MAKING THE MOST OF STRUCTURAL SUPPORT: MODERATING INFLUENCE OF EMPLOYEES' CLARITY AND NEGATIVE AFFECT

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We investigated structural support as a work design characteristic potentially enabling employee effectiveness in demanding contexts, proposing that structural support enhances job and role outcomes for employees but that effects depend on both the outcome under consideration (job vs. role) and the employees themselves. We tested hypotheses in a within-persons quasi-experiment in which 48 hospital doctors carried out their work with and without structural support. Structural support had positive effects on perceived core job performance, and these effects were stronger for individuals with higher clarity about others' work roles, suggesting that individuals can better mobilize available support when clear about how to allocate it. Support was also associated with improved role outcomes although, consistently with conservation of resources theory, effects differed with affect. For individuals with higher negative work affect, structural support was associated with lowered perceived role overload (a resource protection mechanism). For individuals with lower negative work affect, support was associated with higher perceived skill utilization and proactive work behavior (a resource accumulation mechanism). We approach social support at work in a novel way, extend relational approaches to work design, and show the value of considering both job and role outcomes in work redesign research.

Traditional prescriptions for work redesign focus on enriching job content as a key way to motivate better job performance. These recommendations largely derive from the dominant job characteristics model (Hackman & Oldham, 1976), which identified the importance of work design characteristics such as job autonomy and task variety. Enriched work characteristics are assumed to fulfill individual needs for growth, and this need fulfillment in turn motivates employees to perform at a higher level in their jobs. Since the introduction of this model, many successful examples of work redesign have been reported, including individual-level job enrichment (Griffin, 1991; Parker & Wall, 1998; Parker, Wall, & Jackson, 1997) and group-level enrichment in the form of autonomous teams (Cordery, Morrison, Wright, & Wall, 2010; Cordery, Mueller, & Smith, 1991). Work redesigns based on these job enrichment principles continue to be useful today, especially in contexts such as call centers and service work, where deskilled jobs often predominate (e.g., Grant, 2008a, 2008b; Holman & Wall, 2002).

However, in many settings, work is becoming increasingly uncertain as a result of trends such as globalization and technological change, as well as increasingly interdependent as a result of fewer boundaries within and between organizations (Grant & Parker, 2009). In these settings, often the most salient work design issue is not a lack of enrichment, but complex and unpredictable demands that present performance challenges for employees. As Johns observed, some job designs can be "too rich" (2010: 365), an issue that is particularly acute for professional jobs (Elsbach & Harga-

don, 2006; Xie & Johns, 1995). It is thus important to consider work design models and principles beyond job enrichment.

One recent direction that scholars have moved in is giving greater attention to the social and relational aspects of work (Grant & Parker, 2009), with research focusing on work characteristics such as perceived social support (e.g., Morgeson & Humphrey, 2008), interactions outside one's organization (e.g., Grant, 2007, 2008a, 2008b; Zapf, Seifert, Schmutte, Mertini, & Holz, 2001), and task interdependence (Wageman, 1995). This increased attention is warranted because work roles are embedded in broader social systems of interdependent behaviors (Katz & Kahn, 1978), and these social systems are changing in today's workplaces with, for example, the growth of teamwork and pressures for collaboration across boundaries (Grant & Parker, 2009). From this relational perspective, work design is not only about "jobs," but is also concerned with the broader social context within which tasks are enacted, and individuals' associated "roles" (Morgeson & Humphrey, 2008; Parker & Wall, 1998). In a review recommending directions for work design theory, Oldham and Hackman noted, "It is the often-fluid relationships among people and their various work activities that are most in need of empirical research and conceptual attention" (2010: 476).

In this study we investigate the redesign of work through enhancing structural support. Our focus on structural support means we extend beyond the vast literature that has identified the importance of perceived social support in the workplace. For example, recent meta-analyses have demonstrated that perceptions of support from co-workers or supervisors are associated with positive mental health outcomes (Viswesvaran, Sanchez, & Fisher, 1999); perceived co-worker support is associated with more positive role perceptions, work attitudes, work behaviors, and less likelihood of withdrawal, especially in jobs with intense social requirements (Chiaburu & Harrison, 2008); and social characteristics of jobs, such as support and interdependence, predict variance in work outcomes over and above enriched job characteristics such as autonomy (Humphrey, Nahrgang, & Morgeson, 2007). However, this large body of research focuses mostly on individuals' perceptions of availability and/or receipt of support ("perceived support"), leaving one to guess how individuals respond to the provision of actual support resources (referred to in the social support literature as "structural support").

We see two issues with an excess focus on perceived support. First, scholars' understanding of the effects of social support on outcomes is potentially obscured by the difficulty of showing causality. This is partly because mobilization of support—or lack of mobilization—is affected by outcomes (Halbesleben, 2006); and assessing perceptions does not allow this process to be disentangled. As Viswesvaran et al. (1999) concluded, their meta-analytic association of perceived support with strain could be a result of support reducing strain (what is typically assumed) or a result of strained individuals failing to seek or make use of available social support (a possibility that is rarely tested). These authors argued that "the pervasiveness of measures of perceived social support might have limited our ability to detect complex models" (Viswesvaran et al., 1999: 329), and they advocated for longitudinal and experimental studies that do not rely on self-report measures of support.

A second issue resulting from the emphasis on perceived support is that questions about how individual differences influence people's responses to support resources have been neglected (Thoits, 1995). Scholars have rarely considered questions such as which individuals attend to or take up support when it is available, and to what purpose they apply this support. Understanding how people respond differently to available support could help to explain why social support has had mixed success as a buffer of demands. Van der Doef and Maes (1999) found that social support (mostly assessed in terms of perceptions) appeared to mitigate the effects of demanding jobs in only about half of the studies they considered. They suggested that perhaps social support needs to "match" the demands of a job for it to be effective. We go further to suggest that social support needs to "match" the needs of the individual in a job. This is because, for social support to be of any value, it must be responded to in some way by the individual. As Freund and Riediger argued, "the mere possession of goal-relevant means or resources . . . does not in and of itself bring about goal attainment . . . one interesting question when investigating the effect of resources (such as social support) is how they are *used* effectively" (2001: 373). The possibility that different individuals respond differently to available support has been disregarded in the literature because assessing perceptions of support does not allow one to examine responses to objectively available support.

It is our focus on a structural support intervention that enhances available support resources, rather than on perceived support (Chiaburu & Harrison, 2008; Thoits, 1995), that is a key contribution of our study. This focus allows us not only to assess the effects of social support more accurately, but also to consider how individuals differentially respond to available support. Indeed, we suggest this may be the key value of a structural support approach: it enables each individual to respond to an intervention in the way that best meets their particular needs. A structural approach to social support also means that support is formally embedded in a work system, which can be more powerful than relying on informal support alone, with the latter prone to dwindling over time (Norris & Kaniasty, 1996).

Our study also contributes to work design theory. A core approach to understanding the social and relational aspects of work is the relational approach developed by Grant (2007). This theory proposes that, because many employees never meet the customers or clients who ultimately benefit from their products and services, establishing contact can enable employees to better understand the impact they make on the lives of these beneficiaries and thereby motivate employees to help them. Evidence from a series of quasi-experimental and field studies supports this approach. For example, when call center agents were connected with a scholarship recipient who benefited from the agents' work, they demonstrated greater persistence and generated more funding (Grant, 2008b; Grant, Campbell, Chen, Cottone, Lapedis, & Lee, 2007). Nevertheless, as discussed by Grant and Parker (2009), connection with beneficiaries is a less relevant form of work design in contexts already characterized by frequent interactions with beneficiaries. Most research in such domains has investigated interactions with end users as emotional labor, which is a contributor to burnout (Zapf et al., 2001). In these contexts, a more salient issue is whether individuals have sufficient resources for managing intense interactions with beneficiaries. Understanding how work redesign can provide employees with valued social resources through structural support is thus an important and distinct theoretical contribution to relational work design research.

In the current study, we used a within-persons quasi-experimental approach to evaluate the effects of structural support at work more clearly than has previous research and to investigate individual variations in the effects of this support on individuals' job and role outcomes. Specifically, we investigate a structural support intervention in which roles were redesigned so that an interdisciplinary co-worker (a nurse) was trained and authorized to provide instrumental and emotional support to junior doctors. Consistently with prior work redesign research that has focused on effects on core job performance, we consider the effect of structural support on the extent to which individuals perceive they carry out effectively their prescribed and expected tasks.

We also go beyond examining core job performance to include role outcomes, including perceptions of role overload, skill utilization, and proactive work behavior. Because "jobs" exist in a dynamic social environment, it is virtually impossible to prescribe all of the jobs' core task elements, hence Ilgen and Hollenbeck (1992) identified the importance of roles that include emergent tasks exceeding prescribed core tasks. The concept of roles means that individuals holding the exact same job enact their roles in slightly different ways, performing different types and levels of emergent tasks (Graen, 1976; Katz & Kahn, 1978). We suggest that reduced perceived role overload can reflect a decrease in emergent tasks, whereas enhanced skill utilization and proactive work behavior can reflect greater engagement in emergent tasks. Because of their different emphasis on core versus discretionary tasks, we argue that the effect of structural support on core job performance will be moderated by clarity about others' roles, whereas the effect of structural support on role outcomes will be moderated by negative work affect. We draw on resource theories (Hobfoll, 2002) to develop our hypotheses, which we elaborate next.

