

Unsafe by design: Infusion task reallocation and safety perceptions in U.S. hospitals

Benjamin R. Pratt • Benjamin B. Dunford • Timothy J. Vogus • Ahmad M. Ashkanani • Frederick P. Morgeson • Mary Alexander

Background: Research suggests that changes in nurse roles can compromise perceived organizational safety. However, over the past 15 years, many infusion tasks have been reallocated from specialty nurse infusion teams to individual generalist nurses—a process we call *infusion task reallocation*. These changes purportedly benefit employees by allowing care providers to practice at the “top of their license.” However, job demands–resources theory suggests that changing core task arrangements can either enrich or merely enlarge jobs depending on their effects on demands and resources, with corresponding consequences for performance (e.g., safety). There is relatively little research directly exploring these effects and their mechanisms.

Purpose: This study examines the relationship between infusion task reallocation and perceptions of organizational safety. We also explore the extent to which this relationship may be mediated by infusion-related resources and psychological safety.

Methodology: Data were collected through a survey of 623 nurses from 580 U.S. hospitals. The relationship between infusion task reallocation and perceptions of organizational safety, as well as the potential mediating roles of infusion-related resources and psychological safety, was examined using structural equation modeling.

Results: Infusion task reallocation was negatively associated with respondents’ perceptions of organizational safety, with nurses working in organizations without an infusion team indicating lower perceptions of organizational safety than nurses working in organizations with an infusion team. This relationship was mediated by nurse perceptions of psychological safety within the organization, but not by infusion-related resources, suggesting that task reallocation is associated with lower perceived organizational safety because nurses feel less psychologically safe rather than because of perceived technical constraints.

Practice Implications: The results indicate that, although infusion task reallocation may be a cost-reducing approach to managing clinical responsibilities, it enlarges rather than enriches the job through higher demands and fewer resources for nurses and, in turn, lower perceived organizational safety.

Key words: Health care operations, infusions, job demands–resources, nursing, organizational safety, psychological safety, work design

Cost pressures associated with increasingly complex medical interventions (Barbash & Glied, 2010; Calman et al., 2012) and decreasing reimbursement rates from government and private insurance sources (Bendix, 2013; Tozzi, 2014) have required U.S. health care organizations to alter care delivery in ways that attend to cost as well as quality (Huerta et al., 2016). Two such adaptations involve changing who delivers care and how it is delivered (Davis et al., 2011; Lathrop & Hodnicki, 2014; Levin, 2012; Mingee, 2003). For example, in nursing, many tasks have been shifted from nurses with advanced degrees and credentials to generalist nurses (registered

nurses), licensed practical nurses, and certified nursing assistants (Anteby et al., 2016; Hadaway et al., 2014; Lasater et al., 2020). In addition, tasks have been reallocated from teams to individuals to further streamline work processes (Gordon et al., 2008; Preuss, 2003). These efforts to reduce cost are purported to simultaneously preserve or even enhance quality, in part, by “enriching” the jobs of frontline care providers through greater control and responsibility for complex tasks (Chung & Ross, 1977), allowing them to practice at the “top of their license” (Feyereisen et al., 2018). However, if adding and individualizing tasks is merely “enlargement” or adding more tasks to an existing job (Chung & Ross, 1977), a trade-off between cost and quality is more likely.

The job demands–resources (JD-R) theory (Demerouti et al., 2001) explains when a job is more likely to be seen as enriching or enlarging. Specifically, the JD-R model posits that adding work demands without adding resources leads to negative outcomes for individuals and their organizations (Bakker & Demerouti, 2007; Demerouti et al., 2001). Bakker and Demerouti (2007) define resources as “those physical, psychological, social or organizational aspects of

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the job that are either/or: (a) functional in achieving work goals; (b) reduce job demands and the associated physiological and psychological costs; and (c) stimulate personal growth, learning, and development” (p. 312). Adding complex and consequential tasks for individual nurses increases demands but could also be seen as adding motivational and social resources of increased autonomy and status (Chung & Ross, 1977; Hackman & Oldham, 1976). These resources would provide a buffer against the negative outcomes associated with increased clinical demands (Demerouti et al., 2001). However, moving from a team-based to individual approach to tasks reduces the social (e.g., high-quality relationships and support) and technical (knowledge, training) resources available to an individual nurse. According to JD-R, decreasing social and technical resources exacerbates the negative individual and organizational effects of job demands. Thus, drawing upon JD-R, we sought to explore whether work redesign that adds complex tasks and individualizes work enriches or enlarges the job and the corresponding consequences of the nurse and the organization.

