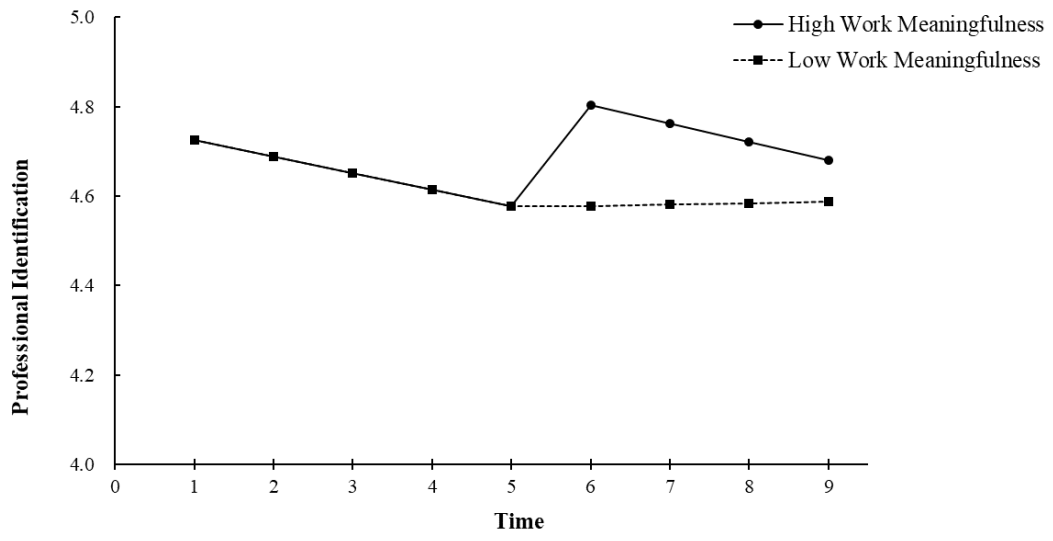


Figure 4. Trajectory of professional identification as a function of work meaningfulness.

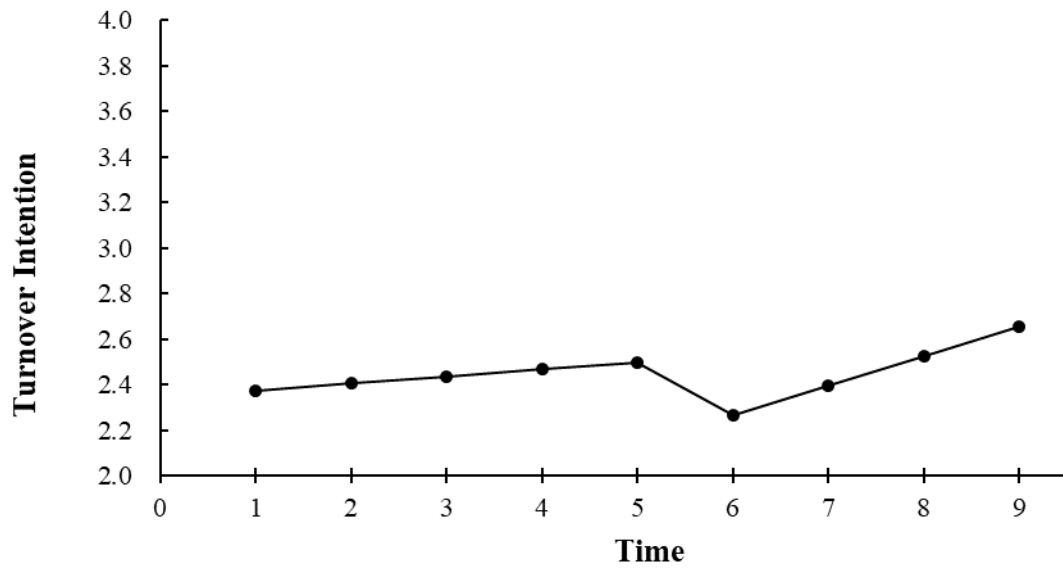


Figure 5. The general trajectory of turnover intention from Time 1 to Time 9.

