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Resilience:

A Review Using a Grounded Integrated Occupational Approach

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Abstract

Resilience, the ability to adapt to adversity and endure job demands, is growing in prominence in the management literature with limited regard to occupational influences. Often examined at the individual level with fragmented conceptualizations, it can be a trait, capacity, or a process. We conduct a review of (1) management studies and (2) content from O*NET for 11 occupations and disciplinary studies taking a grounded approach to synthesize themes to develop an integrated occupational resilience framework. Our

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review suggests that resilience is individually and occupationally determined as part of a multi-level system. Our review shows that specific occupational tasks and contextual demands imply different connotations of what exactly "resilience" means and how contexts may constrain or foster resiliency. Occupational resilience involves (1) multiple conceptual strands related to accessing resources (trait, capacity, and processes); (2) positive and negative triggers that are occupationally distinguished; (3) different resilience types (cognitive, emotional, and physical) that vary in need, breadth, and importance across occupations; (4) a dynamic phenomenon that occurs within and across career stages; (5) both content-general, and job-specific occupational tensions; and (6) work and nonwork domains. Multi-level occupational-specific and comparative studies, adaptive performance and risk taking across the work–nonwork interface are highlighted areas for future research.

Introduction

> I developed a mechanism so that whatever mistakes I made, I would bounce straight back. Whatever was happening off the pitch, I could put it to one side and maintain my mental form. Call it mental resilience or a strong mind, but that is what we mean when we talk about experience in a football team. (Gary Neville, British football player; Brainy Quote, 2015)

> I haven't failed, not once. I've discovered 10,000 ways that don't work. (Thomas Edison, Inventor of light bulb; Quote Investigator, 2015)

> I think you have to reframe rejection ... make it more positive rather than negative or you won't survive in our culture. (Nationally funded academic medical researcher, cited in De Castro, Sambuco, Ubel, Stewart, & Jagsi, 2013, p. 499)

Resilience is commonly defined as "the ability to become strong, healthy, or successful again after something bad happens" (Merriam-Webster, 2015). Resilience is a prominent concept in the social sciences. It is a concept that cuts across occupations from professional sports to science to business; existing since the dawn of time from 509BC to 338BC, as the Romans learned how to manage in challenging wartime contexts (Carmeli & Markman, 2011).

Resilience has become increasingly important to personal and job effectiveness, as individuals must be "resilient" in all life aspects. These range from major events like natural disasters and terrorism to everyday occurrences such as dealing with a difficult work colleague (Coutu, 2002), being positive in tough environments as epitomized by the recent press on Amazon's work culture (Kantor & Streitfeld, 2015), or navigating the frequent spillover of work demands to family life (and vice versa). This necessity of resilience for individuals and organizations continues to grow in importance, given

growing uncertainties associated with the changing nature of work and the workforce across employment contexts.

Key developments include (1) an erosion of the traditional psychological contract with more precarious work and lessened job security (Kallberg, 2009; Waterman, 1994); (2) increasing employer pressures to show constant job devotion placing work ahead of personal life (Blair-Loy, 2009); (3) heightened work–life demands from a shifting composition of the workforce with a rise in dual-earner couples, single-parent and single-person families, and sandwiched caregivers providing for parents and children simultaneously (Jacobs & Gerson, 2004; Kossek & Distelberg, 2009); (4) the increased blurring of work and nonwork boundaries making it more difficult to detach from job demands, with the rapid advance of technologies and digital communication devices (Kossek & Lautsch, 2012); and (5) the growth of 24–7 global work systems (Messenger, 2006).

Resilience is a construct that has been studied in organizational behavior and management, drawing on careers (London, 1983), and positive psychology (Fredrickson, 2001) research. Beyond the organizational literature, there is a rich body of conceptual and empirical work spanning many fields that are not well integrated ranging from clinical and family psychology to public health to sociology. Across disciplines, it remains open to debate whether resilience is a trait, a process, a capacity, or some combination of the three (cf. Luthar, Cicchetti, & Becker, 2000). Resilience is often viewed from one of these perspectives with an emphasis on the individual level. This review will show that these discrete views are not mutually exclusive, but complimentary, as resilience is multifaceted.

Most importantly, although an individual's resilience is influenced by the higher level social environments in which s/he is embedded, the social context, particularly occupational influences have been under-examined in the management literature. As the introductory quotes illustrate, a professional sports player needs to quickly put mistakes aside, just as a popular 2014 song by singer Taylor Swift admonishes to "Shake it off." An inventor needs to view failed experiments toward making a breakthrough as knowledge. A scholar needs to think positively about setbacks and reframe repeated rejection from funders and journals as part of the occupational territory. Each of these examples illustrates variations in resilience that have a common theme of adapting performance to overcome adversity or simply sustain job demands, yet also reflect shades of occupational distinctiveness. There is a need for an integrative understanding of resilience, which acts as a buffer against the demands imposed by the changing nature of work across heterogeneous occupational contexts. To address these gaps, the goals for this review are: (1) to conduct a review of resilience: a general literature review of the way it has been conceptualized with a focus on management studies, and then an examination of resilience across 11 occupations integrating content from disciplinary literatures with data from

O*NET, a large taxonomy of jobs; and (2) to draw on this work to develop an integrated *occupational resilience framework* to foster future research. Overall, a goal of this paper is to propose that resilience is individually and occupationally determined as part of a multi-level system.

We anchor our review in two fragmented management streams: (1) the careers literature (e.g. London's career motivation theory, 1983), and (2) the positive organizational behavior and psychology movement (e.g. Luthans, 2002). We chose these subfields as we believe when integrated they strengthen conceptual understanding and their linkage will also spur investigation of under-examined topics (e.g. work and nonwork relationships, multi-level influences) to demonstrate how resilience is similar yet can vary across occupational contexts.

Second, we attempt to better understand these contextual influences by taking a grounded theory approach (Corbin & Strauss, 2008) to review resilience findings using examples from 11 occupations that were selected based on their representation in O*NET and the disciplinary resilience literatures and to capture cross-occupational diversity. We identify themes which did not emerge as clearly solely on the basis of the management literature review. We argue that specific occupational tasks and contextual demands may imply different connotations of what exactly "resilience" means and that resilience is both individually and occupationally determined. We find that resilience (1) involves multiple conceptual strands related to accessing resources (trait, capacity, and processes) that are not mutually exclusive and can be combined; (2) both positive and negative triggers that are occupationally distinguished; (3) multiple types (cognitive, emotional, and physical) that can be individually and occupationally determined, ranging in need, breadth, and importance in different ways (see also Bell & Kozlowski, 2008); (4) represents a dynamic phenomenon that occurs within and across career stages, (5) can generalize across all occupations or be job-specific in response to "occupational triggers or pressure points"; and (6) encompasses work and nonwork domains.

Third, we draw on this review to develop an *occupational resilience* framework (See Figure 2) where multiple different types of stress triggers—some cognitive, emotional, or physical; some job-specific and some general; some positive or negative; and some emanating from the work or nonwork domains or both—demand resilience in dynamic occupational and organizational environments. In doing so, we treat resilience as a multifaceted gestalt construct integrating resources individuals can draw on—namely traits (i.e. personality hardiness), capacities (i.e. developing capabilities and coping strategies), and processes (i.e. appraisal of feedback and experiences with adaption)—into a process model where these factors—plus contextual influences—interact to determine how individuals will successfully (or unsuccessfully) respond to stressors. We argue that resilience includes multifaceted concepts varying across occupational environments, and can draw from multiple theoretical roots. Following a more in-depth theoretical development of

the framework, we conclude by integrating the emergent themes noted above with several specific areas for future research to pursue: occupationally specific and comparative studies, adaptive performance, risk taking, and the work–nonwork interface.

The work–nonwork interface has been particularly neglected in management writings on resilience, despite its importance for not only social policy but also the competitiveness of national economies, such as the USA's which is lagging in women's labor force participation rates compared to other industrialized economies (Council of Economic Advisors, 2015). In order to increase the numbers of women entering and staying in critical occupations such as science, technology, engineering, and manufacturing (STEM), and at senior leadership levels of business and government, where they have been historically under-represented, the need for a greater understanding of how occupational characteristics impact resiliency is vital. Such knowledge will also provide insights into how to foster occupational resilience for all employees, such as supporting shifting patterns of male workers' engagement in work and nonwork roles.