We focus on infusions as a context for exploring work redesign as it exemplifies widespread shifts, changing who delivers care and how it is delivered. Infusions entail the “administration of solutions, medication, nutritional products, and blood and blood components via the parenteral route” (Alexander et al., 2010, p. 1) that can be as complex as peripherally or centrally inserted vascular access devices used to transfuse blood, administer chemotherapy, or provide nutrition to a patient. Although infusions have been a part of medical practice for over 100 years, it was not until the late 1960s that nurses were authorized to administer infusions in the United States (Alexander et al., 2010). During the decades that followed, responsibility over infusions shifted from doctors to medical residents and then to specially trained nurse infusion teams. The use of specialized nurse infusion teams, known in the industry as the “infusion team model,” remains the standard of care among relevant credentialing bodies (Alexander et al., 2010).

However, during the last 15 years, U.S. health care administrators began disbanding nurse infusion teams, opting instead to reallocate infusion tasks to more generalist nurses in what has been termed the “primary care model” of infusion administration (Hadaway et al., 2014). This decision to disband nurse infusion teams was initially recommended by health care consultants to cut costs without reducing billable services by terminating highly experienced—and well-paid—nurses whose services are rarely linked to direct billable costs (Hadaway et al., 2013). We refer to this process of shifting infusion tasks from specialist nurse infusion teams to generalist nurses as *infusion task reallocation*.

There is suggestive evidence that infusion task reallocation corresponded with an increase in infusion-related medical errors (Hadaway et al., 2014). During 2011, after infusion task reallocation became widespread throughout U.S. health care organizations, infusion-related bloodstream infections in U.S. hospitals climbed to 71,900, with an estimated 10% of those cases resulting in the death of the patient. In addition to the human costs, the financial costs of infusion-related

errors are also significant. Hu et al. (2004) found that central line-associated bloodstream infections cost hospitals between \$5,734 and \$22,939 per case, depending on the severity of the infection. Although many clinicians believe that the increase in infusion-related medical errors is attributable to disbanding specialized nurse infusion teams (Hadaway et al., 2014), we have little systematic evidence regarding differing approaches to infusions (i.e., infusion task reallocation) and their consequences for nurses and their organizations. Specifically, we explore how differences in work design either enrich (e.g., adding meaning and reducing demands for coordination) or enlarge (e.g., increasing demands by adding complex tasks while also reducing the social and technical support resources inherent in team-based approaches) infusion nursing. To do so, we examine how infusion task reallocation relates to perceptions of organizational safety through effects on two types of job resources—technical resource availability (i.e., infusion-related resources) and social resources (i.e., psychological safety).

We propose and test a model of infusion task reallocation and nurse perceptions of organizational safety with data from a survey of 623 nurses representing approximately 580 U.S. hospitals. This study contributes to the health care management literature in three important ways. First, we provide a more systematic investigation of the relationship between infusion task reallocation and organizational safety to assess whether, as consultants propose, it benefits patients and employees (reflective of job enrichment) or if it trades off quality for lower cost as broadly suggested by infection rates (reflective of job enlargement). Second, we identify the mechanisms by which changes in work design like infusion task reallocation affects nurses’ resources—technical infusion-related resources and social resources (psychological safety)—and their effects on organizational safety. Third, we extend the JD-R model in three ways: (a) We explore the effects of a systematic redesign of core work tasks to illuminate the role of task reallocation on demands and resources, (b) we evaluate the relative importance of technical and social resources in response to task reallocation, and (c) we explore the applicability of JD-R to a novel outcome (organizational safety). That is, we illustrate whether and how specific work designs (i.e., task reallocation) of core care delivery processes (i.e., infusion) affect individual nurse perceptions of their workplace and their ability to safely carry out their work for themselves and their patients.

Theory

Task reallocation is the reassignment of tasks from one entity to another. More specific to our study, infusion task reallocation refers to the systemic reassignment of tasks previously performed by specialized infusion nurse teams to generalist nurses.