MODEL AND HYPOTHESES

Several theories highlight the importance of psychosocial resources in different life domains and institutional settings (Gorgievski, Halbesleben, & Bakker, 2011; Hobfoll, 2002). These include resource theories focusing on individual variables that are important for adaption, such as self-efficacy (Bandura, 1997) and optimism (Scheier & Carver, 1985); conservation of resources theory (Halbesleben, 2006; Hobfoll, 1998); and life span resource theories (Baltes, 1987). These resource-based perspectives imply that individuals are motivated to obtain, retain, protect, and foster resources and that resources play a fundamental role in human adaption, coping, and well-being (Diener

& Fujita, 1995; Hobfoll, 1989, 2001; Holahan, Moos, Holahan, & Cronkite, 1999). Resources are defined as conditions, objects, energies, and personal characteristics that are valued in their own right or that act as a means of people's obtaining valued goals (Diener & Fujita, 1995). Social support is particularly key as a resource because it is external to a person and hence is considered "the major vehicle by which an individual's resources are widened outside the limited domain of resources that are contained within the self" (Hobfoll, Freedy, Lane, & Geller, 1990: 467). Social support resources include both emotional and/or instrumental assistance, such as practical help, information, advice, and caring (House, 1981; Karasek & Theorell, 1990).

The assumption that individuals use resources such as social support to achieve centrally valued ends underpins resource theories (Hobfoll, 2002). We focus on two types of ends: perceived core job performance and perceived role outcomes (role overload, skill utilization, proactive work behavior). We suggest these outcomes differ in the extent to which they capture emergent tasks and therefore that the extent to which individuals mobilize structural support to achieve these outcomes will depend on distinct factors. For perceived core job performance, we propose that when structural support is available, individuals will perform their core tasks more effectively than when support is not available, and these effects will be strengthened when individuals are clear about the work roles in the social system in which they operate. We base this prediction on a core assumption of resource-based perspectives regarding the allocation of resources, which is that individuals have limited resources so they need to choose where to allocate them to bring about valued outcomes (Hobfoll, 2002). People do not allocate their resources in exactly the same way (Grawitch, Barber, & Justice, 2010), and we suggest that when individuals have clarity about work roles, they will direct their resources more effectively to make better use of the available structural support.

We also expect positive effects of structural support on role outcomes. However, because role outcomes encapsulate emergent and discretionary tasks, we predict the positive effects of support on distinct role outcomes (or the valued ends sought) will vary according to individuals' resource motivations. We apply a specific resource theory—Hobfoll's (1989, 1990, 1992) conservation of resources theory—to predict how individuals' resource motivations shape their response to structural support

and thereby affect role outcomes. We suggest individuals with high levels of negative affect will be motivated to use structural support to protect against further resource loss, and therefore will report lower perceived overload; whereas those low in negative affect will seek to accumulate further resources by expanding their skill utilization and/or by engaging in proactive work behavior.

Our contrasting predictions for core job performance relative to role outcomes are consistent with Halbesleben and Bowler (2007: 96), who concluded that conservation of resources theory is "particularly useful in understanding discretionary performance behaviors" because these are influenced by resource motivations, whereas this theory is less relevant to core job performance that is "monitored and rewarded" and therefore less affected by motivations to conserve or accumulate resources. Figure 1 summarizes our hypotheses, which we elaborate next.
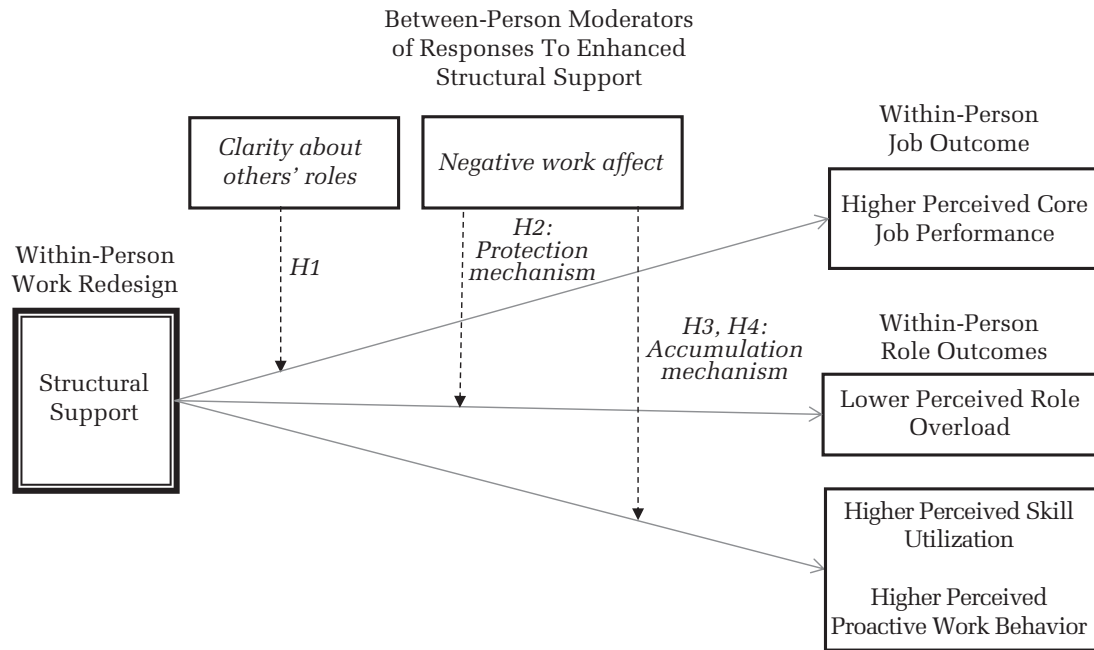
Structural Support, Core Job Performance, and Clarity about Others' Work Roles

Core job performance focuses on fulfilling expected core job requirements. Negative consequences and resource loss will ensue if people do not achieve these requirements because core job expectations are embedded in organizational practices, such as job descriptions and performance appraisals (Griffin, Neal, & Parker, 2007). In essence, core job performance is a nondiscretionary outcome for employees. We therefore expect that all employees will be motivated to respond to available structure support to improve their core job performance. For example, individuals can access practical assistance, such as help executing difficult tasks, which can enhance their core performance. Likewise individuals can access emotional support, which enables them to engage in more effective care giving (Kahn, 1993). In jobs where core tasks involve solving challenging problems and providing care to others, we thus expect that structural support will enhance core task performance.

However, social support resources must be actively attended to in some way for them to promote positive outcomes (Sarason, Sarason, Shearin, & Pierce, 1987). According to resource theories, positive outcomes are achieved when people effectively allocate their resources to meet situational demands (e.g., Bandura, 1997; Carver, Scheier, & Weintraub, 1989). Individuals differ in the way

FIGURE 1
Hypothesized Research Model

Between-Person Moderators
of Responses To Enhanced
Structural Support

Within-Person
Work Redesign

Clarity about others' roles

Negative work affect

Within-Person
Job Outcome

Higher Perceived Core
Job Performance

Structural
Support

H1

H2:
Protection
mechanism

H3, H4:
Accumulation
mechanism

Within-Person
Role Outcomes

Lower Perceived Role
Overload

Higher Perceived Skill
Utilization

Higher Perceived
Proactive Work Behavior

they allocate their resources (Grawitch et al., 2010). We suggest that structural support only serves as a resource if individuals can capture its value and effectively allocate it. Individuals who have clarity about others' work roles in their social system are likely to allocate available support resources toward enhancing their core job performance more effectively than those who lack clarity.[1] For example, clarity about roles in their social system helps employees to decide which tasks can be better achieved with support, relative to tasks that can be achieved without allocating the resource of support. Likewise, being clear what the responsibilities are for others' work roles in their social system means individuals know what type of help it is appropriate to seek from an individual in a support role, rather than wasting their time and energy seeking inappropriate types of assistance. Alto-

gether, clarity about work roles enables structural support resources to be more effectively allocated toward enhancing core performance. Our hypothesis is:

Hypothesis 1. Individuals report higher perceived core job performance when structural support is available than they do when structural support is not available, and this positive within-person effect will be greater for those individuals with high (rather than low) clarity about others' roles.

Structural Support, Role Outcomes, and Negative Work Affect

Role outcomes encompass emergent and discretionary tasks and as such will be influenced by an individual's resource motivations to a greater extent than core job performance (Halbesleben & Bowler, 2007). The resource motivations that are most important, according to conservation of resources theory, concern resource loss. Hobfoll drew on evidence that loss has greater negative consequences than gain in decision-making studies (Tversky & Kahneman, 1981) and studies of life events (Taylor, 1991; Thoits, 1983) to conclude that "resource loss is disproportionately more salient than resource gain" (Hobfoll, 2011: 117). In a study

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[1] In the current study, the notion of clarity about others' work roles is similar to what Goodman and Leyden (1991) referred to as "familiarity," or individuals' knowledge about the unique configuration of the people, jobs, and physical environment of their workplace. Clarity about others' roles, like familiarity, is a cognitive variable concerning individuals' understanding of a system, but it is distinct because it focuses solely on relational aspects, whereas familiarity encapsulates broader types of system understanding.

designed to test this specific tenet of conservation of resources theory, Wells, Hobfoll, and Lavin (1999) showed that resource losses had much greater consequences for emotional well-being than did resource gains. We therefore expect individuals' levels of resource loss to shape the effect of external resources such as structural support on their role outcomes.