Our goal is to develop the notion of occupational resilience and its framework to spark future research. By integrating the trait, capacity, and process perspectives, we enable scholars to look at these interrelated concepts simultaneously. Our occupational review integrates fragmented fields to identify a more comprehensive understanding of stress triggers, its different types (physical, mental, and cognitive) that can vary in degree of job specificity, breadth and importance, and can be positive or negative. We advance theorizing on how resilience is a nested multi-level phenomenon by incorporating triggers, relationships and outcomes from job and nonwork influences. This is important because occupations reflect different industry regimes and cultures, work force characteristics and demography, and career norms and patterns that act as means to control workers and socialize professional norms (Van Maanen & Barley, 1984). This growing heterogeneity in occupational contexts and the ways in which they shape resilience has been under-examined. Emphasizing an occupational focus, our approach addresses how resilience perspectives are linked and how resilience is shaped by environmental demands and the resources people can access. We also encourage future research to look at patterns of resilience within and across occupations, sparking discussions on how contexts can be facilitators or barriers to fostering resilience across an increasingly diverse workforce.

Defining Resilience

Converging Resilience Conceptualizations across Disciplines

Resilience is exploding in popularity across fields of knowledge. A search for the term "resilience" on Google Scholar yields more than 1.1 million results in

0.04 seconds. Similarly, a search for the term on the PsycINFO database yields more than 10,000 academic journal articles, nearly 3000 books, and more than 2000 dissertations with publication dates, beginning all the way back to 1685 with the French Renaissance philosopher Michel de Montaigne's writings on the importance of resolution and constancy when faced with threats. Given this massive body of work, a complete review of all of the literature encompassing the notion of resilience is beyond the scope of this paper. Prior to our focused management review which examines how resilience occurs in a job context, we can illustrate that across disciplines, definitions of resilience frequently converge. Our review will show that the conceptual strands of resilience often overlap, can cross levels of analysis, and even blur antecedents and outcomes, as some scholars of the military context even go as far as to argue that resilience is an outcome of traits (cf Sinclair, Waitman, Oliver, & Deese, 2013).

Resilience as a trait, capacity, or process. Many writers from the psychological literature view resilience as an *individual trait*. For example, drawing on personality theory, clinical and developmental psychologists describe resilient individuals as: "Persons who experience high degrees of stress without falling ill (that) have a personality structure differentiating them from persons who become sick under stress" (Kobasa, 1979, p. 3). Some social psychology writers also identify resilience-related traits. For example, they describe "hardiness" as representing "a personality dimension that is believed to confer resistance against the effects of psychological stress" (Contrada, 1989, p. 896).

Yet, given that resilience occurs in response to events in social environments, which can vary, conceptualizations from other psychology subfields suggest that resilience may be not only a trait, but also a *capacity* that can be enhanced. It occurs in a dynamic process in response to triggering events. For example, self-regulation psychologists Block & Kremen, 1996, p. 351) describe resilience as the dynamic capacity of a person to modify ego-control levels upward or downward as "a function of the demand characteristics of the environmental context, so as to preserve or enhance system equilibration." Here, unlike the trait view, resilience is more than a fixed attribute, but entails developing or obtaining resources for recovery to return to balance.

Still other scholars take an interactionist approach emphasizing resilience as the *process by which an individual adapts to risk in their environment*. Social work writers note:

> to be resilient, one must be exposed to risk and then respond successfully . . . Resilience is a successful adaptational response to high risk. By definition, a person who is not exposed to risk cannot be said to be resilient . . . Conceptually, resilience is the transactional product of individual attributes and environmental contingencies. (Fraser, Galinsky, & Richman, 1999, p. 137)

Context is also central to writings of many clinical and developmental psychology writers who define resilience as "the process of coping with stressors, adversity, change, or opportunity" in a way that results in the identification and enrichment of protective factors (Richardson, 2002, p. 308). The public health and family systems literatures adopt comparable definitions pertaining to the social settings studied. In public health, resilience "reflects the notion that some people are more able than others to fend off negative consequences of experiences such as poverty, severe family discord, chronic illness, or disability" (King et al., 2003, p. 195). And in the family systems literature, resilience "reflect[s] families balancing strengths and buffers (resources) against challenges and demands" (Karraker & Grochowski, 2006, p. 78).

This brief overview suggests that the multiple meanings of resilience are not mutually exclusive and the context in which resilience occurs that triggers the demand for individuals to respond to adversity matters and should be incorporated in theorizing. Given this, we briefly turn to the general management literature to understand how resilience is conceptualized in the work context, before reviewing 11 specific occupations as exemplars.

Resilience from a Management Perspective: Capturing the Changing Nature of Work

In order to understand resilience in work settings, we conducted a more targeted investigation by searching for the term "resilience" among the primary management and industrial organizational psychology journals. For example, from the perspective of resource-based theories including Conservation of Resources (COR; Hobfoll, 1989) and Job Demands-Resources (JD-R; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), workers were more "resilient" when they were able to maintain higher levels of resources and work engagement (Bickerton, Miner, Dowson, & Griffin, 2014; McGonagle, Beatty, & Joffe, 2014). Similarly, employees were more "resilient" in the face of workplace incivility when they experienced lower levels of burnout and strain (Ferris, Sinclair, & Kline, 2005; Welbourne, Gangadharan, & Sariol, 2015; Williams & Cooper, 1998). Finally, "resilient" individuals also included those who were able to overcome discrimination or were able to successfully complete various task requirements (Adams, Cahill, & Ackerlind, 2005; Finn & Rock, 1997). Although resilience can be found across many management subfields, focusing our brief review on careers and positive organizational behavior literatures helps to update resilience research in an occupational context.

Careers.   Perhaps resilience has to date left its largest management footprint in the careers literature via London's (1983) career motivation theory. Career resilience was broadly defined as "a person's resistance to career disruption in a less than optimal environment," encompassing self-efficacy, risk taking, and dependency subdomains (London, 1983, p. 621). These

subdomains included a variety of constructs including self-esteem, autonomy, adaptability, internal control, fear of failure, risk-taking tendency, and tolerance of uncertainty, ambiguity, and competitiveness. Thus, embedded within this definition is a level of abstractness, which attempts to encompass individual characteristics, situational characteristics, and career decisions and behaviors.

Despite the rich theoretical foundation established by London, empirical assessments of resilience in a career context have been limited in management studies (Bimrose & Hearne, 2012). This gap may partly stem from measurement issues and lack of construct clarity. Three different popular scales were developed to assess career motivation (Carson & Bedeian, 1994; London, 1993; Noe, Noe, & Bachhuber, 1990), all of which included the career resilience sub-dimension. Although the three scales were shown to demonstrate overall convergent validity, subtle differences in the measurement of career resilience suggested that the instruments could not be considered as interchangeable (London & Noe, 1997, p. 69). London's (1993) scale focused on attitudes, while Noe et al. (1990) scale focused on behaviors. Yet, Carson and Bedeian's (1994) measure assessed the perceived value of putting effort into a job. Moreover, career resilience has tended not to be the main focus of empirical studies, although we review a few examples here. A study addressing work–family conflict found that when spouses displayed negative reactions when their partners discussed work, the partners tended to experience lower career resilience (Green, Schaefer, MacDermid, & Weiss, 2011). Research on mentoring has also demonstrated that positive mentoring relationships enhance career resilience (e.g. Ensher & Murphy, 2011; Kao, Rogers, Spitzmueller, Lin, & Lin, 2014). Another study (Kossek, Roberts, Fisher, & DeMarr, 1998) that drew on Noe and colleagues' career motivation scales examined career self-management in a downsizing organization. They found that individuals who engaged in higher feedback seeking and were more open to career-mobility preparedness reported greater career self-efficacy. Relatedly, career resilience has been found to be positively associated with successful career transitions (London & Greller, 1991; Phillips, Blustein, Jobin-Davis, & White, 2002; Wolf, London, Casey, & Pufahl, 1995).

Since London's and others' seminal work, the concept of career—"the unfolding sequence of a person's work experiences over time"—has been updated to reflect the *boundaryless career*, which includes not only organizational and occupational transitions but also transitions across roles between work and nonwork (Arthur & Rousseau, 1996, p. 4; Sullivan, 1999). Such perspectives suggest that any study of career resilience should include some study of nonwork resilience (in family life and personal well-being) and/or nonwork triggers on work resilience. Although traditionally the management literature has tended to underemphasize this holistic view, current research shows that work and nonwork experiences are increasingly linked and shape conflict

and enrichment on and off the job (e.g. Greenhaus & Powell, 2006). As Greenhaus and Foley (2007) argue, "Because of the growing interconnections between work and family lives, it is virtually impossible to understand career processes without considering the work-family interface" (p. 142).