Organizational and Psychological Safety

Organizational safety is the extent to which individuals perceive that patients and those delivering care are free of harm. Employee perceptions of organizational safety are vitally important within organizations, as they affect important worker attitudes and outcomes, such as well-being and organizational

commitment (McCaughey et al., 2013). Perceptions of organizational safety are also important because they are associated with unsafe work behaviors (Flin, 2007) that may harm employees and patients. Although patient and employee safety represent distinct outcomes, prior research has demonstrated that both derive from similar workplace antecedents. For example, Flin (2007) details how both patient and worker injuries derive from perceptions of workplace commitment to safety (e.g., how the work is designed and carried out) and the resulting employee motivation for safety and unsafe behaviors. Safety climate, or “shared perceptions with regard to safety policies, procedures, and practices” (Zohar, 2003: 125), also serves as a key antecedent to employee perceptions of overall safety, as opposed to separate evaluations of safety for patients or employees. Therefore, a more comprehensive examination of perceptions regarding organizational safety as presently defined necessarily considers both patient and worker safety.

Unlike perceived organizational safety, which focuses on avoiding or mitigating (physical) harm, psychological safety refers to the extent to which individuals or groups feel safe to take interpersonal risks, such as learning a new task on the job or reporting errors in the workplace. As such, it focuses on relational and interpersonal harm (e.g., getting yelled at, being ostracized; Edmondson, 1996). When present, psychological safety acts as a social resource that aids reducing job demands, achieving work goals, and stimulating learning (Frazier et al., 2017). In other words, effectively learning and developing professional skills (Rich et al., 2010) as well as safe performance (Vogus et al., 2010) rely on feeling psychologically safe. As such, psychological safety is an antecedent of organizational safety. Psychological safety is enabled by supportive leadership (Nembhard & Edmondson, 2006), peers, and organizational practices (Frazier et al., 2017). In general, norms and practices that encourage experimentation, foster interdependence, and treat errors as an opportunity for learning enhance psychological safety among workers (Edmondson, 1999).

Task Reallocation and Organizational Safety

The increased demands associated with infusion task reallocation, like with other work demands, are expected to lead to negative outcomes for individuals and the organizations in which they work (Bakker & Demerouti, 2007; Demerouti et al., 2001). Despite being important and meaningful tasks (Alexander et al., 2010), reallocated infusion tasks are sufficiently complex and consequential that they represent a substantial demand for nurses. These tasks are especially likely to be viewed as demands rather than resources that bolster meaning and status because they require generalist nurses to perform outside their typical comfort zone and, potentially, outside their perceived level of competency (Alexander et al., 2010). Increased job demands, such as performing outside one’s competency, increase potential threats to patient (Hansez & Chmiel, 2010) and worker (Cantley et al., 2016) safety. They also reflect job enlargement more so than enrichment. Enlarging the generalist nurse job means the resources needed for engaging

in safety practices are instead consumed by job demands (Bakker & Demerouti, 2007). In addition, the greater demands also consume psychological resources in ways that can further negatively impact worker motivation and ability to use safe practices, increasing the likelihood of harm to workers and patients (Flin, 2007).

Moving away from the team-based approach means removing resources that can help manage higher task demands by answering questions, detecting anomalies, and providing technical support that can aid organizational safety (Vogus et al., 2010). In keeping with the JD-R model, we hypothesize that these demands will be exacerbated by the lack of supportive resources available to generalist nurses. In other words, the infusion team model eliminated by task reallocation provides dedicated infusion specialists not only to conduct complex and consequential infusions but also to provide technical training and mentoring for generalist nurses providing infusions. Thus, we hypothesize that infusion task reallocation will be associated with lower levels of perceived organizational safety.

Hypothesis 1: Task reallocation will be negatively associated with perceived organizational safety.