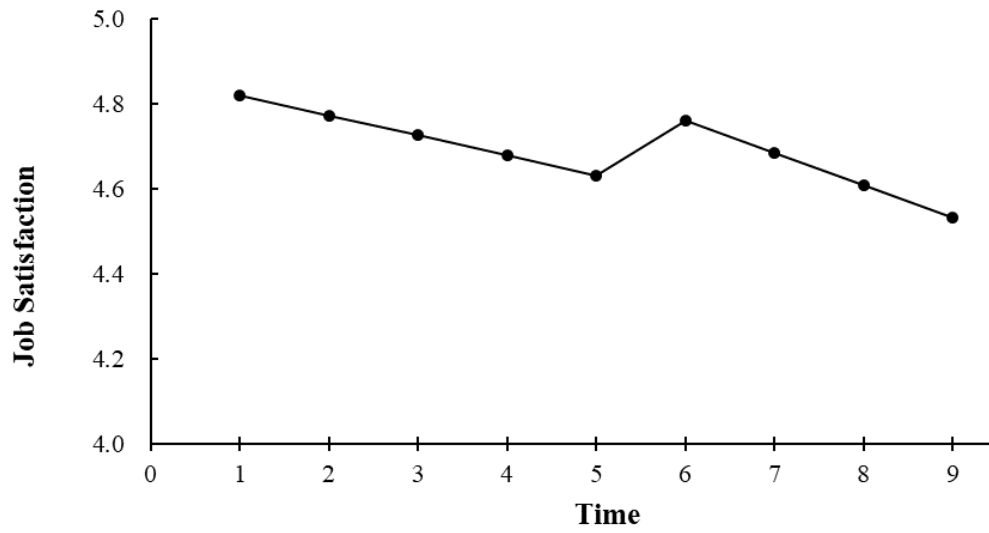


Figure 6. The general trajectory of job satisfaction from Time 1 to Time 9.

Appendix A

Measures

Professional identification

1. When someone criticizes professions of nurses, it feels like a personal insult.
2. I strongly identify with my current profession as nurses.
3. I feel strong ties with my current profession as nurses.

Sensegiving

1. The department facilitates our understanding of nurses' responsibility during the COVID-19 pandemic.
2. The department encourages us to stand firm as nurses during the COVID-19 pandemic.
3. The department helps us to make sense of the mission of nurses during the COVID-19 pandemic.

Moral elevation

During the COVID-19 pandemic, how frequently you will feel the following emotions when you witnessed the stories of other nurses or health-care workers?

1. Inspired.
2. Awe.
3. Admiration.

Work meaningfulness

1. I know my work makes a positive difference in the world.
2. The work I do serves a greater purpose.
3. My work really makes a bit difference to the society.

Workload increase

1. The workload has increased since the outbreak of COVID-19.
2. The number of patients has increased since the outbreak of COVID-19.

Appendix B

Analytic Approach & Results of Testing Measurement Invariance and Discriminant Validity of the Measures

We first tested measurement invariance across time of professional identification to ensure that the changes we found in the trajectory were not due to changes in the meaning or measurement of the construct (Chan, 1998). We then conducted several confirmatory factor analyses (CFAs) and Fornell and Larcker (1981) test for the distinctiveness of our measures.

To test our hypotheses, we used discontinuous growth modeling (DGM) (Bliese et al., 2016; Bliese & Lang, 2016) because we expect the COVID-19 pandemic represents a disruption in the professional identification process. We used the outbreak of COVID-19 as one breakpoint to split the time span into three change terms: the growth rate before (T1-T5), the change from T5 to T6, and the growth rate after the outbreak (T6-T9). To determine the pattern of change, we compared the discontinuous growth trajectory with three alternative models: a linear model, a quadric model, and a no-change model. The model fit of these latent growth models was evaluated based on χ^2 statistic, comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). Based on these model fit indices, we can decide whether a discontinuous growth model is the best fitting model and determine the extent to which professional identification changed before and after the outbreak of COVID-19.

In the next step, we estimated the effects of sensegiving and moral elevation on the change in professional identification following the outbreak of COVID-19. We then tested whether the effects were mediated by work meaningfulness, while also

controlling for participants' age, gender, education, work experience, department, and workload increase. We used full information maximum likelihood (FIML) to address the issue of missing data (Graham, 2009) and used Mplus 8.4 to perform the analyses.

We first tested measurement invariance across time following Chan's (1998) procedure and comparing unconstrained measurement models in which factor loadings of the items administered over time and item-specific errors were freely estimated and constrained models in which factor loadings of the same items were fixed to be equal across time. The results ($\Delta\chi^2 (\Delta df = 16) = 28.04, p = .03, \Delta CFI = .002$)⁶ provide evidence of measurement invariance or professional identification.

CFAs on the variables supported the discriminant validity of the measures. Because we had nine waves of measurements for professional identification, we chose T6 measure of professional identification for the analysis since other variables were also collected at T6. Specifically, we entered items of professional identification, sensegiving, moral elevation, and work meaningfulness into four correlated factors. The data fit the four-factor model well ($\chi^2 (48, N = 313) = 71.27, p = .02, RMSEA = .04, CFI = 1.00, TLI = .99, SRMR = .01$) and significantly better than other models.⁷ Moreover, we followed Fornell and Larcker (1981) procedure as another test of discriminant validity. The average variances extracted in sensegiving (T6), moral elevation (T6), work meaningfulness (T6) and professional identification (T6) were .94, .93, .94 and .81, respectively. The largest squared intercorrelation between these latent variables was the one between sensegiving (T6) and work meaningfulness (T6), which was .52. These results provided support for the discriminant validity of our measures.