Central to the notion of "career" is the passage of time. Indeed, career resilience has been linked to being important at different life stages (Entrekin & Everett, 1981). Yet, despite the temporal nature of a career perspective for understanding occupational resilience to better capture continuous burnout, occupational and employer longevity, many studies have adopted cross-sectional designs (e.g. Ensher & Murphy, 2011; London, 1993; Kidd & Smewing, 2001; Noe et al., 1990). Overall, the study of career resilience—like many others—is not immune from the critique that time has been a neglected factor in management research (Ancona, Okhuysen, & Perlow, 2001).

Positive organizational behavior.   Positive organizational behavior, which emerged from the positive psychology movement, (Fredrickson, 2001; Seligman & Csikszentmihalyi, 2000) has frequently examined resilience as a resource for coping (Braunstein-Bercovitz, Frish-Burstein, & Benjamin, 2012; Chen & Lim, 2012; Vuori, Toppinen-Tanner, & Mutanen, 2012). Some work in this field conceptualized resilience as cluster of traits—a composite of self-esteem, control, and optimism (Wanberg & Banas, 2000), similar to London's (1983) broad conceptualization. Other scholars define as a "capacity to 'bounce back' from adversity, uncertainty, conflict, failure or even positive change, progress and increased responsibility" (Luthans, 2002, p. 702). Pioneered by the work of Luthans and his colleagues, resilience emerged as a one of the core dimensions of "psychological capacity" (Youssef & Luthans, 2007). In addition to resilience, the constructs of hope, optimism, and self-efficacy have been found to load onto this composite factor or "meta-construct," also being referred to as a core confidence construct (Luthans, Avolio, Avey, & Norman, 2007; Schaubroeck, Riolli, Peng, & Spain, 2011; Stajkovic, 2006). These have been labeled as state-like capacities, "more malleable and open to change and development than are hard-wired traits" but "still more stable than pure momentary states" (Youssef & Luthans, 2007, p. 776).

Many psychological capital studies—which include the resilience dimension—have found numerous positive outcomes including thriving at work, better job performance, increased job satisfaction, higher levels of organizational commitment and change commitment, and higher levels of employee well-being over time (Avey, Luthans, Smith, & Palmer, 2010; Luthans, Norman, Avolio, & Avey, 2008; Paterson, Luthans, & Jeung, 2014; Peterson, Luthans, Avolio, Walumbwa, & Zhang, 2011; Roche, Haar, & Luthans, 2014; Shin, Taylor, & Seo, 2012).

Although the negative antecedents of resilience—including adversity and failures—are included in the positive organizational behavior definition of

resilience, a key point of departure from much of the management and other social science writings on resilience is that this view centers on the positive side of resilience. Embedded within the definition is the idea that resilience itself can result from positive changes (e.g. fostering and holding positive emotions) and positive exposures to people and contexts. This notion is consistent with the theory of "broaden and build," which is consistent with the occupational resources perspectives discussed below. It holds that experience with positive emotions and/or contexts increases' an individual's positive awareness, which over time builds to provide sustainable resources such as resilience (Fredrickson, 2001).

Writers admonish individuals to seek positive work environments where individuals can thrive, be generative and creative, engage in pro-social behaviors, or achieve greater well-being (cf Linley, Harrington, & Garcea, 2009). Although resilience has received primarily an individual-level focus, team resilience (grounded in the psychological capacity literature) has been linked to positive team outcomes including cohesion, cooperation, satisfaction, and reduced conflict (West, Patera, & Carsten, 2009). Organizational resilience has also been examined as to how to create positive work contexts where organizations and individuals can positively bounce back when faced with work and life challenges (Ollier-Malaterre, 2010).

Summary.   While the sections above provide some solid grounding for the development of a definition of resilience at work, there are also unanswered questions and some conflicting notions. For example, is resilience a trait, a state, a process, or some combination and how are these shaped by occupational context? The notion that resilience fluctuates on a daily basis as illustrated from a recent experience sampling methodology (ESM) study (Martinez-Corts, Demerouti, Bakker, & Boz, 2015) that showed that personal psychological resources such as optimism prevented work conflicts from spilling over to the nonwork domain. These findings suggest that resilience is not only a trait but is also malleable. This stands in conflict with earlier writings we reviewed above (e.g. Kobasa's, 1979 work on hardiness) or London's (1983) work on self-efficacy that resilience is static. The positive organizational behavior literature seems to stake out the "state-like" or capacity-building middle ground.

Furthermore, the study of resilience—particularly from the positive organizational behavior standpoint—seems to lack occupational context. Few studies delineate what sort of adversity, exactly, one is bouncing back from. This gap makes it challenging to identify and examine some of the specific occupationally determined demands and how these interact with personal characteristics and resources. To address these issues, we consider the role of occupations, namely the general and specific occupational job contextual demands on resiliency. Examples of interesting understudied questions that might be examined

with an increased emphasis on how occupational contexts vary and shape resilience might include, for example, are nurses and police members more resilient (or required to be more resilient) than accountants? What are the within-occupational factors such as access to formal work supports that may make one nurse more resilient than another? Do different industries, occupations and professions put individuals and groups at greater risk to have harm and occupational risk or conversely greater likelihood to thrive and have well-being on and off the job? How do systems between work and personal life interact to support or hinder resilience over occupational contexts? For example, some industries and occupations seem to be less supportive of facilitating demographically diverse groups such as women and minorities thriving in the Silicon Valley or becoming start up CEOs (c.f., Thomsen, 2014). Similarly, do jobs such as service work and night work have occupational demands that make it difficult (or impossible) to have time to participate in school, community or take time for personal exercise? How does the occupational level interact with industry, and organization and national culture levels to shape resiliency patterns across job groups? Although it is beyond the scope of this work to attempt to fully answer these questions, in the following section, we integrate aspects of omnibus and discrete context (see Johns, 2006) and take an inductive approach by reviewing the literature to explore examples of resilience across different occupations. Following this, we offer our framework for occupational resilience.

Taking an occupational approach to our multi-phase review is consistent with the occupational health/job stress literatures (Tetrick, Quick, & Gilmore, 2012) that look at primary factors in the structure of specific occupational contexts, and the design of work that contributes to the health and well-being of the workforce. Such research is beginning to be more widely integrated in the broader, management literature on the design of healthy work (and prevention of unhealthy work) that fosters resiliency such as sleep, vitality and physical and mental health. This stream draws on the resource-based theories noted above (Demerouti et al., 2001; Hobfoll, 1989), to which we return later in the paper when we present our integrated framework following this review.

We begin with a broad assumption: resilience, the ability to bounce back from adversity and endure demands, in one form or another, is critical to all occupations; but it can be critical in different ways. For example, given the pressure to publish in academia, more resilient researchers will re-submit a rejected manuscript to other journal outlets more times compared to less resilient researchers (Hollenbeck & Mannor, 2007; Tijdink, Vergouwen, & Smulders, 2013). Resilience spans gender and diversity issues across occupations in that, for example, it can be a key resource for women in male-dominated professions (e.g. Kawahara & Bejarano, 2009; Richman, van Dellen, & Wood, 2011). Or as a qualitative study of elite young athletes as a semi-

occupation, involving adolescent soccer players, found, resilience was one of four "competencies"—besides discipline, commitment, and social support—that was central to avocational success (Holt & Dunn, 2004).

Furthermore, there are some types of resilience demands that are purely occupation-specific like exposure to physical danger which is inherent in being a fire fighter, but is unlikely to occur in accounting, for example. There are other resilience demands such as work–family balance that may be content-general. Given the changing nature of work and workforce demographics (e.g. longer life spans, changing work–family, and gender demographics of the workforce), such demands are generally increasingly present across occupations.

Our review also concludes that a supportive context matters and can foster resilience. As found in an empirical study of basketball players, social support emerged as a primary source of resilience to combat adversity (Madden, Summers, & Brown, 1990). Increased effort and resolve and problem-focused coping were also used to respond to high levels of stress from competition.