Resources as Mediating Mechanisms of Organizational Safety

Infusion-related resources. In considering the mechanisms through which the hypothesized negative relationship between task reallocation and nurse perceptions of organizational safety operates, we focused on the resources that may be negatively affected. Alexander et al. (2010) have explained that dedicated infusion nurses are key sources of technical support regarding the practice of infusions and provide information sharing and other infusion-related support to other nurses. When infusion task reallocation leads to fewer infusion-related resources within an organization—as the dedicated infusion team is no longer available for technical training and mentoring—we anticipate that nurses will perceive that organization as less safe as there is less infrastructure for ensuring infusions are conducted safely and threats to safety are recognized earlier before harm occurs (Vogus et al., 2010). In addition, the loss of technical infusion-related resources creates strain on individual nurses as they feel less competent and comfortable carrying out infusion tasks, as well as less supported by the organization (i.e., that the organization is less committed to safety; Hansez & Chmiel, 2010), all of which can increase the likelihood of harm to the worker or patient. For this reason, we posit that the loss of technical infusion-related resources represents a mechanism by which task reallocation is associated with lower perceptions of organizational safety.

Hypothesis 2: Infusion-related resources mediate the relationship between task reallocation and perceived organizational safety.

Psychological safety. We posit, however, that technical infusion-related resources are not the only potential mechanism

by which task reallocation is associated with perceptions of organizational safety; it is also important to consider the social resources. A key social resource for employees and their organizations is psychological safety. Task reallocation may compromise psychological safety by heightening a sense of vulnerability (Edmondson, 1999; Kahn, 1990) in multiple ways. The demands associated with the reallocation of complex tasks outside generalist nurses' typical job duties are heightened by the need to learn new tasks on the job. On-the-job learning requires a level of vulnerability, as employees must often proactively request additional guidance, direction, and support from experienced colleagues and managers to develop the knowledge, skills, and abilities required to properly perform those complex tasks (Edmondson, 1996, 1999). Regarding infusions, this vulnerability is further accentuated in three ways. First, infusion tasks are highly consequential, as infusion-related medical errors can result in patient death and lawsuits targeting the nurse or hospital (Hadaway et al., 2014), and when the work is conducted individually, there is lower psychological safety (Frazier et al., 2017). Second, according to experts in the field, infusion task reallocation was undertaken in many organizations to cut costs by eliminating infusion specialist positions and laying off highly qualified nurses, creating a lower sense of professional security and trust in leadership among remaining nurses (Hadaway, 2013). As trust between leaders and subordinates is key to psychological safety (Aranzamendez et al., 2015; Carmeli et al., 2012; Frazier et al., 2017), cost-focused infusion task reallocation is likely to be associated with lower perceptions of psychological safety by generalist nurses. Third, higher levels of interdependence are associated with psychological safety (Frazier et al., 2017); infusion task reallocation reduces interdependence and increases independent work and learning such that generalist nurses experience lower levels of psychological safety.

Ensuring safety also relies on psychological safety that creates the conditions and willingness to speak up about unsafe conditions, errors, and close calls (Vogus et al., 2010). As such, psychological safety is linked to both safety-enhancing behaviors and organizational safety. Specifically, a meta-analysis reveals that psychological safety is consistently associated with information and knowledge sharing, team learning, and voice (Frazier et al., 2017). There are also multiple studies that have linked psychological safety with on-the-job learning and job performance (Nembhard & Tucker, 2016) as well as organizational safety in health care organizations (Edmondson, 1996; Nembhard & Tucker, 2016).

In contrast, lower levels of psychological safety means individuals perceive the work environment is judgmental and threatening in ways that inhibit the information and knowledge sharing, learning behaviors, and speaking up needed to ensure organizational safety. Without being able to engage in actions that help ensure safe performance and effectively learning from experience, lower psychological safety is likely to be associated with perceptions of lower levels of organizational safety.

Hypothesis 3: Psychological safety mediates the relationship between task reallocation and perceived organizational safety.

Figure 1 summarizes our proposed multiple mediator model.

Methods

Data and Sample

Participants were selected to participate through their affiliation with at least one of five professional associations: the Infusion Nurses Society (INS), the Academy of Medical-Surgical Nurses, the Academy of Neonatal Nurses, the American Academy of Ambulatory Care Nurses, or the Immunoglobulin National Society. A description of the study and link to the survey was sent out in each nursing association's newsletter. As our study is particularly relevant to INS, we sent an e-mail to each individual on the INS mailing list. Unfortunately, because we cannot know how many individuals saw the survey description and link in each respective association newsletter, we are unable to calculate a meaningful response rate. However, 1,207 nurses provided full responses to our survey. To address our particular research questions, we limited our sample for this study to nurses who reported working in hospitals ($N = 623$).