Because of the salience of resource loss, Hobfoll and colleagues argued that individuals will be motivated to invest in and mobilize resources to protect against resource loss, recover from losses, and gain resources for future benefit. However, the relative emphases on these various processes depends on individuals' existing level of resource loss and their associated motivations. Specifically, individuals engage in two distinct processes when faced with external resources such as social support: protection or accumulation. When individuals' psychological resources are threatened with loss or have already been lost, their recovery becomes a central motivating force, so the individuals use external resources to protect themselves (Hobfoll, 1988, 1998). In contrast, when individuals are not experiencing high levels of resource loss, Hobfoll (1989: 520) argued, they are motivated to use external resources to further "enrich their resource pool." This second process is referred to as an accumulation mechanism in which people use available resources to exert control over the environment so as to gain new resources that equip them for future challenges. From the perspective of structural support, this theory implies that individuals will mobilize support in two different ways depending on their existing level of resource loss—in a way that enables them to protect themselves by recovering from resource loss or in a way that accumulates new resources. We consider a reduction in perceived role overload as an indicator that an individual is protecting him- or herself against resource loss, whereas using and developing new skills and engaging in proactive work behavior indicate that an individual is accumulating resources.

In this study, we expected that individuals high in negative work affect would be more focused on protecting themselves than accumulating new resources, whereas the reverse would be true for those low in negative work affect. Negative work affect refers to an individual's subjective experience of unpleasant and aversive emotional states associated with work, such as feelings of anxiety and depression (Daniels, 2000; Griffin, 2001). Research has established that negative affect is symptomatic of resource loss (Halbesleben & Bowler, 2007; Hobfoll, 2001; Wells et al., 1999). We elaborate precisely how negative work affect moderates the effect of structural support on each of the role outcomes.

Moderating influence of high negative work affect on perceived role overload. We propose that individuals high in negative work affect will respond to structural support by protecting and recovering their resources in the form of lowering perceived role overload. Perceived role overload refers to individuals' perception they are engaged in fulfilling too many responsibilities or activities in light of the time available, their abilities, and other constraints (Rizzo, House, & Lirtzman, 1970). Therefore, in a process that aligns with the protection mechanism described above, individuals experiencing negative work affect will be motivated to restore their resources by lowering their actual or perceived demands. For example, instrumental support can result in a reduced number of demanding tasks, including a reduction in emergent and discretionary tasks that do not constitute individuals' core prespecified job tasks. Emotional support can reduce feelings of an inability to cope with the pressure. Both reductions in emergent tasks and changes in feelings resulting from emotional support would be reflected in lowered perceived role overload, and both can be seen as strategies to protect and recover one's resources. For example, Hobfoll (1989) suggested that protecting one's resources can occur objectively via reduced demands as well subjectively via reappraising challenges or reevaluating a situation. Experiencing reduced role overload indicates that individuals are recovering resources and protecting themselves from losing yet more resources, which helps them maintain effective functioning. This mechanism is similar to what Schwarzer (2001: 405) referred to as reactive coping, in which individuals try to deal with ongoing stressful situations in ways that protect them against further distress or loss.

A protection mechanism is also indicated in prior studies that show individuals experiencing high negative affect seek to distance themselves from the situation that is causing the negative work affect (e.g., Freedy, Shaw, Jarrell, & Masters, 1992; Halbesleben & Bowler, 2007). However, it is relevant to note that at the same time as distancing from aspects of their roles causing resource loss, individuals experiencing negative work affect do not distance themselves from support. Indeed,

evidence shows these individuals become intensely focused on maintaining interpersonal relationships and building social support (Halbesleben & Bowler, 2007; Lee & Ashforth, 1996), especially work-related support that can help address the resource loss (Halbesleben, 2006).

Importantly, we suggest that a reduction in perceived role overload is a positive role outcome. Managing role demands is a determinant of both effective performance and individual well-being in a challenging environment (Halbesleben & Bowler, 2007). Reducing in role overload is thus a positive way of responding to structural support for individuals experiencing high negative work affect. We hypothesize:

Hypothesis 2. Individuals report lower perceived role overload when structural support is available than they do when it is not available, and this positive within-person effect is greater for those individuals with higher (rather than lower) levels of negative work affect.

We do not expect individuals high in negative work affect to respond to structural support by increasing their skill utilization or proactive work behavior. Such outcomes would be inconsistent with a protection mechanism. Halbesleben and Bowler found that individuals experiencing negative work affect engaged in less citizenship directed toward their organization. They argued that individuals suffering from high negative work affect would not want to engage in behaviors that are "not prescribed by his/her role, measured or rewarded, as presumably that would require the very resources the employee is seeking to protect" (2007: 96).

Moderating influence of low negative work affect on perceived skill utilization. Conservation of resource theory highlights how, when individuals are not experiencing resource loss, they will actively seek to use available resources to accumulate yet more resources and to thereby broaden their control over their environment and their capacity for dealing with future challenges (Hobfoll, 1989). Likewise, proactive coping theories imply that people strive to gain resources, maximize gains, and build up capabilities to better address future challenges (Aspinwall & Taylor, 1997; Schwarzer & Schwarzer, 1996). Each of these theories emphasizes individuals' proactive approach to resources and that "people do not wait for stressors to occur in their lives but, instead, act to foster their circumstances in ways that will help them gain resources

and position themselves so they are less vulnerable to future resource loss" (Hobfoll, 2002: 317). In so doing, individuals can create positive spirals in which resources beget more resources. For example, employees who work in challenging situations and yet are not experiencing high negative work affect have likely been successful in addressing their challenges. Effective coping with challenging situations leads to a positive gain spiral whereby individuals obtain resources such as confidence and self-esteem, which enables them to identify and mobilize yet more resources (Carver et al., 1989).

We propose that individuals experiencing lower levels of negative work affect will be motivated to use structural support to gain new resources and to broaden their control over their environment. One way individuals can gain new resources and broaden their control is through enhancing their skill use and development. Perceived skill utilization refers to the extent to which individuals feel they are using a range of their existing skills as well as developing new skills whilst performing their role (Cordery, Sevastos, Mueller, & Parker, 1993; Morrison, Cordery, Giradi, & Payne, 2005; O'Brien, 1982). The concept of skill utilization arose out of the recognition that, whereas some skills and knowledge are brought into a job by an incumbent, other skills and knowledge are acquired through the process of enacting one's tasks. As Morrison et al. wrote, "there is a gap between those characteristics of work system functioning that can be readily predicted ahead of time, and those that need to be discovered and dealt with during the performance of work" (2005: 61). When individuals perform emergent tasks that arise as a result of system uncertainty, they acquire new skills and knowledge, and thereby experience skill utilization.

Using and developing skills enables the accumulation of important resources for the future: the more individuals expand their skills, the more they develop their capability to engage in further emergent tasks beyond their prescribed job, leading to positive performance assessments from supervisors (Morgeson, Delaney-Klinger, & Hemingway, 2005). In addition, individuals themselves, rather than employers, are increasingly expected to take responsibility for their own development (Hall & Mirvis, 1995), so they need to be self-directed in expanding their skill sets (Fugate, Kinicki, & Ashforth, 2004). Using and enhancing skills creates capabilities for future career success, both in terms of human capital (skills, knowledge) and psycho-

logical capital (self-efficacy, resilience, etc.). For example, Schwarzer (2001) identified skill utilization as a way in which individuals proactively build up their resources "just in case" they are needed in the future.

Nevertheless, using and developing skills whilst carrying out tasks requires psychological resources, such as self-efficacy vis-á-vis engaging in a new challenge. If individuals are experiencing high negative work affect, such as feelings of anxiety and depression, they are unlikely to have these resources, and the resources they do have are likely to be directed toward protection against further loss (Hypothesis 2). We suggest only individuals who are experiencing lower levels of negative work affect will have sufficient psychological resources to make use of structural support to increase their level of skill utilization. For example, such individuals will draw on instrumental support to try new tasks. They will also draw on emotional support that enhances their sense of psychological safety to try new things. Our hypothesis is:

Hypothesis 3. Individuals report higher perceived skill utilization when structural support is available than when structural support is not available, and this positive within-person effect is greater for those individuals with lower (rather than higher) levels of negative work affect.

Moderating influence of low negative work affect on proactive work behavior. We suggest that a further way that individuals can increase their resources and obtain control over their environment is through proactive work behavior. Proactive work behavior is a higher-order category of self-initiated behaviors that "focus on taking control of, and bringing about change within, the internal organizational environment" (Parker & Collins, 2010: 636). Although several proactive behaviors were identified as fitting within a higher-order category of proactive work behavior, we focus here on voice and taking charge. Voice involves individuals' speaking out about issues that affect their work group (Van Dyne & LePine, 1998), and taking charge concerns constructive efforts by employees to bring about change in how work is executed (Morrison & Phelps, 1999). Voice and taking charge are conceptually and empirically related and have been identified as examples of proactive work behavior because each involves taking control and trying to actively shape the immediate work environment (Parker & Collins, 2010). Both voice and

taking charge are particularly useful to examine as exemplars of proactivity because these behaviors involve challenging the status quo (unlike problem prevention, which was also identified as a type of proactive work behavior), and they can be executed in a single work shift (unlike individual innovation, which is likely to occur over multiple shifts).

Like skill utilization, proactive work behavior is especially important in uncertain contexts because these situations give rise to unanticipated demands that cannot be managed solely through completion of prescribed tasks (Cummings & Blumberg, 1987). When uncertainty is high, employees are needed who speak out with ideas and take charge by introducing new ways to create change; such bottom-up change is essential for enabling an organization to be agile in its environment (Griffin et al., 2007). From an individual perspective, engaging in proactivity is an important way of gaining new resources. Research shows that individuals who behave proactively experience many benefits, such as being judged as higher performers overall (Thompson, 2005), as well as being more satisfied with their careers and demonstrating faster career progression (Seibert, Crant, & Kraimer, 1999).