Occupational Literature Review

To acknowledge the contextual influences of resilience, we took a quasi-grounded theory approach (Corbin & Strauss, 2008) to understand resilience at the occupational level. By occupation, we refer to "a group of work roles spanning multiple organizations that share a similar set of work requirements (e.g. tasks and responsibilities), methodologies, objectives, or worker requirements" (Morgeson, Dierdorff, & Hmurovic, 2010, p. 352). This approach resembles the approach taken by Wrzesniewski and Dutton (2001), who drew upon existing studies of hospital cleaning staff, hairdressers, design engineers, nurses, computer technicians, and professional cooks to supplement their theoretical conceptualization of job crafting. We conducted a targeted literature search by journal using "resilience" and "resiliency" as keywords. We targeted journals where we could not only find relevant work concerning individual-level studies regarding resilience but also studies which addressed or took into account the influence of occupation-level factors at the individual level. The list of journals included *Academy of Management Journal, Academy of Management Review, Journal of Applied Psychology, Journal of Organizational Behavior, Journal of Vocational Behavior, Journal of Occupational Health Psychology*, and *Administrative Science Quarterly*. Based on the articles we found here, we identified the ways in which resilience was discussed and noted the samples used in the studies. Then, we used a snowball search strategy to identify additional references for the occupations in which resilience was most discussed (in addition to striving for a collection of occupations which would ensure generalizability). Most of these studies were published in journals specific to their respective fields. For example, studies in this

section include those found in *Teaching and Teacher Education* and *Journal of Advanced Nursing* to better inform context-specific thinking about resilience for the teaching- and nursing-related occupations, respectively. We then augmented this disciplinary review, which was sometimes scattershot and nonsystematic[1] in cross-cutting trends with specific job analysis data we coded and organized on stress tolerance, need for resistance and range and types of most important job tasks from O*NET, a large occupational database. Below we provide background on integrating O*NET into our review as one means for classifying resiliency demands of occupations.

Some Approaches to Classifying Occupations

Approaches to defining and classifying occupations vary and all have some potential strengths and weaknesses depending on the goal of the analysis. One approach used by scholars relies on income when discussing occupational differences in job contexts. As an example, Williams and Boushey (2010) used income to discuss occupational differences in work–life resources and demands. The rationale is that lower income jobs often have less control over work hours (a demand) and less pay (a resource) to purchase supports (e.g. quality child care or to purchase a car to help commute.) While offering a helpful example of what we see as general or cross-cutting work–life demands for resilience, more specificity in occupational differences beyond income is needed to capture variation in resiliency demands in occupational contexts.

Another approach is to use broad job type classifications comparing "general employees" to managerial and professional samples (cf. Baltes, Briggs, Huff, Wright, & Neuman, 1999). This method, somewhat aligns with the U.S. Fair Labor Standards Act's discussion of exempt and non-exempt employees, which governs working conditions, supervisory roles, and delineating eligibility for overtime pay. While this tactic begins to get at occupational context, a binary comparison of exempt versus non-exempt employees seems too broad.

Another approach we found was O*NET, or Occupational Information Network. O*NET is one of the most comprehensive standardized taxonomies of occupational requirements that delineates knowledge, skills and abilities, typical job tasks, and worker backgrounds across occupations and is developed by the U.S. Department of Labor (see Peterson et al., 2001 for greater detail.) By describing occupations in terms of the knowledge, skills, abilities, and other characteristics (KSAOs) or core knowledge skills and abilities and other competencies required for jobs; how the work is performed; and typical work setting, O*NET enabled us to classify resiliency demands across diverse occupations (U. S. Dept. of Labor, O*NET, 2015).

Occupations selected and analysis approach. Our review of resilience across occupations seeks to balance breadth versus depth. O*NET has 23

broad occupational categories and within these categories, there are 953 occupations. A review of every single occupation out of nearly a thousand would be too much. Therefore, we selected specific occupations for review according to these criteria.

First, we devised a way to rank occupations on O*NET in terms of the importance of resilience. O*NET captures resiliency demands systematically through related measures of resiliency covered in our review. Specifically, O*NET provides scores for these resiliency KSAOs for each occupation: *stress tolerance* (defined as "job requires accepting criticism and dealing calmly and effectively with high stress situations") and *persistence* (defined as "job requires persistence in the face of obstacles").[2] These two dimensions appeared to capture the essence of resilience based on the review of the management literature above. In selecting occupations to sample, we also sought for variance in the "need for resilience," which we developed combing these ratings as shown in Table 1. These attributes were rated at least somewhat important for almost every occupation, suggesting the importance of resilience as a cross-cutting meta-skill for job effectiveness. We included the most demanding occupation (dancers, ranked #1) and the least demanding occupation—at least according to the O*NET data (models, ranked #953) and a nice mix of everything in-between. We then as explained below coded important job tasks for type of competency, frequency, and skill set configurational breadth. Unless otherwise noted, the information about the task requirements of each occupation below comes from the O*NET database (https://www.O*NETonline.org/).

The occupations examined reflect variation in range and depth of resiliency demands and relatively common jobs across many disciplines: teachers, nurses, social workers, police officers/firefighters, engineers, accountants, doctors, and models, dancers, and fine artists. These occupations reflect about half or 11 of 23 possible SOC codes (standard occupational categories) and dovetail with our disciplinary review of resilience. We also draw attention to variation in the level of occupational detail O*NET provides in comparison to some of the disciplinary studies we reviewed, the latter of which varied widely in making fine-grained distinctions within these occupational groups. From an O*NET perspective, some groups like "accountants" and "dancers" are straightforward with only a single category for these types of occupations. However, groups like "teachers" and "engineers" had multiple occupational-specific sub categories (e.g. elementary school teachers and mechanical engineers). When this occurred, we selected a common subcategory occupation for the analysis below. Overall, our disciplinary review was analytically enhanced by integrating job content from O*NET, as the latter provided a systematic way to organize types of resilience.

Surprisingly, rather than finding that some occupations emphasized resiliency as a trait for example, while others focused on resiliency as a capacity

Table 1 Need, Breadth, and Importance of General Types of Resilience across Selected Occupations

Occupation name (O*NET Code)	Need				Breadth Important task count	Type rated as generally important		
	Occupation rank	Stress tolerance	Persistence	Total score		Cognitive (%)	Emotional (%)	Physical (%)
Dancers (27-2031.00)	1	97	96	193	7	14	0	86
Elementary school teachers, except special education (25-2021.00)	45	90	85	175	21	76	24	0
Child, family, and school social workers (21-1021.00)	65	93	80	173	18	56	44	0
Police patrol officers (35.3051.01)	105	92	78	170	16	88	13	0
Doctors (General) (29-1063.00)	105	94	76	170	15	80	20	0
Fine artists (27-1013.00)	204	76	86	162	4	50	0	50
Nurse practitioners (29-1171.00)	212	84	78	162	22	95	5	0
Municipal firefighters (33-2011.01)	217	84	77	161	26	23	4	73
Accountants (13-2011.01)	307	78	78	156	2	100	0	0
Mechanical Engineers (17-2141.00)	393	74	78	152	5	100	0	0
Models (41-9012.00)	953	24	45	69	6	67	0	33

Notes: All data come from O*NET. First two digits of O*NET Code correspond to SOC (Standard Occupation Classification) Category: 13 = Business and Financial Operations; 17 = Architecture and Engineering; 21 = Community and Social Services; 25 = Education, Training, and Library; 27 = Arts, Design, Entertainment, Sports, and Media; 29 = Healthcare Practitioners and Technical; 33 = Protective Service; 41 = Media Sales and Related.

Column 1: Occupation Need for Resilience Rank based on sum of Stress Tolerance Score (maximum 100) and Persistence score (maximum 100) as reported in O*NET.

Column 2 summarizes the frequency of Important Tasks = all tasks with an importance rating of 75 and above in rank by experts.

Column 2 reflects the type of Resilience required for each important task that was coded (see Table 2 for example of coding statements.)

or process; just as a recent review argued for a broad multifaceted conceptualization of culture as a "coat of many colors" (cf. Giorgi, Lockwood, & Glynn, 2015), our review results below suggest that a broad multifaceted conceptualization of resilience is also appropriate, as concepts often overlapped with both general and specific trends. Overall, our mixed-method analysis shows not only commonalities, but also variation in the prevalence and strength of themes.

Occupational Resilience Trends

Below, we review cross-cutting trends of the occupations and distinctive highlights. Table 1 shows summary data for need for resilience, and breadth, and importance of types of job demands. To systematically capture need for resilience, we added together the stress tolerance and persistence scores (which are developed by job analysis experts) across all the 953 occupations in O*NET database to tally a "total score" to classify our sample's need for resilience rank for each occupation.

Next, we analyzed the number of tasks rated as important to capture the nature and breadth of job competency demands. As noted in our Table 1 footnote, we classified tasks that rated at least 75 and above (highest score in 100 meaning highly important) in O*NET. This cut-off of 75 and above demarcation seems to have good face validity, as this suggests that most of the time the task was seen as an important job demand to demonstrate.

Next, we classified the type of job demands. For the coding of job tasks considered important, two coders independently coded, each classifying it as a mainly cognitive, physical, or emotional job demand. Disagreements (required for less than 10% of the coding) were discussed to resolve any coding differences and a complete listing of coding is available from the authors. In the few cases where some tasks could or may fall under multiple categories, for parsimony and clarity, we coded the most relevant category for each important task. To illustrate how the coding was done, column 1 of Table 2 shows coding examples of several core tasks rated important to show variation in job-specific demands. Column 2 shows job context triggers from the disciplinary literature reviews.