Measures

Infusion task reallocation. Infusion task reallocation in this study focuses on whether hospitals are using nurse infusion teams or if infusion tasks have been reallocated to bedside nurses, which Hadaway et al. (2014) refer to as the "primary care model." In determining infusion administration methods, we used a dichotomous measure with the item "Does your organization have a dedicated infusion team?" (0 if yes, 1 otherwise) that allowed us to know if infusion teams were used within the respondents' organizations. Organizations without an infusion team of any kind, by default, are assumed to use the primary care model of infusion administration, in which infusion tasks have been reallocated to generalist nurses.

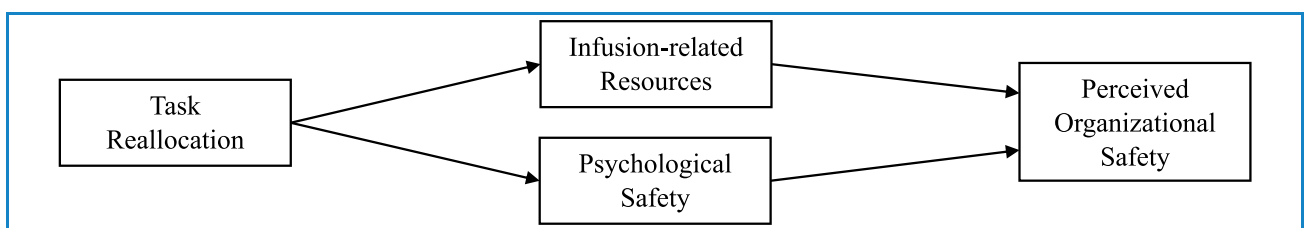


Figure 1. Conceptual multiple mediator model.

Perceived organizational safety. Organizational safety entails the safety of an organization’s patients, as well as its staff (Mohr et al., 2018). We define perceived organizational safety as the respondent’s individual perceptions of both patient and staff safety within their organization, relative to safety in peer organizations. For this measure, we adapted an existing organizational safety scale developed by Vogus (2004), focusing specifically on patient and employee safety. The main prompt reads: “In your personal opinion, compared to your peer facilities, how does your facility rate on the following?” Individual items include “injuries to patients (reverse coded),” “medication errors (reverse coded),” and “staff injuries (reverse coded).” Respondents choose from among seven options on each item, ranging from 1 = *much lower* to 7 = *much higher*. Cronbach’s alpha for this scale was .80.

Infusion-related resources. With the help of various infusion experts from the professional nursing associations in our sample, we developed a seven-item scale of infusion-related resources, which gives respondents the opportunity to indicate the ways they felt supported in carrying out their infusion-related tasks. Respondents use a 5-point Likert scale, ranging from 1 = *very poor* to 5 = *very good*, indicating the level of infusion-related resources that provide informational and technical support—such as training, mentoring, and career development—available within the hospitals in which they work. As this was a scale of our creation, we validated it with a sample of 351 nurse respondents who worked in nonhospital health care organizations. Cronbach’s alpha for this scale was .92.

Psychological safety. We adapted Edmondson’s (1999) seven-item, team-level psychological safety scale, changing the referent from “team” to “organization.” Items include the following: “When people make a mistake in this organization, it is often held against them” (reverse coded) and “Members of this organization are able to bring up problems and tough issues.” Respondents used a 7-point Likert scale,

ranging from 1 = *strongly disagree* to 7 = *strongly agree*. Cronbach’s alpha for this scale was .80.

Control variables. In addition to the hypothesized variables, we controlled for key variables, which may have influenced the relationships under examination. As with many professions, there are generational differences in how nursing should be appropriately conducted. Consequently, we control for respondent’s age (in years). In addition, research indicates that infusion nurses often have notably high levels of experience (Hadaway et al., 2014). In order to control for responses given by those who have considerable experience with infusions, we control for amount of experience in infusion work (in years). Finally, infusion-related opinions, as well as the practicality of a dedicated infusion team, are likely to vary considerably from hospital to hospital according to infusion needs and resources. To acknowledge this variance, we control for the number of employees employed in the respondent’s hospital, which we convert to natural log because of the natural right-skew in the data.