Nevertheless, engaging in proactive work behaviors requires resources beyond those required for core job performance. As Bolino, Valcea, and Harvey (2010) argued, behaving proactively is likely to deplete time and mental energy because it entails future-oriented anticipation and planning, and because it often involves additional responsibilities, it also consumes physical energy. Likewise, Parker, Bindl, and Strauss (2010) described how the uncertainty, change focus, and self-initiated features of proactivity result in its being psychologically risky, thereby requiring high levels of internalized motivation, self-efficacy, and positive affect. We suggest that only individuals who are not experiencing negative work affect will be motivated to use external resources to engage in proactivity. For example, individuals lower in negative work affect will draw on emotional support to develop greater confidence, thereby enhancing their self-efficacy for voice. In contrast, individuals high in negative work affect will lack the psychological resources to engage in proactive work behavior when structural support is available, and instead will be focused on using the support to protect against further resource loss (see Hypothesis 2). We hypothesize:

Hypothesis 4. Individuals report greater engagement in proactive work behaviors when

structural support is available than when it is not available, and this positive within-person effect is greater for individuals with lower (rather than higher) levels of negative work affect.

It is important to note that we do not expect that individuals' negative work affect will moderate the effects of structural support on core job performance. As Halbesleben and Bowler (2007) argued, these in-role behaviors are more closely monitored and formally rewarded, so they are less susceptible to the influence of resource loss than more discretionary behaviors.

METHOD

Study Context

The study was set in a metropolitan training hospital in Australia and focused on junior doctors[2] working on overtime shifts.[3] In overtime shifts, five junior doctors are assigned to monitor patient care on eight wards each. Two senior doctors are on duty in the hospital, and junior doctors are also able to consult senior doctors who are on call yet not physically present at the hospital. Junior doctors are scheduled to work on multiple overtime shifts per week.

Hospital management recognized that junior doctors were experiencing increasing demands during the overtime shift due to rising levels of chronic disease, financial constraints, and a shortage of junior doctors (NHHRC, 2009). Senior doctors described these challenges as potentially confining junior doctors to a "maintenance model" of after-hours patient care. Senior doctors recognized that such a maintenance model reduces the quality of patient care because, for example, complications often develop if problems are not acted upon in a timely way. A maintenance model also inhibits doctors' learning. The overtime shift provides junior doctors with critical opportunities to learn and practice their skills, as well as to engage in voice and taking charge behavior, because overtime roles

involve more responsibility and less supervision than day shift work. Junior doctors have a bird's eye view during overtime shifts because they rotate through a hospital, sampling systems and processes in each medical specialty. They are also less adapted to existing routines, so their fresh perspective places them in an ideal position to identify unsafe practices and poor methods (Feij, Whitely, Peiro, & Taris, 1995). Yet traditionally junior doctors have shown low use of voice out of fear of career repercussions or appearing foolish in front of senior doctors or nurses (Walton, 2006), making it difficult for them to speak out with ideas or improve work methods (see also Table 1).

To move away from a maintenance model, senior doctors implemented an initiative to make structural support available to junior doctors. They created an advanced practice nurse position to work alongside the junior doctors on overtime shifts so as to make available to doctors both instrumental and emotional support, including coaching to develop their technical and decision-making skills; providing information about patients from earlier shifts to improve continuity of care; improving relationships between doctors and nurses; and providing advice and general emotional support. Table 1 shows comments from doctors that illustrate the support provided by the advanced practice nurse. Similar advanced nursing roles have been introduced elsewhere in hospital settings, with evidence of improved patient outcomes (e.g., Vazirani, Hays, Shapiro, & Cowan, 2005), but the effect of such a work redesign on other professionals in a hospital social system, such as doctors, is unknown.

There was only funding to employ one advanced nurse covering four overtime shifts per week (i.e., on any given shift, one advanced nurse was available to support five doctors working overtime). This situation created a natural within-persons quasi-experiment in which the participants experienced two conditions—the *structural support intervention condition* (*advanced nurse on shift*) and a *nonintervention condition* (*advanced nurse not on shift*). This within-persons quasi-experimental research design has strengths and disadvantages. As a naturally occurring intervention, it has high external validity. The within-persons design also strengthens internal validity because it rules out selection as a plausible alternative explanation (all participants experience the intervention, so there is no "selection"), and it also removes variance that might otherwise have been attributable to stable

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[2] Junior doctors are postgraduate trainees (and are also known as "residents," "interns," "foundation doctors," or "fellows") who, in their first six years of internship, are supervised by a consultant (or attending physician) and a team of registrars employed by a hospital.

[3] Scheduled duty after regular working hours (5 p.m.–11 p.m. Monday to Friday or 8 a.m.–11 p.m. Saturday/Sunday).

TABLE 1
Illustrative Comments from Pre- and Poststudy Interviews that Highlight the Work Context and Doctors' Experience of the Intervention

Theme	Sample Comment
Enriched jobs on overtime shifts	"It's really on the overtime shift that the intern gets to make any decisions because they are relatively less supervised, so that's the environment where they feel they can do clinical work and make decisions." (senior doctor, prestudy)
High job demands on overtime shift	"[Without the advanced nurse on shift] I know there will be constant interruptions, with lots of little jobs interspersed with the big ones . . . you know the pager will go off in 10 minutes if you haven't got to the little jobs, so you feel under pressure." (junior doctor, poststudy)
	"If the nurse can't get a catheter in, she has probably had 20 years more experience at putting catheters in than the intern [junior doctor] . . . but she calls the intern to do it when the intern may have put one catheter in when they were a student. So it is those sort of pressures." (senior doctor, prestudy)
Lack of support prior to the intervention	"As a group we are pretty keen to sort things out ourselves and maybe that's our background . . . we see challenges as something we need to overcome on our own." (junior doctor, poststudy)
	"There is an honor thing. If you ask for help you are seen as being weak. So most people won't . . ." (junior doctor, poststudy)
	"Junior doctors tend to shut up and don't say anything, if you want to stay or progress." (junior doctor, poststudy)
Examples of instrumental and emotional support from the advanced nurse	"I don't feel guilty calling him [the advanced nurse]." (junior doctor, poststudy)
	"I can ask the advanced nurse 'how's that ward going?' and he gives you an idea of what needs to be done and makes you aware of issues." (junior doctor, poststudy)
	"You can relax and concentrate on what you are doing because you can assess and anticipate what is going on, and set priorities for other wards." (junior doctor, poststudy)
	"[He] will coach us through things . . . saying 'I'm 100% behind you'. . . . It gives you a lot of confidence." (junior doctor, poststudy)
	"[With the APN on shift] you feel a lot less isolated." (junior doctor, poststudy)
	"I trust the advanced nurse so if he feels the same way about the patient we are reviewing it gives me extra confidence." (junior doctor, poststudy)
	"Junior doctors talk about what the advanced nurse can do—and we have a discussion and find out 'oh! I didn't know he can do that'—and then when doctors are confronted with that situation, they call him." (junior doctor, poststudy)

individual differences (Judd, Kenny, & McClelland, 2001). The within-persons design also "result(s) in a dramatic increase in statistical power . . . [consequently such designs] often involve smaller samples than those typically used in between-subjects designs" (Judd et al., 2001: 116). However, observing the same participant in different conditions increases the likelihood of context effects such as history, learning, sensitization, and carryover effects, which can limit interpretation of findings (Greenwald, 1976). In this study, the chances of these context effects are reduced because the order of the conditions (with or without the structural support intervention) was idiosyncratic, depending on shift schedules rather than attributes of the participants or any other systematic factor. The lack of any systematic influence on condition order reduces the threats to internal validity of history, learning, sensitization and carryover effects, maturation, regression toward the mean, instrumenta-

tion, and testing threats (Cook & Campbell, 1979). In addition, to ensure that shifts with and without structural support were as close to equivalent as possible, we matched the shifts on weekday versus weekends and shift type (wards covered), which controlled for workload, patient acuity, and other such factors. As far as possible, we also gathered the information at the same time (the very end of the shift), so that the time of assessment was constant across conditions.

Procedure

We were introduced to the junior doctors as researchers who were interested in their experience on the overtime shift. This message likely had strong face validity, since the overtime shifts were notorious for being challenging for staff. To justify administering surveys on more than one shift, we advised doctors that we needed to assess percep-

tions on multiple occasions to reliably understand their experiences. Because of our prior longitudinal research in the same hospital (a longitudinal study with nurses), this explanation had high face validity. Our introduction to doctors occurred approximately three months after the onset of the structural support intervention so the new role could be embedded in the hospital system. We intentionally did not tell the doctors that we intended to investigate the effects of the support intervention because we did not want to create demand characteristics.

Paper-and-pencil surveys were distributed to doctors at the end of overtime shifts and were collected directly by us or placed in a locked box for later collection. Participation was voluntary and written consent was obtained. Small nonfinancial rewards were offered (e.g., chocolate). Because we asked doctors to complete the survey at the end of an overtime shift when they might have been working for 15 hours, we used the shortest measures possible. To ensure our shortened scales were valid, we administered full versions of the scales to a student sample (described below).