⁶ As researchers suggest, ΔCFI is a more reliable indicator than $\Delta\chi^2$ of measurement invariance, and when ΔCFI is greater than .01, the invariance is untenable (Cheung & Rensvold, 2002).

⁷ Full CFA results including alternative model specifications are available from the authors upon request.

Appendix C

Alternative Coding for Discontinuous Growth Model

The coding we used for the discontinuous growth model, as shown in Table 3, was the basic discontinuous model, in which the TRANS variable and RECOV variable are defined relatively and the change pattern represents predict change based on the linear model if the event causing the discontinuity had not occurred (Bliese & Lang, 2016). We chose this coding because in our theoretical development, we propose the outbreak of COVID-19, as a disruptive event, will interrupt new graduate nurses' entry processes (Ashforth et al., 2014). And according to previous research, this process might last 1 year (Boswell et al., 2009; De Vos & Freese, 2011) or even longer (Jokisaari & Nurmi, 2009). For example, Boswell et al. (2009) found that newcomers' job satisfaction might decrease in 1 year after their entry. The results suggested that new nurses' professional identification might keep decreasing if the COVID-19 pandemic had not occurred. Therefore, we focus on relative TRANS change to see how the outbreak of COVID-19 has shifted the change patterns of new graduate nurses' professional identification.

With a negative pre-transition slope, a positive TRANS parameter could represent (a) a significant decrease, (b) no change, or (c) an increase in absolute terms. And a positive RECOV slope could represent (a) a positive slope, (b) a flat slope, or (c) a positive slope in absolute terms. Therefore, to fully understand the change pattern, we need to examine absolute change. As suggested by Bliese and Lang (2016), the key to examine absolute change is to substitute TIME.A, as in Table A.1, for TIME when coding the change variables. The TRANS effect and RECOV effect are defined relative

to zero. The results based on TIME.A coding was shown in Table A.2. The results shown, there was an absolute increase in professional identification (TRANS Slope mean = .11, $p = .003$) from T5 to T6. And after the outbreak of the COVID-19 pandemic, the change of professional identification was not significant (RECOV Slope mean = -.02, $p = .20$, RECOV Slope variance = .02, $p = .001$), which suggest that professional identification remained the same with increased level after the outbreak of the COVID-19 pandemic.

Table A.1
Absolute Coding and Interpretation of Change Variables in the Discontinuous Growth Models

Measurement occasion	Coding		
	TIME.A	TRANS	RECOV
T1	0	0	0
T2	1	0	0
T3	2	0	0
T4	3	0	0
T5	4	0	0
T6	4	1	0
T7	4	1	1
T8	4	1	2
T9	4	1	3
Interpretation	Linear change of professional identification during socialization process before the outbreak of COVID-19 pandemic	Professional identification's change from before to after the outbreak of COVID-19 pandemic ^a	Linear change of professional identification after the outbreak of COVID-19 pandemic ^b

Notes. ^a The TRANS change is compared to zero.

^b The RECOV slope is compared to zero.

Table A.2
Summary of Discontinuous Growth Model based on Absolute Coding for the Professional Identification

	TIME.A	TRANS	RECOV
Intercept_mean		4.76***	
Intercept_variance		.39***	
Slope_mean	-.04**	.11**	-.02
Slope_variance	.01***	.11**	.02**
Cov (I, S)	-.02**	.02	.01

Notes. $N = 322$.

Cov (I, S) = the covariance between intercept and slope.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Appendix

Data Transparency

The data reported in this manuscript were collected as part of a larger data collection. Findings from the data collection have been reported in separate manuscripts. MS 1 (under review) focuses on routine disruption, safety climate, training, informational justice and medical errors; while MS 2 (the current manuscript) focuses on professional identification, sensegiving, moral elevation, work meaningfulness, workload increase and turnover intention. There is no overlap in using variables between the two manuscripts. The table below displays where each data variable appears in each study, as well as the current status of each study.

Variables in the Complete Dataset	MS 1 (STATUS = under review)	MS 2 (STATUS = current)
Professional identification		✓
Sensegiving		✓
Moral elevation		✓
Work meaningfulness		✓
Workload increase		✓
Turnover intention		✓
Routine disruption	✓	
Safety climate	✓	
Training	✓	
Informational justice	✓	
Medical error	✓	