Data Analysis

Data analyses were conducted using STATA 17 software. Although regression analysis can be used to test our hypotheses (Hayes, 2013), we chose to use structural equation modeling, which tests relationships among latent variables while also simultaneously accounting for measurement error, thereby providing a more comprehensive test of our hypotheses (Beran & Violato, 2010). Table 1 provides means, standard deviations, and correlations for the main constructs in the study. The results of the structural equation model analyses are provided as standardized coefficients in Figure 2.

Results

The average age of the survey respondents was 52.7 years, and respondents reported an average of 23.6 years of experience performing infusions. Of those surveyed, 94.9% were women, whereas nearly 87.6% self-reported as Caucasian. All respondents reported working in hospitals, and 83.4% of respondents

TABLE 1: Descriptive statistics and correlations for main variables

Variable (scale)	Mean	SD	1	2	3	4	5	6	7
1. Task reallocation (0–1)	0.46	0.50	—						
2. Infusion-related resources (1–5)	3.34	0.84	-.17**	(.92)					
3. Psychological safety (1–7)	4.77	1.05	-.09*	.52**	(.80)				
4. Perceived organizational safety (1–7)	4.63	1.01	-.10*	.22**	.24**	(.80)			
5. Age (in years)	52.47	10.33	-.07	-.06	-.01	.09	—		
6. Infusion experience (in years)	23.52	12.04	-.07	-.06	.00	.03	.70**	—	
7. Org size (natural log of employees)	6.90	1.77	-.16**	-.02	-.03	-.15**	.01**	.02	—

Note. Sample size: $N = 623$. Coefficient alpha estimates of reliability are in parentheses on the diagonal where applicable.

* $p < .05$. ** $p < .001$.

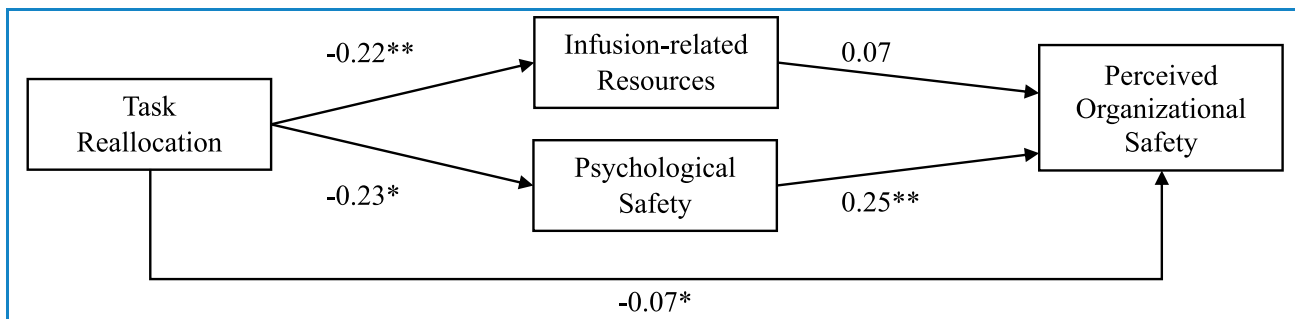


Figure 2. Multiple mediation results (* $p < .05$, ** $p < .001$).

indicated that they still work primarily in clinical roles, as opposed to administrative roles.

Confirmatory factor analysis supported the discriminant validity of our measures as a three-factor model with separate factors for infusion-based resources, psychological safety, and perceived organizational safety ($\chi^2 = 569.039$, RMSEA = .07, CFI = .93, TLI = .91, SRMR = .05) fit better than an alternative one-factor model in which all items were loaded onto a single factor ($\chi^2 = 1,975.736$, RMSEA = .14, CFI = .69, TLI = .65, SRMR = .12) or a two-factor model in which the two mediators were loaded onto a single factor ($\chi^2 = 1,134.476$, RMSEA = .10, CFI = .83, TLI = .81, SRMR = .08).

Our hypothesized model fit the data well ($\chi^2 = 609.709$, RMSEA = .06, CFI = .92, TLI = .91, SRMR = .04). We then examined the relationship proposed in Hypothesis 1 while also controlling for respondent's age, infusion-related experience, and number of employees in the hospital in which each respondent works. We found a negative relationship between infusion task reallocation and perceived organizational safety ($\beta = -.21$, $z = -2.12$, $p < .05$), suggesting that infusion task reallocation to individual generalist nurses is associated with lower perceptions of organizational safety, supporting Hypothesis 1.