It is important to note that, to inform the study design, we interviewed a sample of staff prior to the quasi-experimental study, including two senior doctors, the advanced nurse, and four junior doctors (selected by a senior doctor to cover a range of doctor experience, seniority, and performance). In addition, to understand experiences associated with the intervention, we interviewed staff after the quantitative study, including further senior managers and junior doctors, as well as the advanced nurse. Table 1 summarizes illustrative themes from these interviews. The interview data supported our observations that junior doctors' jobs on overtime shifts possessed many of the key enriching job characteristics referred to in traditional job design models (Hackman & Oldham, 1976), such as high job autonomy, task variety, task identity, and task significance. Interviews also showed that doctors faced significant challenges in managing unpredictable demands arising from dynamic interdependencies amongst roles, complex patient problems, and long working hours. Data from the interviews confirmed that traditional support interventions were unlikely to be effective in the context because of the existence of a "lone ranger" culture in which junior doctors were reluctant to ask other junior or senior doctors for help. Finally, these data highlighted various forms of instrumental and emotional support provided to junior doctors by the

advanced nurse as part of the intervention (see Table 1 for example comments).

Participants

Eighty-six junior doctors participated in the quasi-experimental study (an 89 percent response rate). Not all participants were included in the final sample because they did not return surveys representing both quasi-experimental conditions. The final sample consisted of 48 participants, of whom 58 percent were female and whose average tenure at the hospital was 2.2 years (s.d. = 1.28, range 1–6). As Rogelberg and Stanton (2007) recommended for assessing nonresponse biases, we compared participants who completed the survey in both conditions ($n = 48$) with those who completed the survey only in the structural support condition ($n = 21$) or only in the nonintervention condition ($n = 17$). Using a dummy variable (0 = "not in the final sample," 1 = "included in final sample"), our analyses showed that staying in the sample was not significantly associated with gender ($r = -.06$); tenure ($r = -.04$); clarity about others' roles ($r = -.21$); negative work affect ($r = -.08$); perceived core job performance ($r = -.01$, nonintervention condition; $r = .16$, structural support condition); perceived role overload ($r = .01$, nonintervention condition; $r = -.03$, structural support condition); perceived skill utilization ($r = .01$, nonintervention condition; $r = -.05$, structural support condition); or perceived proactive work behavior ($r = -.19$, nonintervention condition; $r = .17$, structural support condition). Participants who appeared in the data in both conditions did not appear significantly different from those who participated in only one condition.

In addition to the main study, we conducted a study with a student sample to validate shortened versions of the measures and to assess the factorial distinctiveness of the dependent variables. This validity sample included 131 undergraduates in an organizational behavior class who completed exercises and the survey for course credit. Sixty-eight percent of these participants were female, with an average age of 20.13 years (s.d. = 1.80, range 17–29 years).

Measures

Dependent variables. The dependent variables—core job performance, role overload, skill utilization, and proactive work behavior—are with-

in-person self-report measures. It was not possible to obtain other-reports of junior doctor behavior from a consistent senior doctor across shifts due to incompatible shift schedules. Some of the usual criticisms against self-report methods were mitigated in our study. First, our within-person design meant we aimed to predict differences in self-reported behavior according to condition, rather than levels of self-reported behavior per se. Issues of bias that affect an individual's self-ratings are minimized with a within-person design because any stable biases or third variables affect ratings equally on each occasion (Zapf, Dormann, & Frese, 1996). In addition, we obtained reports of specific behaviors, perceptions, and affect within a specific shift, and evidence suggests that such approaches avoid the memory-related distortions associated with more delayed and general evaluations (Robinson & Clore, 2002). Prior to reporting on their behavior, perceptions, or affect, individuals were asked to indicate the major tasks they completed during their shift, a practice that helps to elicit specific memories and to reduce biases of recall (Belli, 1998). This approach has some parallels with the day reconstruction method reported by Kahneman, Krueger, Schkade, Schwarz, and Stone (2004) in which individuals are prompted to reflect on the days' events prior to reporting their affect and that yielded similar findings to those obtained from experience sampling approaches.

Perceived core job performance ($\alpha = .81$ for both conditions) included four items with the stem "In tonight's shift, how frequently did you . . ." (1, "very infrequently," to 5, "very frequently"). Two items were from a general measure of core job performance (Williams & Anderson, 1991): "perform the tasks that were expected as part of your job" and "meet performance expectations." The other two items covered context specific core job performance: "provide quality patient care," and "provide timely patient care." In the validity sample, these items (with the latter two items adapted to suit the student context) correlated .96 with William and Anderson's (1991) in-role performance measure.

Perceived role overload ($\alpha = .91$ and .92 for the two conditions) was assessed using four items from Caplan, Cobb, French, Harrison, and Pinneau's (1975) measure of work overload, as well as an additional item. All items referred to a current shift; examples are, "In this shift, did you have to work faster than you would like to complete your work?" and "In this shift, were you constantly in-

terrupted?" The additional item ("In this shift how much pressure did you feel under?") was a more general assessment of demands. The response scale was 1, "to no extent," to 5, "to a very large extent" ($\alpha = .90$ and .91, for the two conditions). In the validity sample, these items correlated .92 with Bolino and Turnley's (2005) role overload measure.

Perceived skill utilization ($\alpha = .84$ and .92 for the two conditions) is the extent to which an individual perceives his/her skills and abilities are used and developed through the enactment of work. It was assessed using five items from a skill utilization scale based on Morrison et al. (2005) and O'Brien (1982). The instructions asked doctors to focus on their skill utilization during the shift. Illustrative items include "During this shift, did you develop more confidence in your skills?" and "During this shift, did you learn/practice skills that are important for your career?" The response scale was 1, "to no extent," to 5, "to a very large extent." In the validity sample, our measure had a correlation of .94 with Morrison et al.'s (2005) full skill utilization measure.

Perceived proactive work behavior ($\alpha = .85$ and .88 for the two conditions) refers to the extent to which individuals report taking control of, and bringing about change within, their immediate work environment. We assessed this variable with two voice items (Van Dyne & LePine, 1998) and two taking charge items (Morrison & Phelps, 1999) adapted to focus on participants' current shifts. The voice items were, "In tonight's shift, how frequently did you communicate your views about work issues to others in the workplace, even if others disagreed with you?" and "In tonight's shift, how frequently did you speak up about issues that affect you?" The taking charge items were "In tonight's shift, how frequently did you make suggestions for improvements?" and "In tonight's shift, how frequently did you challenge or question traditional ways of doing things?" We deliberately used items that tapped proactive behaviors that could be executed within a single shift (e.g., making suggestions) rather than items assessing behaviors (such as that assessed by the standard taking charge item, "introducing new structures, technologies or approaches") that are likely to require sustained effort across multiple shifts. The response scale for all items was 1 ("very infrequently") to 5 ("very frequently"). Because the voice and taking charge items were highly intercorrelated ($r = .63$ and .73 for the two conditions) and formed a single factor in an exploratory factor analysis, we com-

bined them into a single measure of proactive work behavior. This overlap in items is consistent with Parker and Collins (2010), who showed that voice and taking charge can be considered as part of a higher-order construct of proactive work behavior. For the validity sample, the correlation between the four-item measure that we used and combined full measures of voice (Van Dyne & LePine, 1998) and taking charge (Morrison & Phelps, 1999) was .98.

To further assess the validity of the proactive work behavior scale, we obtained ratings of participants' proactivity from the advanced nurse. We judged that the nurse was in the best position to assess participants' proactivity as he was the only person who observed all the doctors during overtime shifts (the consultants who managed the junior doctors rarely interacted with them on overtime shifts). The nurse rated each doctor on a scale from 1 ("requires significant assistance") to 5 ("outstanding performance") on these items: (1) self-starting behavior/using initiative/making changes (e.g., actively seeks advice from registrars/consultants, proactively initiates assistance to colleagues with higher workloads or difficult patients, voices ideas for improvements) and (2) taking control of the situation, (e.g., actively follows up on results, checks back over patients under their care to ensure all tasks have been completed). The nurse's ratings of these behaviors were highly correlated with each other, so we combined them into one measure of "other-rated proactivity." The nurse also indicated his confidence in making the assessment. Focusing on those assessments for which the nurse indicated confidence to a level of at least four on a five-point scale ($n = 39$), doctors' self-reports of proactivity were significantly correlated with other-rated proactivity ($r = .34$, $p <. 05$). Showing differential validity, participants' self-rated core job performance did not correlate with other-rated proactivity ($r = .07$, n.s.).

Factor analysis of dependent variables. The size of the main sample was too small for factor analyses, so we used the student sample to assess the factorial validity of the dependent variables. An initial confirmatory factor analysis (CFA) for the short measures showed that a four-factor solution (perceived core job performance, perceived role overload, perceived skill utilization, and perceived proactive work behavior) showed good fit (χ^2 [129] = 227.53, $p < .01$; χ^2 ratio < 2; RMSEA = .08, CFI = .93). All factor loadings were significant. A further CFA of the dependent variables using the full set of items for each scale (as described above) also

confirmed that the four-factor solution fit the data well (χ^2 [371] = 664.75, $p < .01$; χ^2 ratio < 2; RMSEA = .08, CFI = .91). For both the short-item version and the long-item version, the four-factor model had better fit than any alternative model, including a three-factor model with skill utilization and proactive work behavior combined (CFI =.85 and .83, respectively), a two-factor model separating core job performance from all role outcomes (CFI = .72 and .76, respectively), and a one-factor model (CFI = .62 and.67, respectively). Chi-square difference tests showed that all alternative nested models had significantly poorer fit to the data.