Occupational resilience comparisons: need, breadth & importance of job demand types. As Table 1 shows, occupations vary in their *need for resilience* as captured by summary scores of job demands for stress tolerance and persistence. Dancers, teachers, social workers, and police ranked in the top third of our sample for having high rankings of the need to tolerate job stress and have persistence. Models had the least need for stress tolerance and persistence in our sample and ranked last of all occupations in O*NET.

Turning to *breadth of job demands in terms of having the highest number of tasks that were rated at highly important to perform on the* job, firefighters,

Table 2 Sample O*NET Core Tasks across Occupations and Occupational Resilience Triggers from Disciplinary Literatures

Occupation	Sample important core tasks from O*NET	Examples of positive and negative trigger types from disciplinary reviews
Dancers	• Train, exercise, and attend dance classes to maintain high levels of technical proficiency, physical ability, and physical fitness. (physical) • Harmonize body movements to rhythm of musical accompaniment. (physical)	Pain, image, health issues (e.g. eating disorders and physical injury) (−) Mindfulness (+) Perfection obsessiveness (−)
Teachers	• Adapt teaching methods and instructional materials to meet students' varying needs and interests. (cognitive) • Prepare students for later grades by encouraging them to explore learning opportunities and to persevere with challenging tasks. (emotional)	Work-affirming events providing intrinsic rewards (+) Voice loss (−) Identity threat from lack autonomy, growth (−) Challenging uncooperative students, families (−)
Social workers	• Consult with parents, teachers, and other school personnel to determine causes of problems, such as truancy and misbehavior, and to implement solutions. (emotional) • Lead group counseling sessions that provide support in such areas as grief, stress, or chemical dependency. (emotional)	Cumulative stress from prolonged exposure to clients, conflicts (−) Prior experience (+)
Police	• Monitor, note, report, and investigate suspicious persons and situations, safety hazards, and unusual or illegal activity in patrol area. (cognitive) • Review facts of incidents to determine if criminal act or statute violations were involved. (cognitive)	Traumatic events-. exposure to violence, horror, physical danger (−) PTSD/suicide ;cumulative stress (−)

Table 2   (Continued)

Occupation	Sample important core tasks from O*NET	Examples of positive and negative trigger types from disciplinary reviews
Doctors	• Manage and treat common health problems, such as infections, influenza, and pneumonia, as well as serious, chronic, and complex illnesses, in adolescents, adults, and the elderly. (cognitive) • Monitor patients' conditions and progress and reevaluate treatments as necessary. (cognitive)	Learning and risks such as emergency situations with high cognitive demands ($\pm$) Helping patients ($+$) Patient harm ($-$)
Fine artists	• Use materials such as pens and ink, watercolors, charcoal, oil, or computer software to create artwork. (physical) • Submit preliminary or finished artwork or project plans to clients for approval, incorporating changes as necessary. (cognitive)	Creative demands ($-$) Evaluation of work by critics ($-$) Self-efficacy ($+$) Self-esteem ($+$)
Nurses	• Analyze and interpret patients' histories, symptoms, physical findings, or diagnostic information to develop appropriate diagnoses. (cognitive) • Prescribe medications based on efficacy, safety, and cost as legally authorized. (cognitive)	Adverse Patient Events such as exposures to grief & death ($-$) Burnout ($-$)
Firefighters	• Search burning buildings to locate fire victims. (physical) • Position and climb ladders to gain access to upper levels of buildings, or to rescue individuals from burning structures. (physical)	Traumatic events, physical danger ($-$) PTSD Cumulative stress ($-$)

Accountants	• Prepare, examine, or analyze accounting records, financial statements, or other financial reports to assess accuracy, completeness, and conformance to reporting and procedural standards. (cognitive)	Year-end close & cyclical high-demand schedules (−) Reputation Threat (−)
	• Compute taxes owed and prepare tax returns, ensuring compliance with payment, reporting, or other tax requirements. (cognitive)	
Engineers	• Read and interpret blueprints, technical drawings, schematics, or computer-generated reports. (cognitive)	Social marginalization (−) Role overload (−) Skill specialization demands (−) Skill Obsolescence (−)
	• Research, design, evaluate, install, operate, or maintain mechanical products, equipment, systems or processes to meet requirements. (cognitive)	
Models	• Pose for artists and photographers. (physical)	Image criticism (−) Physical demands (−) Low median wages; periodic unemployment spells (−)
	• Gather information from agents concerning the pay, dates, times, provisions, and lengths of jobs. (cognitive)	

Note: All task descriptions in column 1 are taken from O*NET. Both authors independently coded the tasks across all 11 occupations with tasks as rated in O*NET as 75 and higher in terms of task importance (maximum 100). Discrepant codes were discussed and resolved. The triggers in column 2 are a summary of unique demands in the literature.

teachers and nurse practitioners have the most breadth of tasks that are rated on generally important. In other words, they have the highest number of tasks that were classified as important competencies to perform the job. In contrast, accountants, mechanical engineers and models have the least breadth in resiliency demands, as they had the least number or range of job core tasks that were rated important to perform.

Turning to *type of resilience*, Table 1 shows that based on O*NET data, jobs vary in the importance and configurations of key cognitive, emotional and physical resilience demands. That is, certain types of job demands are deemed generally important for specific occupations and the configuration of these types varies across occupations. Tasks not rated highly important (i.e. a below 75 rank on a score of 100, the anchor signifying highly important) cover 0% categories in the table and Figure 1.

Accountants and mechanical engineers have 100% of their most important job demands ranked as cognitive. This is not to say that emotional and physical task demands are never important for these occupations; they are just ranked not ranked as most highly important as a core job demand. Compared to other occupations in the sample, social workers and teachers were the most likely to have some of their important job tasks involving emotional demands. Dancers and firefighters had the high percentages of physical tasks as important competencies. Figure 1(a) and (b) provides a graphing of the frequencies and configurations of the types of tasks rated important across occupations. Specifically, Figure 1(a) provides a visual comparison of the number or breadth of important tasks required for each occupation across types. Figure 1(b) is a percentage comparison to display, which type of job demands tends to be the most commonly required across each occupation.

A key take away from Table 1 and Figure 1 is that some occupations such as teachers have to constantly respond and balance a multiplicity of different types of highly important job demands (cognitive, emotional, and physical). In contrast, others occupations such as accountants and engineers only have one type of job demand rated as highly important, namely cognitive. These findings suggest that for occupations with many different types of important demands, a broader skill set of diverse resilience competencies is needed to adapt to varying job difficulties or changing work environments, when compared to jobs with narrower role repertoires.

Integrating O*NET analytical and occupationally grounded descriptive approaches. As the grounded disciplinary review shows below, the unique triggers of the demand for resilience—both positive and negative—qualitatively vary across occupational contexts, so drawing on standardized analytical O*NET data, while useful for systematic comparison and identification of common types of job demands for resilience, provides an incomplete picture.
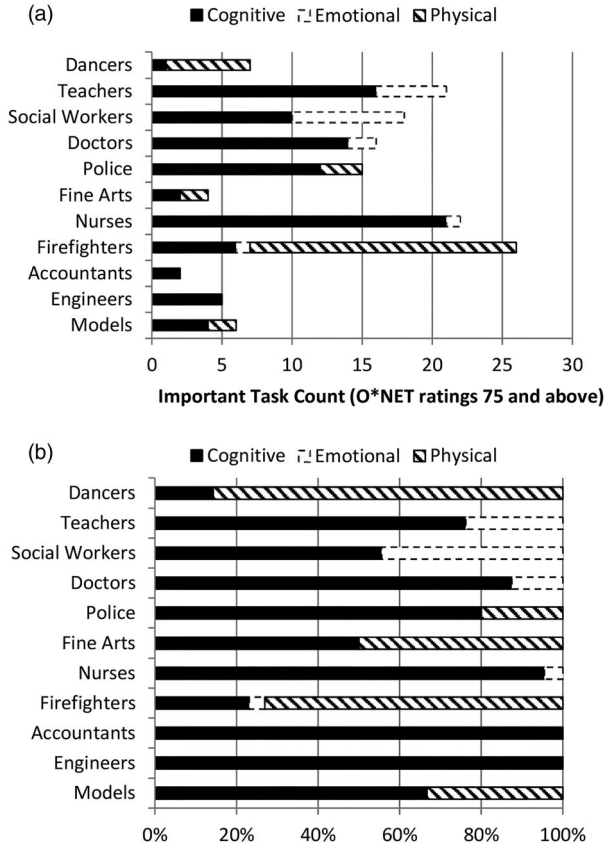
Figure 1   General Types of Resilience Required for Important Tasks Across Occupations.