Hypothesis 2 posits infusion-related resources mediate the relationship between task reallocation and perceived organizational safety. We found a negative relationship between infusion task reallocation and infusion-related resources ($\beta = -.22$, $z = -3.55$, $p < .001$). However, there is no significant relationship between infusion-related resources and perceived organizational safety ($\beta = .07$, $z = 0.75$, *ns*). Because there was no significant relationship between infusion-related resources and perceived organizational safety, infusion-related resources cannot mediate the relationship between infusion task reallocation and perceived organizational safety, thus failing to support Hypothesis 2.

Finally, Hypothesis 3 suggests psychological safety mediates the relationship between task reallocation and perceived organizational safety. We found a negative and significant relationship between infusion task reallocation and psychological safety ($\beta = -.23$, $z = -2.42$, $p < .05$), as well as a strong positive relationship between psychological safety and perceived organizational safety ($\beta = .25$, $z = 3.57$, $p < .001$). Our analysis also demonstrated a statistically significant negative indirect effect of Task reallocation \rightarrow Psychological safety \rightarrow Perceived organizational safety (-0.0744 , 95% CI

$[-0.1381, -0.0107]$). Taken together, Hypothesis 3 was supported, suggesting that psychological safety mediates the relationship between task reallocation and perceived organizational safety. In other words, task reallocation weakens perceived organizational safety through its negative association with psychological safety.

Discussion

The results from our study provide support for Hypotheses 1 and 3 but fail to provide support for Hypothesis 2. We found a negative relationship between task reallocation and nurse perceptions of safety within the hospitals in which they work. Although nurses in hospitals that have reallocated infusion tasks from specialty nurse infusion teams to generalist nurses report lower levels of both technical (infusion-related) and social (psychological safety) resources than nurses in hospitals in which nurse infusion teams still provide infusion services, training, and mentoring, only psychological safety mediates the relationship between infusion task reallocation and perceptions of organizational safety. As such, our findings suggest despite being sold as a source of enrichment infusion task reallocation more closely resembles job enlargement that, in turn, compromises perceived organizational safety. This finding seems to indicate that psychological safety, a social resource, plays a more important role in the relationship between infusion task reallocation and perceptions of organizational safety than more technical infusion-related resources. As a result, efforts to cultivate or restore psychological safety seem especially important to perceptions of organizational safety and effectively managing different work arrangements (e.g., moving from the infusion team model to the primary care model).

In this study, we have examined the effects of task reallocation, a novel and systematic approach to work design, on organizational safety. As such, this study contributes to the work design literature by introducing a common yet underexamined work redesign phenomenon in which management takes tasks from groups of specialized employees and then reallocates those exact tasks to more generalist groups of employees. We also show how such approaches to cost reduction carry significant costs to employees in the form of lower levels of technical (infusion task-related) and social (resources) that impede their ability to effectively respond to the increased demands. Infusion task reallocation also predicts lower perceived organizational safety and its associated human and

financial costs (e.g., central line-associated bloodstream infections). Thus, pursuing cost-focused task reallocation needs to consider the full range of employee and organizational costs.

Our research extends the JD-R model in three ways. First, we find that although task reallocation is associated with lower levels of technical and social resources, only the social resource (psychological safety) was associated with lower levels of perceived organizational safety. This suggests that social resources might require extra attention from managers considering work redesign like task allocation. Future research should continue to explore the relative value of technical versus social resources on employee and organizational outcomes. Second, the benefits of task reallocation purported by consultants—individual motivational effects of task reallocation through autonomy and status enhancement (Hadaway et al., 2014)—did not offset the loss of technical and social resources from peers and the organization. This suggests the importance of social resources for navigating the disruptive effects of disruptive task-based change and that the most consequential effects of these changes may be to the quality of relationships rather than individual motivations. Third, we extended the JD-R model—which typically focuses on worker burnout and engagement (Schaufeli, 2017)—to consider not just commonly found effects on individual well-being but safety perceptions because the combination of demands and loss of resources compromise the ability to engage in safety-enhancing dialogue and information sharing. Overall, our findings suggest a potential prioritization of resources to bolster when undertaking work redesign generally and when pushing tasks down to individuals practicing at the top of their license in particular.