Moderator variables. For both clarity about others' roles and negative work affect, we used individuals' reports from the nonintervention condition to prevent "contamination" as a result of the intervention.[4] We assessed clarity about others' roles ($\alpha = .78$) using three items concerning how clear an individual was about the key roles affected by the relational work redesign, including the general role of nurses relative to junior doctors, the advanced nurse role, and the clinical nurse role (a distinct nursing role that was already in existence, but one that doctors might have confused with the advanced nurse role). With response anchors from 1 ("strongly disagree") to 5 ("strongly agree"), the items were, "I am clear about the role and responsibilities of the advanced nurse," "I am clear about the role and responsibilities of the clinical nurse," and "Nurses and junior doctors have roles that are clearly distinct." Negative work affect ($\alpha = .88$) was assessed using six items from the Daniels (2000) measure of work-based negative affect: "anxious," "worried," "tense," "depressed," "miserable," and "gloomy." Individuals were asked to indicate how often they had these feelings during the shift of concern on a scale from 1 ("not at all") to 5 ("extremely"). We focused on feelings at work (rather than feelings in general) because we were interested in resource losses associated with work. In the validity sample, this measure of negative work affect had a correlation of .73 with Watson, Clark, and Tellegen's (1988) PANAS measure.

Order. Depending on their schedule, some individuals completed the initial survey while in the

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[4] A consistent pattern of findings was obtained when the measure of clarity about others' work roles and the measure of negative work affect were based on average reports across both the structural support intervention condition and the nonintervention condition.

structural support intervention condition ($n = 25$), whereas some completed their initial survey while in the nonintervention condition ($n = 23$). We included condition order (0 = "survey completed first in nonintervention condition"; 1 = survey completed first in structural support intervention condition) as a control variable in the analysis.

Manipulation check. To ensure that the structural support intervention had the expected impact on doctors' roles, we assessed doctors' self-reported frequency of engaging in specific tasks. Thus, at the end of the shift, junior doctors completed a checklist (designed by senior doctors) to record each task they carried out during the shift. The checklist included 20 tasks likely to be carried out by a junior doctor (e.g., reviewing patients, writing up medication charts, inserting intravenous cannulas). Doctors reported how often they engaged in each of these tasks during the shift. These tasks were then categorized to create two measures: *advanced nurse–permitted tasks* were those that the advanced nurse was permitted to carry out under the regulatory framework governing medical practice and had been authorized to engage in as part of his support role (e.g., inserting intravenous cannulas); and *advanced nurse–prohibited tasks* were those that the nurse was, by law, not permitted to engage in as part of the support role (e.g., writing up medication charts). We expected that, for shifts with structural support, doctors would report engaging in fewer of the advanced nurse–permitted tasks, whereas the level of engagement in advanced nurse–prohibited tasks would be unaffected by the intervention.

RESULTS

To assess significance for all analyses, we used the standard *p*-value of .05. We also report marginally significant findings ($p < .10$) because several scholars have advocated the use of a more liberal alpha value when sample sizes are small, to increase statistical power and to reduce type II error (for a review of this issue, see Aguinis and Harden [2009]).

Regarding the manipulation check, a paired *t*-test showed that, as expected, participants reported engaging in significantly fewer advanced nurse-permitted tasks in the structural support intervention condition (mean = 17.64) than the nonintervention condition (mean = 22.5, $t[47] = -2.33$, $p < .05$). As expected, the numbers of advanced nurse–prohibited tasks reported by doctors in the intervention condition (mean = 7.02) and in the nonintervention condition (mean = 6.00), $t[47] = 1.20$, n.s.) did not significantly differ. These findings suggest the structural support intervention changed participants' work roles in a meaningful way. The survey process also appears to be sufficiently sensitive to detect differences across the conditions.

Table 2 contains the means, standard deviations, and correlations of all of the main study variables

TABLE 2
Descriptive Statistics and Correlations of Main Variables[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10
Structural support (intervention condition)												
1. Perceived core job performance	3.84	0.54										
2. Perceived role overload	2.37	0.84	−.04									
3. Perceived skill utilization	2.67	0.71	.07	.45**								
4. Perceived proactive work behavior	2.51	0.93	.14	.29*	.15							
No structural support (nonintervention condition)												
5. Perceived core job performance	3.66	0.55	.43**	.05	.15	−.00						
6. Perceived role overload	2.63	0.83	.06	.31*	.08	−.03	−.14					
7. Perceived skill utilization	2.61	0.69	.11	.21	.52**	.05	.04	.59**				
8. Perceived proactive work behavior	2.23	0.87	.04	.06	−.09	.41**	.09	.21	.20			
Moderators												
9. Order[b]	−0.46	0.50	−.03	−.10	−.14	.09	−.09	−.12	−.07	−.03		
10. Clarity about others' roles	3.44	0.86	.16	−.01	.01	.01	−.33*	−.09	−.04	−.03	.10	
11. Negative work affect	1.61	0.71	−.11	.14	−.11	−.17	−.06	.49**	.22	.26	−.22	−.16

[a] $n = 48$.

[b] Coded 0 if the survey was completed first in the nonintervention condition; 1, survey completed first in the structural support condition.

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

for the structural support intervention and nonintervention conditions. Although main effects of the work redesign were not our core focus, we carried out paired *t*-tests to assess mean within-person differences in each variable as a function of the intervention. When participants were in the structural support condition rather than the nonintervention condition, they reported significantly higher core job performance ($t[47] = 2.09$, $p < .05$), marginally significantly higher proactive work behavior ($t[47] = 1.92$, $p < .10$), and marginally significantly lower role overload ($t[47] = -1.75$, $p < .10$). There was no significant main effect for perceived skill utilization ($t[47] < 1$).

To test the hypotheses regarding the moderating effects of clarity about others' roles and negative work affect, we followed the procedure recommended by Judd et al. (2001) for examining moderation using within-person experimental designs. We conducted a separate regression analysis for each outcome variable. The dependent variable was the within-person difference score for each condition (e.g., perceived role overload scores in the structural support condition subtracted from perceived role overload scores in the nonintervention condition). The condition order in which the individuals completed the survey was the first variable entered in the equation. A significant beta weight for order would signify that differences as a function of structural support were attributable to whether individuals completed the survey in one or the other condition first, suggesting an alternative explanation for any condition effects. Order was not significant in any of the regression analyses. The independent variables entered in the second step were the centered between-person moderators (clarity about others' roles and negative work affect). A significant beta weight for the moderator signifies that the within-person differences in structural support depend on the moderator—in other words, that the two within-condition slopes are unequal (Judd et al., 2001: 119). We included both moderators in all of the analyses to provide a rigorous test of the hypotheses. Findings are reported in Table 3 (see also the section on additional analyses for extensions to these tests).

If a moderator was significant in the regression analyses, we conducted two paired *t*-tests, each comparing within-person scores across conditions: (1) a paired *t*-test for lower levels of the moderator (lower than half a standard deviation below the mean) and (2) a paired *t*-test for higher levels of the moderator (higher than half a standard deviation above the mean). We opted to use half a standard deviation to create moderator groups rather than the more conventional one standard deviation because the latter resulted in a very low sample size in some groups. We plotted the means compared in these *t*-tests to visually show the pattern of findings; see Figures 2A–2D.

Hypothesis 1 states that individuals will report higher perceived core job performance when structural support is available than they will when structural support is not available, and clarity

TABLE 3
Results of Separate Regression Analyses Showing Moderators of the
Within-Person Condition Effects of Structural Support on Outcomes[a]

|	Job Outcome		Role Outcomes					
Variables	Within-Person Difference between Conditions for Perceived Core Job Performance		Within-Person Difference between Conditions for Perceived Role Overload		Within-Person Difference between Conditions for Perceived Skill Utilization		Within-Person Difference between Conditions in Perceived Proactive Work Behaviors	
Step 1								
Order	−.05	−.01	−.02	.05	.08	.17	−.12	−.03
Step 2								
Clarity about others' roles		−.47**		−.02		−.01		−.03
Negative work affect		−.03		.31*		.38*		.39*
R^2 change	.01	.14*	.00	.09†	.00	.14*	.01	.14*

[a] With the exception of the final row, figures in the table are standardized beta weights. The dependent variable for each regression analysis (the condition effect) is the score in the non-intervention condition (no structural support) minus the score in the intervention condition (structural support).

† $p < .10$

* $p < .05$

FIGURE 2
Findings from Paired *t*-Tests for Moderator Groups

(2A) Perceived Core Job Performance
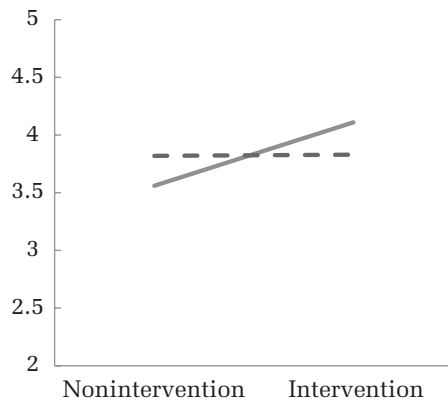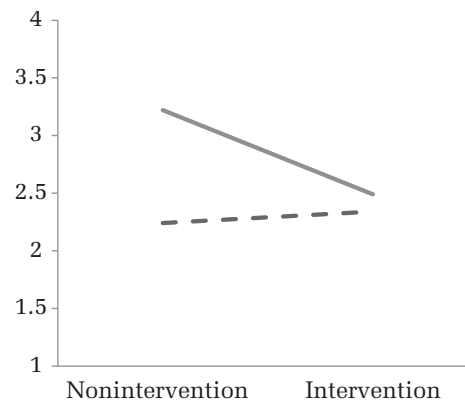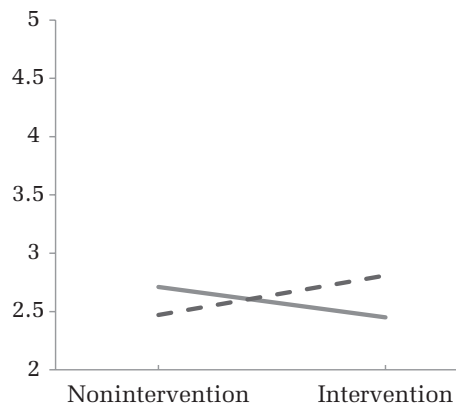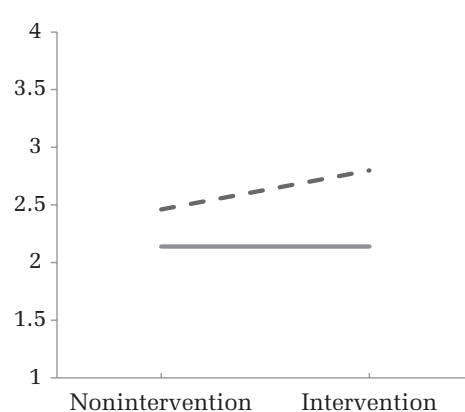