Table 2 provides a summary of integrative data from the two reviews—one based on O*NET, the other based on an investigation into specific literatures where we sought to gain additional descriptive information about resilience in occupation settings. The disciplinary review highlighted several unique resilience triggers that the quantitative O*NET job analytical approach underemphasized. The findings from our review suggest that taking a broad multi-method quantitative and qualitative descriptive approach to conceptualizing and examining occupational resilience is necessary. This is readily apparent when one compares columns from O*NET with samples of the most important tasks, with the triggers noted in the literature reviews we did in each discipline. By juxtaposing both columns from different data sources in Table 2, we highlight that each approach—the O*NET approach or the qualitative literature review approach—has its advantages and disadvantages. O*NET is very analytical and detailed about the occupations such as measurement of stress

tolerance and persistence; the range and nature of job tasks and types of demands. While O*NET data allowed for analytical cross-occupational comparisons of resiliency needs, types, and demands, the disciplinary review identified unique triggers, gender, work/life or performance and well-being contextual concerns. So, while incredibly useful, the quantitative approaches lacked rich context regarding exactly about how resilience might play out into each occupation. The more eclectic disciplinary review data provide useful insights into resilience that goes deeper in terms of contextual determinants than O*NET, but it had the drawback of being scattered and sometimes making cross-occupational comparisons challenging. Table 3 gives examples of typical workforce gender demographic and work schedule trends from the disciplinary reviews.

Occupationally specific variation in job demands, triggers, gender, and work–life factors. For each occupation below, we organize the subsection by providing (1) a few distinctive job-specific highlights from the O*NET analysis; (2) at least one illustrative resiliency trigger from the disciplinary literature noted in Table 2; (3) an example of a gender demography, work–life/or other work contextual issue that was salient in the disciplinary review; and (4) a grounded lesson for future research on context and occupational resiliency. At the end of this section, we conclude with common themes across occupations on resilience-facilitating work contexts.

Nurses. For our sample, the O*NET analysis shows that nurses have the highest number of tasks that were ranked as important, largely involving cognitive demands. An example of an important ongoing job demand showing a need to attend to multiple cognitive goals was: "Prescribe medications based on efficacy, safety, and cost as legally authorized". Out of 953 occupations, nurses rank in roughly the top 20% or top fifth in the need for resilience and persistence. One key reason for this is that nursing is among the highest-ranked occupation for nonfatal occupational injury at work, which is often followed by job loss. (Okechukwu, Bacic, Velasquez, & Hammer, 2016). A recent US study showed that one in five nursing facilities reported regular nursing incidents of muscular skeletal disorders, which is among the highest among all US occupations for this type of injury (Gomaa et al., 2015). Yet, this only tells part of the occupational context story, which is filled in by the disciplinary review.

One unique form of adversity that nurses experience in their everyday work is exposure to pain, grief, and death. In a qualitative study from Shorter and Stayt (2010), nurses reported feeling grief after the death of patients they cared for. The grief was intensified if there had been meaningful engagement with the patient and relatives; death also was less traumatic if it was a "good death", which incorporated expectedness and good nursing care that kept the patient comfortable. The nurses in this study denied using formal support systems to cope with their grief, but instead relied on informal

Table 3 Summary of Illustrative Gender Demography, Work–Life Scheduling

Occupation	Prevailing Gender Demography and Work–Life Context
Nurses	• Majority female
	• Shift work including nights, weekends,
	• Can have rotating shifts; some access to compressed work weeks
Teachers	• Majority female
	• 9 months, day work with summers and school vacations off
Social workers	• Majority female
	• Work–life demands vary from mostly day work for therapists with, some control over work hours; yet increasingly erratic patient hours in evening
Police/ Firefighters	• Majority male
	• Shift work, can have nights and weekends including rotating shifts, compressed work weeks sometimes available.
Engineering	• Majority male
	• Hours can vary but can involve long hours
Accountants	• Mixed gender
	• Generally day hours, and can have decent balance except during tax season quarterly financial reporting deadlines.
Doctors	• Majority male for highest-paid specialties with mixed gender across specialty
	• Long hours overwork
Dancers	• Mixed gender
	• Long hours nights, weekends, income variability

conversations with nursing colleagues. Yet, other studies suggest the importance of both personal and professional support networks to manage these daily challenges, allowing for career success and thriving (Gist & Taylor, 2008; Jackson, McDonald, & Wilkes, 2011).

The disciplinary review also made salient that given many individuals in nursing are female, the ability to balance and effectively integrate work and

personal responsibilities was an ongoing concern. In a qualitative study of Australian nurses, a key theme was that family often disrupted career and vice versa (Maher, 2013). Another finding was the career success and progression were framed in the context of sustaining dual commitment to family. In particular, this study found that the greater access to compressed shiftwork and ability to work flexibly was seen as a positive job design feature, which may explain the continued attractiveness of nursing for individuals seeking to combine high family involvement with work.

Overall, the disciplinary review highlights the multitude of challenges nurses face including intense daily workloads and adverse patient events, which lead to an accumulation of stress (Bail, 2007; Hodges, Troyan, & Keeley, 2010; McAllister & Lowe, 2011; McNeely, 1995). These factors could result in unhealthy coping mechanisms, making it more difficult to maintain a long-term career without access to resiliency resources (Bail, 2007; Winwood & Lushington, 2006).

Lesson for future research on work context. The review of nurses suggests that for any occupation with a predominantly female workforce (or one characterized by balanced gender involvement in work and domestic life) that also has high cumulative breadth of resiliency demands, the recursive link between job control over work–nonwork relationships and access to work–family supports cannot be ignored in the design of employment policies. Occupational context moderates risk for higher exposure to work–family conflict due to the structure of work.

Doctors. The O*NET analysis shows physicians ranked in nearly the top 10% of all occupations for having a high need for stress tolerance and persistence scores. Doctors' important job tasks were nearly all (80%) cognitive, followed by 20% emotional demands.

While doctors are certainly exposed to death and pain like nurses, the disciplinary review indicated that one of the most salient occupational triggers doctors face relates to risk taking involving high cognitive demands. Consistent with London's (1983) notion that risk taking represents a dimension of career resilience, doctors are faced with numerous decisions as to whether or not to take risks. Doctors are expected to learn by doing in an attempt to master their profession, although this sometimes results in errors which can lead to patient harm (Katz-Navon, Naveh, & Stern, 2005). This necessity of learning how to balance cognitive risk comes during residency, which is characterized as a "stressful and overwhelming period, during which residents work long hours and take responsibility for the lives of the patients in their care" (Katz-Navon, Naveh, & Stern, 2009, p. 1200). Doctors also face high pressures to follow high professional standards (e.g. Hippocratic Oath) and growing numbers of regulations to follow which has been found to be linked to increased psychological distress (Cadieux & Marchand, 2014). As these pressures mount, secondary traumatic stress and an intolerance for uncertainty are

among the outcomes associated with less resilience (Cooke, Doust, & Steele, 2013). Despite the challenges that doctors face, they also are exposed to positive triggers fostering resilience by having jobs designed to foster intrinsic motivation such as helping others, opportunities to intellectually engage with job tasks, and interpersonal appreciation of the population they serve (Stevenson, Phillips, & Anderson, 2011).

Doctors have historically been predominantly male in the USA, particularly for the highest-paid specialties, with a trend of some female doctors more likely to choose subspecialties with less demands and hours. Supportive relations, especially supportive staff (Jensen, Trollope-Kumar, Waters, & Everson, 2008) and persistence, self-control, self-efficacy, and the ability to help others (Howe, Smajdor, & Stöckl, 2012) also help bolster resilience among doctors.

Lesson for future research on work context. These findings on doctors highlight the need for a greater understanding on how to design work contexts to mitigate risk demands in occupations with higher cognitive risk by enhancing the positive side of occupational resiliency. Examples include increasing opportunities to stay up to date with the latest knowledge advances, and reducing role overload or overwork pressures that can lead to medical errors or poor risk management.

Engineers. Engineers, as illustrated by the ONET category of mechanical engineers, had all highly important demands rated as cognitive demands, such as reading and interpreting blueprints and technical drawings, or researching, designing, and maintaining mechanical products. Of the occupations studied in our sample, it had the lowest breadth of tasks. Engineers were rated in the middle of ONET rankings for need for resilience and persistence.