Practice Implications

Currently, many U.S. hospitals are under distressing economic pressures, with many experiencing the threat of financial insolvency (Ellison, 2016). In order to make ends meet, many hospitals have reallocated tasks to cut payroll costs (Hadaway et al., 2014), a trend likely to accelerate and broaden in light of the strain on hospital finances because of COVID-19. Although task reallocation may generally yield immediate financial benefits, infusion task reallocation's negative association with nurse perceptions of organizational safety is a cause for concern, as decreases in hospital safety are typically associated with reputational costs (Mira et al., 2014), litigation costs (Annas, 2006), and lower reimbursement (for certain "never events" in the United States).

In disbanding nurse infusion teams, many hospitals failed to see the institutional and task-specific infusion knowledge and technical support they were sacrificing to save money. As demonstrated in our study by the negative relationship between infusion task reallocation and infusion-related resources, hospitals following the primary care model of infusion delivery have thus far failed to provide adequate infusion-related resources to counteract the resources that dedicated nurse infusion teams provide to their organizations.

Perhaps most concerning, however, is the negative association found in this study between infusion task reallocation

and a key social resource (psychological safety), even when accounting for the effects of infusion-related resources. Given its importance to perceived organizational safety in our study and its wide-ranging effects on individual and group commitment, engagement, information sharing, learning and improvement, and task performance found in a meta-analysis (Frazier et al., 2017), psychological safety merits heightened managerial attention. In other words, in response to the additional demands resulting from infusion task reallocation, many nurses are not benefitting from sharing and learning from experience—including mistakes that they may make—nor are they benefitting from strengthening relationships with others in their workplace, working instead in environments that they perceive as less conducive to both learning and sharing medical errors and other information. However, this finding signals an opportunity for resource-depleted hospitals to improve nurse perceptions of organizational safety. By enhancing psychological safety through more active mentoring or leaders being more inclusive (Nembhard & Edmondson, 2006)—both of which create feelings of safety to learn on the job and ask questions—organizations may be able to mitigate the negative relationship between infusion task reallocation and nurse perceptions of organizational safety.

Limitations

Our findings should be considered in light of the limitations to this study. First, although the model described in this study implies causality, the data for this study are cross-sectional, precluding any investigation into causality. Future research should take a more longitudinal approach in testing these relationships, thus facilitating our understanding of the temporal ordering of the variables in this study. In particular, future longitudinal studies should examine discrete shifts from infusion team to primary care models of infusion delivery as well as the potential antecedent effects of infusion-based resource availability on infusion task reallocation and psychological safety. Second, the outcomes for this study—perceptions—are based on subjective responses from nurses, rather than objective data. Although research has shown a significant negative relationship between safety perceptions and number of event reports (Halbesleben et al., 2008) and the study of perceptions plays an important role in both management studies (see Rodell & Lynch, 2016; Sikora et al., 2015) and studies of safety in health care (Halbesleben et al., 2008), future studies of task reallocation should consider the objective effects of task reallocation on patient care measures and nurse behavior, in combination with attitudes and perceptions. Third, although we controlled for organization size, which provides an indication of resource differences across hospitals, future research should explore more specific organizational factors like staffing levels and how they affect task reallocation and perceived organizational safety. Finally, although care was taken to distance the scales considered in this study from one another within the survey instrument, there remains the possibility of common method bias, as these data were gathered from one single survey. Future studies should gather data through multiple methods and, when possible, at multiple points in time.

Conclusion

In this study, we explore the impacts of task reallocation, specifically infusion task reallocation, on technical infusion-related resources, psychological safety, and perceptions of organizational safety. Results from this study indicate that infusion task reallocation seems to create demands that resemble job enlargement more than enrichment and, consequently, has a negative relationship with nurse perceptions of organizational safety and that this relationship is mediated by nurse perceptions of psychological safety. The mediating effect of psychological safety suggests that the negative relationship between infusion task reallocation and nurse perceptions of organizational safety operates through a lack of social resources more than technical infusion-related resources. As task reallocation is becoming an increasingly common cost-saving practice in hospitals throughout the United States (Hadaway et al., 2014), the more holistic set of costs (social resources, perceived organizational safety) we identify merit consideration when evaluating potential work redesigns and suggest interventions to bolster psychological safety to mitigate these costs.

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