(2B) Perceived Role Overload

FIGURE 2A
—— High clarity about others' roles
– – Low clarity about others' roles

(2C) Perceived Skill Utilization

(2D) Perceived Proactive Work Behavior

FIGURES 2B, 2C, 2D
—— High negative affect
– – Low negative affect

about others' roles will moderate this positive within-person effect. This hypothesis was supported. As noted above, perceived core job performance was significantly higher when structural support was available than when it was not. Further, the regression analyses showed that clarity about others' roles moderated these within-person effects (β = −.47, p < .001). The moderator had a strong influence, contributing an additional 14 percent of variance to the prediction of condition differences in perceived core job performance (ΔR^2 = .14). Follow up paired *t*-tests showed a significant within-person difference in perceived core job performance for structural support compared to no structural support for the higher clarity group (t[16] = 2.76, p < .01), but not for the lower clarity group (t[17] < 1, n.s.); see Figure 2A. Thus the positive within-person effect of structural support on per-

ceived core job performance applied only to those who were clear about others' roles. These results are consistent with our argument that individuals with clarity about others' work roles in a system are more able to make effective use of structural support than those who lack this understanding.

Hypothesis 2 states that individuals will report lower role overload when structural support is available than when it is not available, and this positive within-person effect will be stronger for individuals with higher negative work affect. This hypothesis was supported. As shown in Table 3, negative work affect moderated the within-person effect of structural support on perceptions of role overload (β = .31, p < .05), and this effect accounted for 9 percent of variance in the prediction of condition differences (ΔR^2 = .09). A paired *t*-test showed that, for those with higher levels of nega-

tive work affect ($n = 14$), perceived role overload differed significantly across structural support conditions ($t[23] = -2.81$, $p < .05$). In contrast, for individuals lower in negative work affect ($n = 25$), there was no difference in perceived role overload as a function of structural support ($t[24] < 1$, n.s.); see Figure 2B. Thus, for individuals experiencing higher levels of negative work affect, perceptions of role overload were lower when structural support was available than they were when support was not available. This finding is consistent with the argument that employees experiencing resource loss are motivated to respond to, and draw on, available social support in a way that protects them against further resource loss.

It is relevant to note that individuals experiencing higher levels of negative work affect reported no difference in perceived skill utilization or self-reported engagement in proactive work behavior as a result of structural support (see Figures 2C and 2D). This finding is consistent with Hobfoll and Shirom, who suggested "those who lack resources are likely to develop a defensive posture that limits the possibility of further resource loss, but also precludes possibility for resource gain" (2001: 60).

Hypotheses 3 and 4 state that structural support will be associated with increased perceived skill utilization and increased perceived proactive work behavior, respectively, but that these within-person changes will apply most strongly to individuals low in negative work affect who are not experiencing resource losses. In keeping with these predictions, negative work affect moderated the effect of structural support on perceived skill utilization ($\beta = .38$, $p < .01$) and on perceived proactive work behavior ($\beta = .39$, $p < .01$). In each case, the variance accounted for by the moderation was high (14%). Follow up paired *t*-tests showed that, as expected, perceived skill utilization differed as a function of structural support for those low in negative work affect ($t[24] = 2.55$, $p < .05$) but did not vary significantly as a function of structural support for those high in negative work affect ($t[13] = -1.82$, n.s.). Likewise, perceived proactive work behaviors differed as a function of structural support for those low in negative work affect ($t[24] = 2.90$, $p < .01$), but not for those high in negative work affect ($t[12] < 1$, n.s.). Altogether, individuals experiencing lower levels of negative work affect—that is, individuals who do not appear to be experiencing resource losses—reported engaging in greater skill utilization and more proactive work behavior when structural support was available

than when support was not available. These findings are consistent with an accumulation of resources mechanism.

Additional Analyses and Findings

To test plausible alternative hypotheses, we conducted additional analyses (full details are available from the first author). First, to further examine whether order of condition explained the results, we included interaction terms (clarity about others' roles multiplied by order; negative work affect multiplied by order) as an extra step in the regression equations, beyond the steps described above. The interaction terms were not significant, suggesting there was no interaction between order and the moderator variables. Second, to ensure that the findings reflected negative work affect rather than positive work affect, we repeated the analyses controlling for this variable. We measured positive affect with two items from the Daniels (2000) scale: motivated and enthusiastic ($\alpha = .98$ and $.91$ for the two conditions). The same pattern of findings was obtained when positive affect was included as a control variable. In addition, positive affect was not a significant moderator in any analysis.

Third, because scholars have sometimes criticized the use of difference scores, to complement the Judd et al. (2001) approach reported above, we conducted the analyses in two different ways: (a) regression analyses in which the dependent variable was individuals' scores for the nonintervention condition, the first step was individuals' scores for the structural support condition, the second step was the order variable, and the third step was the moderators; and (b) hierarchical linear modeling (HLM) (Raudenbush, Byrk, & Congdon, 2004) with the structural support condition and nonintervention condition scores being dependent variables at a within-person level (level 1) and the moderators being at the between-person level (level 2). The pattern of findings was replicated with both sets of analyses. All significant moderating effects continued to be significant, and no additional significant findings were identified.

Finally, to understand whether the moderating effects of negative work affect were driven more strongly by the anxiety or depression elements of negative work affect, we repeated the regression analyses with these as separate subscales. Anxiety moderated the effect of structural support on perceived role overload ($\beta = .34$, $p < .05$), perceived skill utilization ($\beta = .35$, $p < .05$), and perceived

proactive work behavior ($\beta = .43$, $p < .01$). Depression moderated the effect of structural support on perceived skill utilization ($\beta = .31$, $p < .05$) and, somewhat more marginally, on perceived proactive work behavior ($\beta = .26$, $p < .10$). Depression did not moderate the effects of structural support on perceived role overload ($\beta = .20$, n.s.). Altogether, anxiety appears to play a more powerful role, especially in terms of moderating the effect of structural support on perceptions of role overload.

DISCUSSION

Individuals working in demanding environments often lack support, a work design that jeopardizes their effectiveness. To better understand how to intervene to improve such situations, we investigated the effects of a relational work redesign that enhanced structural support. Insights from our research obtained using a quasi-experimental research design make important contributions to theory and research on social support, work design, and work outcomes, as we elaborate next.

Theoretical Contributions

Understanding of social support is advanced by this study. Strategies to enhance perceptions of support, such as encouraging managers to support their team members through coaching, are common in literature that focuses on social characteristics of jobs (Humphrey et al., 2007), as well as in the wider social support literature (Thoits, 1995). Going beyond this dominant approach, our study highlights the benefits of making support available through structural change. Importantly, we demonstrated these benefits without any causal entangling of perceptions of support with outcomes, a methodological issue that has limited previous research into the effects of social support (Halbesleben, 2006; Viswesvaran et al., 1999). Moreover, although some studies have suggested positive effects of programs such as introducing support groups (Brown, 1984; Heaney, Price, & Raffety, 1995; Larson, 1986), many of these studies suffer from methodological inadequacies, such as the lack of a control group. Likewise, although there are some experimental studies of support with control groups (e.g., Sarason & Sarason, 1986), findings are inconsistent, due in part to experimental design challenges with confederates providing consistent support to all participants (Thorsteinsson & James, 2007), and due in part to a failure to consider different individual

responses to support. Our quasi-experimental field study thus provides a rare insight into how structural support can make a difference in people's work lives. Demonstrating its practical value, after our study, senior management institutionalized and expanded structural support by creating two permanent positions to ensure that all junior doctors on overtime shifts had access to these support resources.

Importantly, our study highlights how a structural approach can enable different individuals to extract different benefits from available support. Our findings are a unique demonstration of conservation of resource theory, showing how existing levels of resource loss shape individuals' subsequent approach to external resources (Hobfoll, 2001). Thus, individuals reporting higher levels of negative work affect had outcomes that were consistent with efforts to use support to protect oneself against further resource loss (lowered perceptions of role overload), whereas individuals reporting lower levels of negative work affect had outcomes consistent with efforts to use support to accumulate resources for the future (enhanced perceptions of skill utilization and proactive work behavior). Our findings concur with the notion that individuals secure an improved "motivational fit" between themselves and their environment (Mitchell, 1997) by extracting what they need from the external resource of structural support. Our findings are also consistent with the idea that resources tend to enrich other resources (Hobfoll et al., 1990) and that positive resource spirals can emerge for some individuals.