The disciplinary reviews highlighted technological obsolescence as a key contextual challenge. Engineers are constantly pressured to constantly keep their technology-related skills up to date and to be able to demonstrate their value to employers. This may be daunting when they are working in employer-structured internally focused labor markets and work environments where the employer assigns their roles where their expertise is required (Wolf et al., 1995). This loss of control over job task assignment and internal market focus has some risk, particularly during economic downturns or when there is a technological paradigm shift demand for specific engineering skills. As the risk of job loss increases due to these macro factors, the prospects of employee mobility will be hindered to the extent that energies have been devoted to developing an internally specific and potentially now obsolete set of skills. These situations may result in a "double-whammy" for engineers, as a recent meta-analysis demonstrates that not only the heightened threat of job loss but also low job control have significant negative health consequences (Goh,

Pfeffer, & Zenios, 2015) among professionals such as a high risk for depressive symptoms (Kossek, Lautsch, & Eaton, 2006).

Regarding demographic contextual influences, opposite nursing, engineering tends to be a male-dominated profession. As a result, women may be at more risk for experiencing social marginalization. Walton, Logel, Peach, Spencer, and Zanna (2015) recently demonstrated through two studies that the adversity associated with social marginalization can be mitigated by social-belonging interventions (which increase camaraderie with male engineers) and by affirmation training (which creates external resources and allows women to identify with their gender group).

Lessons for future research on work context. One lesson from this review of engineers is that, given the wide variation in occupational sub-specialization and industry contexts, studies are needed that examine variation in resiliency demands and risks for exposure to job obsolescence for outdated cognitive skills, given the narrow focus of skill demands. It is important to understand resiliency nuances in occupational subcategories for seemingly similar jobs across organizations and industries. For example, how do resiliency demands inherent in being employed as a software engineer in a global Silicon Valley firm compare to those from being a civil engineer at an inner-city Midwest public works? Another lesson is that for occupations with chronic underrepresentation of key workforce demographic groups such as women or other minorities, work context resources such as training to support belonging and affirmation can foster resilience.

Accountants. O*NET data show that accountants, like engineers, are in an occupation where the most important demands are cognitive, such as preparing and analyzing financial statements or reporting on finances. Accountants have the least breadth of important tasks of all we examined. Although at first blush, accounting may seem a lot less demanding than say being a police officer (and indeed, they are ranked lower in need for stress tolerance or persistence), a key contextual challenge for accountants relates to the peaks and valleys of work cycles and the need to stay current with complex regulatory developments. Chief of these stressors are the notorious "year-end close" where public companies must report earnings for the fiscal year. The effects exerted by time pressure and work demands on burnout have been shown to be exacerbated during these periods of high-demand compared to the normal or slower periods (the latter of which can have the adversity of boredom) (Ozkan & Ozdevecioğlu, 2013; Teuchmann, Totterdell, & Parker, 1999). Other pernicious effects experienced include greater job dissatisfaction (Smith, Everly, & Lating, 2009)

Regarding work–life implications of being an accountant. Evans and Steptoe (2001) found that heart rate and blood pressure were both higher during the workday compared to leisure days or being at home in the evening. High-threat stressors, including threat to reputation—composed of personal loss,

negativity, threat to self-esteem, and control by others—have not only been linked to higher levels of work anxiety in accountants but also are powerful enough to create anxiety at home and work–family conflict (Doby & Caplan, 1995; Elloy & Smith, 2004). Support and trust in management, in addition to social support, buffered these negative effects (Evans & Steptoe, 2001; Harvey, Kelloway, & Duncan-Leiper, 2003).

Lesson for future research on work context. One takeaway from the disciplinary review of accountants that may be useful to examine in future research is how cyclicality or peaks and valleys in job demands and workload may, in turn, create cyclical demands for resilience or risk burnout. What kinds of work contexts and supports (or lack thereof) can place employees less or more at risk for overload and burnout?

Police and Firefighters. Police and firefighters are in the same general O*NET protective Service classification. While the media and general public tend to emphasize the physical danger for police patrol officers, O*NET analysis highlights the high importance placed on cognitive tasks (88%) of important job tasks. Police work involves multiple cognitive demands related to reviewing facts and incidents to identify and investigate potential suspects. Police rate in the top third in our sample for need for resilience. They also have emotional demands such as psychological exposures to traumatic events over the course of a police career (Violanti, 2006), which poses risk for posttraumatic stress disorder (PTSD). The importance of responsive quick access to supportive work context resources is clear. Pole (2008) suggests that the magnitude and quality of responses during and immediately after the trauma, labeled as "peritraumatic responses" are among the most important predictors of PTSD for police officers.

In a study of Iraqi police service members, nearly half (231 out of 520) respondents met the criteria for PTSD; the majority of those surveyed had never been given information regarding symptoms or reactions, nor were they aware that they might have experienced traumatic stress (McNally, 2006). Work stress among police officers has been positively correlated not only with exposure to critical incidents, but also with workplace discrimination, lack of coworker cooperation, and job dissatisfaction (Gershon, Barocas, Canton, Li, & Vlahov, 2009). This study also showed that work stress was related to incidents of depression and partner abuse.

Police officers may also undergo a fitness-for-duty evaluation regarding their ability to appropriately discharge their duties under stressful conditions. A study of 134 police officers engaging in the fitness-for-duty evaluation indicated that suicide may be a risk of cumulative stress and deteriorating resiliency (Janik & Kravitz, 1994). This risk was enhanced when marital problems were present which also highlights the importance of employers fostering healthy work and nonwork relationships. Work scheduling also seems to be a moderator. Reviews show that police who work in afternoon and work shifts are also

found to be at higher risk for work stress than police who work day shifts (Ma et al., 2015).

Turning to firefighters, unlike police officers, most of the highly important demands for firefighters identified by ONET, are physical. A job task example is searching for and rescuing victims from burning buildings, positioning and climbing ladders to gain access to upper levels of buildings, and creating openings in buildings for ventilation or entrance. Additionally, there are some cognitive demands involved in learning various firefighting techniques based on the most recent developments in the fire science literature. In our sample, firefighters had one of the highest number of tasks that were all rated important—in other words, a great number of different types of physical and cognitive skill competencies. Like police, accumulative stress and PTSD are also concerns (Dowdall-Thomae, Culliney, & Piechura, 2009; North et al., 2002) to the extent that they are involved in accidents, disasters, and arson calls.

The negative effects of cumulative stress have been found to be mitigated by the work contexts' provision of open communication and effective leadership. For example, the Peer Support Action Plan is one such program designed to promote resilience, positive coping strategies, and social support (Dowdall-Thomae et al., 2009). Similar to the findings from the studies of police officers, a study of 181 firefighters who served in the Oklahoma City bombings in 1995 found that more resilient firefighters suffered fewer injuries, post-disaster mental health intervention requirements, and lower levels of PTSD (North et al., 2002). These authors suggest the lesson that for any known expected exposure to occupational adversity, preparedness and experience were important predictors of resilience.

Lesson for future research on work context. These trends suggest that for any occupation such as firefighting and police that has physical and emotional risk built into the work, there is a need for proactive education or stress-related interventions *prior* to exposure to the occupational risk. Training prior to the event may help to enhance resilience; and monitoring following a traumatic event may buffer adverse effects (Thompson & Solomon, 1991).

This review also suggests the need for occupations with built-in difficult transitions, such as rebounding from crisis situations such as a terrorist attacks or fighting days of fire, or when exiting the occupation, to develop initiatives to foster positive resilient trauma or occupational separation. Such strategies will not only enhance the incumbents' well-being as well as organizational reputation, but also could save money on the back-end from post separation problems. Similarly, occupations where there are known job thresholds for stressors to become overwhelming, such as in the case of PTSD emanating from cumulative stress, occupational contexts must have mechanisms for nonstigmatized self-identification of threshold warning signs. Here, individuals must be culturally allowed to take a work leave and have time for recovery. Such proactivity will reduce the costs to the individuals, co-workers, their

families, and the mission (as highlighted by recent high-profile media on police potential overuse of force), as opposed to doing nothing and taking a laissez-faire approach to the risks of cumulative stress.

Teachers. Teachers, as illustrated for the quantitative analysis from the ONET category of elementary school teachers, have the greatest breadth of O*NET tasks with a score of 39 different tasks, 21 of which were rated highly important, ranking toward the top of our sample. Most of teachers' important demands are cognitive, followed by one-fourth being emotional, the second highest occupasional rank for emotional job skills. The emotional demands typically relate to interactions with students. In addition to providing instruction and one-on-one help when necessary, teachers must also meet with parents and guardians to discuss progress reports. Teachers also rated toward the top of the sample in having high need for resilience.