A further contribution of our study lies in treating social support as a system-level change rather than an individual-level change. Our approach parallels what Chen and Kanfer (2006) referred to as team-oriented inputs into a motivational system that pervade a whole team (such as work design) and that contrast with person-oriented stimuli directed to specific team members (such as individual feedback). From an intervention perspective, Perlow argued there are significant benefits of "changing the system" instead of "changing individuals" when it comes to time management: "At best, these [individual-level change] techniques make individuals maximally efficient within the current way of interacting. These changes do nothing to affect the synchronization of individuals' actions and interactions or the context in which they exist" (1999: 80). Structural support through work redesign is a system-level change, or a change

in team-oriented stimuli. An avenue for future research will be to assess whether this structural approach helps to overcome limitations of individually oriented and informal support approaches. For example, studies of social support (Atkinson, Liem, & Liem, 1986; Norris & Kaniasty, 1996) have demonstrated that when support is not formally instituted, it tends to deteriorate over time, especially in chronically stressful situations, leaving recipients highly vulnerable. In addition, receivers of informally offered individual support often worry they are unable to reciprocate the contribution (Greenberg, 1980) and, for the giver of informal support, the process can be costly as there is no formal recognition (Shumaker & Brownell, 1984).

For the topic of work design, our study extends recent social and relational work design theory developed by Grant and colleagues (Grant et al., 2007; Grant, 2008b), in which the interdependencies of employees with their beneficiaries are enhanced so that there is greater connection with customers, clients, or other end users of the work. Here we present a study in which the internal structural interdependencies amongst employees in the department were enhanced to embed greater support into jobs. Our approach is an important complement to existing relational theory because in some jobs there are already strong connections between employees and their beneficiaries. Indeed, these connections are often a source of unpredictable work demands that can lead to burnout and other negative outcomes (Grant & Parker, 2009). We demonstrated that it is possible to change the relational aspects of work in these contexts to improve work outcomes, albeit by enhancing interdependencies amongst employees rather than those between employees and their beneficiaries. Our study also builds on the dominant job enrichment approach to work design (Hackman & Oldham, 1976). Elsbach and Hargadon urged moving job design theory beyond a focus on enrichment because "professional work that is designed to be challenging and intrinsically motivating becomes, instead, relentlessly mindful and stress inducing" (2006: 471). Providing structural support is one way that work can be redesigned to enable employees to operate more effectively in demanding environments. Our study also contributes to the literature on employee proactivity (Grant & Ashford, 2008; Parker et al., 2010) because we identify structural support as a way to enhance this outcome. Previous studies concerned with increasing proactivity have primarily focused on individual-level interventions such as training

(e.g., Raabe, Frese, & Beehr, 2007) or have investigated job enrichment (e.g., Frese, Garst, & Fay, 2007). From a work design perspective, our study also supports prior research that suggests the importance of role clarity for effective interdependent working (Griffin et al., 2007) but extends this work by highlighting that clarity about roles beyond one's own role is critical for the effective use of social support.

Finally, our study shows the value in assessing both job and role outcomes when evaluating work redesign interventions. Whereas the effect of structural support on core job performance was moderated by clarity, the effects of structural support on role outcomes were moderated by negative work affect. We suggested that clarity enabled employees to more effectively allocate the additional resources derived from structural support to maximize the valued end of core job performance. In contrast, we suggested that an individual's level of negative work affect influenced whether that individual sought to protect himself or herself against resource loss via reduced perceived role overload or whether the individual sought to accumulate further resources via using and developing more skills and engaging in proactive work behavior. Our arguments rested on the perspective that role outcomes reflect emergent tasks to a greater extent than core job performance, and consequently that role outcomes are more strongly influenced by individuals' level of personal resources. Our findings are consistent with Halbesleben and Bowler (2007), who suggested that individuals' motivation to conserve or gain resources is most important for understanding discretionary outcomes. Our study also suggests the value of considering role overload and skill utilization not as objective job features, which is the traditional conceptualization (Morgeson & Humphrey, 2006), but as crafted role outcomes that potentially reflect discretionary engagement in emergent tasks.

Study Limitations

The quasi-experimental approach adopted in this study has advantages, as we outlined in the method section, but it has limitations too. One threat to internal validity that we cannot rule out is the possible biasing effects of diffusion between treatment conditions (Cook & Campbell, 1979). For example, employees might have formulated hypotheses about how they should respond to surveys and conversed with others about the work redesign. We

reduced this demand characteristic by framing our study in a neutral way. It also seems unlikely that doctors completing surveys at the end of a 15-hour shift would deliberately have produced the nuanced set of results we reported, especially given evidence that individuals typically engage in minimal cognitive processing before providing reports of their current states (Robinson & Clore, 2002). Nevertheless, we cannot rule out the threat of diffusion across treatment conditions.

A further validity issue is that we used self-report measures of the key variables because independent assessments by supervisors were not possible in the context. As reported in the method section, the within-subject design focuses on differences in behavior according to condition, and this research design alleviates important problems associated with self-reports. For example, if individuals have a social desirability bias, this will be applied to reports at both conditions, and is therefore controlled for when examining condition differences. In addition, our focus was on moderated effects which "cannot be artificially created through common method variance" (Siemsen, Roth, & Oliveira, 2009: 472). Finally, we focused on assessing specific behaviors, perceptions, and affect within a time-limited shift, which evidence suggests is less susceptible to memory distortions and bias than global or generalized assessments (Schwarz, 1999). We nevertheless recommend future research using other-reports. One avenue is a laboratory study that manipulates social support and observer ratings of behavior, albeit recognizing the challenges associated with manipulating support (Thorsteinsson & James, 2007).

It is also important to consider the possibility of a selection-treatment effect in which the nurse responded differently to individual participants according to their clarity or negative work affect. There are several reasons why such an interpretation is unlikely. The interactions were hypothesized on the basis of theory, which strengthens causal interpretation when added to a field experiment (Cook & Campbell, 1979). In addition, for a selection-treatment interaction to explain the results, the nurse would have had to respond differently to individuals as a function of their clarity about others' roles (not readily observable) as well as differently to individuals according to their level of negative work affect. Such complex responding by one individual to different doctors working within a demanding context seems unlikely, especially because the work redesign was structured to offer support to doctors based on patient acuity rather than doctors' personal characteristics. However, we cannot rule out this threat to external validity.

A limitation of our study is that we did not assess all of the processes that we proposed as explanations for our hypotheses. In particular, we did not assess resource loss directly, but rather inferred it from individuals' level of negative work affect. We believe this approach is defensible given extensive research linking resource loss to negative work affect, but a more direct assessment of resource losses is important in the future. Teasing out exactly why the benefit of support arose is also warranted. For example, individuals experiencing high negative work affect might have reported lowered perceptions of role overload because of an actual reduction in demands, or as a result of "feeling" supported, or both. We also did not assess all work outcomes that might have been affected by structural support. For example, speaking out with ideas should improve the effectiveness of the patient care system, and accelerating skill development should promote more capable doctors in the longer-term. Likewise, Kahn (1993) suggested that providing emotional support to caregivers will enable them to provide better care, so there should be better outcomes for patients. Assessing the longer-term effects on employees is also desirable to see whether the benefits persist, accumulate, or wane over time.

The generalizability of our findings needs testing. The small sample size means our study lacked power, so we might not have observed effects when they existed. As an example, we focused on negative affect as shaping the effect of structural support on role outcomes, but it is possible that clarity about work roles would further strengthen the effect of negative affect on role outcomes. A study with more employees in each condition is required to test this more complex three-way interaction pattern. Also the role of negative work affect in this study might be because junior doctors typically experience high levels of negative affect compared to other occupations (Firth-Cozens, 1987), especially in overtime shifts (Orton & Gruzelier, 1989). The study investigated only one individual in the support role, which rules out confounds (the same person provided support to all participants), but has the disadvantage that we do not know whether a different individual would have given the same support. Nonetheless, our finding of positive benefits from one nurse, supporting five doctors at one

time who in turn oversee the entire hospital, speaks to the power of the intervention.

We recommend further attention to the issue of what type of structural support is most valuable. In the current context, structural support was not simply "an extra pair of hands," but an interdisciplinary co-worker, which likely has some unique benefits. For example, the organization could have introduced additional supervision on the overtime shift, but this might have reduced employees' opportunity for decision making and thereby their skill development. Another strategy might have been to increase the number of junior doctors on shift, but again, this approach would likely have been more limited as a form of support given doctors' reluctance to ask for help from peers. Increasing support from supervisors or peers is also unlikely to have affected proactivity as it would not have changed the culture, whereas the presence of an advanced nurse appeared to break down some of the barriers for speaking out. Benefits of structural support thus appear in part due to the fact the support was delivered by a co-worker from a distinct discipline; this conclusion concurs with research suggesting the value of interventions that support boundary spanning (Ancona & Caldwell, 1992). A further benefit of having an advanced nurse in the support position is that it creates a small element of redundancy, a characteristic of high-reliability organizations (Roberts, 1990). We encourage research regarding the features of structural support that are most useful.

In conclusion, relational work redesign that enhances structural support appears to be a powerful way to improve job and role outcomes in demanding work contexts, with the specific effects of support depending on individual's clarity about roles in the social system and their level of negative work affect. We hope our study paves the way for further exploration as to how structural support can make a positive difference at work. In the words of a study participant: "When you get a page that the advanced nurse is on shift, it makes you feel really good . . . that this will be a good shift."

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