The need to couple high breadth of tasks that couple important cognitive skills with adeptness with emotional skill, plus having among the highest need for stress tolerance and persistence in an increasingly less supportive work context distinguished the teaching occupational context. Resilience in teaching as an "emotional practice, found to be multidimensional socially constructed concept that is relative, dynamic, and developmental in nature" (Gu & Day, 2007, p. 1302). This breadth was highlighted not only by the ONET analysis above, but also in a study identifying four broad dimensions of teacher resilience: profession-related, emotional, motivational, and social (Mansfield, Beltman, Price, & McConney, 2012).

Another unique form of adversity involves macro contextual changes in nature of work for teachers that is eroding positive professional identity as a job resource. With the passage of the No Child Left Behind Act in 2001, new teachers in New York City "find their personal and professional identity thwarted, creativity and autonomy undermined, the ability to forge relationships with students diminished" (Crocco & Costigan, 2007, p. 512).

We note at the end of this section that workplace social support is important for resiliency across occupations as it enhances thriving and occupational retention. This is particularly salient for teachers, where there is an intensely growing gap between higher job demands (e.g. high number of important tasks, high cognitive and emotional demands, growing regulations) and the declining availability of job resources for teachers, including an erosion of professional control and positive identity. As an example, one study of first-year teachers identified social support and coping skills as critical assets for resilience, allowing them to successfully adapt to working with their students (Burns, Poikkeus, & Aro, 2013; Kitching, Morgan, & O'Leary, 2009; Morgan, 2011). Principals and department heads also matter greatly as critical resources for social support (Bickel, 2009; Peters & Pearce, 2012) and resiliency to buffer teacher attrition, turnover intentions (Price, Mansfield, & McConney, 2012), and enhance thriving (Sumsion, 2004). Other positive outcomes associated

with resilience relate to the witnessing of work-affirming, positive effects on students' lives, which is one way that teachers resist plateauing in their careers (Meister & Ahrens, 2011). For teachers of special education needs children, a commitment to working with these children helped to foster resilience (Mackenzie, 2012). An ESM study further demonstrated this link, with positive feelings resulting from student engagement and achievement and negative feelings resulting from student misbehavior (Kitching et al., 2009). The ability to access professional growth opportunities are also important to help teachers avoid plateauing and career dissatisfaction (Meister & Ahrens, 2011; O'Sullivan, 2006).

Lesson for future research on work context. Our review of teachers also highlights the importance of resilience studies to identify for each occupation, the particular job context-specific forms of adversity. Identifying job-specific occupational risk exposures is essential for a proactive as opposed to reactive approach to resilience and the design of multi-level interventions. At the individual level, studies might look at how realistic job previews of the occupational positive and negative challenges of the profession and heightened social support may be useful interventions to foster resilience and reduce occupational turnover. At the macro level, in occupations with growing regulation and declining resources and autonomy, interventions are needed to redesign the context to still foster positive professional identity.

Social workers. Social workers as illustrated by the ONET category of child, family, and school social workers were rated highest in our sample for having important emotional job demands, followed by cognitive. Among the most highly rated important tasks are counseling (individuals, groups, or families), interviewing clients to assess their situations, and serving as liaisons to students, homes, schools, family services, courts, protective services, and other contacts to help children who face problems such as disabilities, abuse, or poverty. Social workers also ranked toward the top of the sample are in need for stress tolerance and persistence.

The high emotional demands of social workers are an especially critical trigger heightening the need for work context resiliency resources, as resilience is "a protective factor that enhances the ability to manage stress, and promotes well-being in the social care context" (Kinman & Grant, 2011, p. 261l see also Grant & Kinman, 2012). Social workers work in stressful situations and are called upon to resolve, ameliorate, or prevent stressful conditions under which their clients live (Starak, 1984, p. 19). Balancing self-care and family care can be especially challenging in the helping professions, as those who treat victims of stressful and traumatic events may experience empathy fatigue (Skovholt, Grier, & Hanson, 2001; Stebnicki, 2008), as well as crossover contagion. Prolonged civil conflicts, poverty, and disasters are some of the unique forms of adversity, which place humanitarian aid personnel at risk for experiencing traumatic and daily cumulative stress (McFarlane,

2004). Such exposure to high cumulative stress can lead to major physical and mental disorders for social workers.

Kinman and Grant (2011) argue that emotional intelligence and empathy are key predictors of resilience and that a focus of social work education should be on building resilience. Relatedly, one study of social workers found that emotional and social competence explained 47% of variance in resilience (Kinman & Grant, 2011). In-depth interviews with rural child protection workers revealed that those who had completed a field education placement in child protection or who had prior experience appeared to have greater resilience (Gibbs, 2001, p. 19). One social work department successfully used stress education defusing and debriefings as an effective intervention to promote resilience (Spitzer & Burke, 1993).

Lesson for future research on work context. The social worker review suggests the criticalness of supporting access of ongoing resources for maintaining optimism (Beddoe, Davys, & Adamson, 2013) and stress management to foster resilience for professions in work contexts high in emotional job demands. For example, job buddy and mentoring systems can be integrated in the way the work is designed, enacted, and how workers are on-boarded and socialized. Senior and junior workers might be partnered as partner of on-the-job orientation over the first year of employment, which can systematically move resiliency as an individual "fend for yourself" self-managed challenge to one that is constantly buffered against in positive organizational design.

Dancers, Fine Artists, and Models. While dancers, fine artists and models are all in the same broad ONET category (SOC code: 27), our analysis showed wide diversity in need for resilience. Dancers ranked at the top of all ONET categories and our sample are in need for stress tolerance and resilience. One reason for this is that dancers have among the highest athletic demands, a finding first reported in a seminal study (Nicholas, 1975) examining the physical and mental demands for ballet dancers compared to 61 other sports. Models ranked the lowest, and fine artists (e.g. painters, sculptors, and illustrators) were in between. One reason for this is that while dancers, artists and models all have physical demands, despite being in the same job group category, models are in a sales subcategory. What all have in common is that all have at least some physical job demands rated as highly important (unlike most other occupations in our sample); many (except public safety) had no physical tasks rated as highly important. These occupations also were similar in ranking low in the sample for having a breadth or a great number of tasks rated highly important.

Dancers must train, exercise, and attend dance classes, in addition to practicing and perfecting their moves. Similarly, models must follow strict routines of diet, sleep, and exercise to maintain appearance. Fine artists must use their hands to cut, bend, and fasten individual or mixed raw materials to create

works of art. The demanding aesthetic and technical requirements may result in pain or injury as physical and mental stress amasses (Hamilton & Robson, 2006). Moreover, health issues (e.g. eating disorders) may manifest in the desire to achieve the perfect aesthetic look or master a routine (Nordin-Bates, 2012).

Compared to dancers and models, fine artists have more important cognitive demands related to the creativity, including envisioning and devising ways to create their artwork. Yet, all three occupations share the fact that their prowess in physical demands is frequently evaluated by critics and outsiders. These occupations require self-confidence and self-esteem to help deal with the behavioral anxiety created by these demands (Nordin-Bates, 2012; Salmon, 1991).

This link between physical (body) and mind is what is a unique stress trigger of this work group. Neurologists exploring the mind–body connection highlight that mindfulness (also referred to as self-awareness), or the ability to objectively view the self, can also be useful in reducing stressors that stem from the demands of the arts (Boyce, 2011; Fogel, 2009).

Notwithstanding the diversity of this job group, its inclusion helps to highlight our earlier point: resilience is important to all occupations regardless of how they are ranked. For example, in a recent interview, celebrity model-turned-actress Cara Delevingne discussed her early, unsuccessful modeling years where her image was criticized by modeling agencies and she suggested that models were "used" by photographers (Melas, 2015). Granted this may be a high-profile case (at the time of this writing, she had more than 21 million followers on Instagram), it emphasizes the point that resilience is needed even in the occupation with the lowest rank of need for stress and persistence.

Lesson for future research on work context. This review highlights the importance of understanding how jobs with high physical demands impact mind–body relationships and resilience. Thus, the design of work can foster resilience by fostering positive connections between emotional, cognitive, and physical self. If one trigger (e.g. physical) gets out of whack (e.g. mandated starvation diet for models, injury for dancers, hand abrasions for artists), it is unlikely over the long run that the individual will perform well or experience well-being on and off the job.

Cross-cutting work contextual resiliency facilitators from occupational reviews. As demonstrated in our occupational-specific review, across the 11 occupations, four themes emerged as generic occupational facilitators to reduce occupational risk and prevent lower resilience or conversely foster an occupational work context supportive of resilience. The first theme was the growing importance of designing workplaces to increase *the ability to control hours, work schedules or workload as a facilitator or barrier to occupational resilience.* This is especially critical for occupations that are female-dominated in

workforce demography, which had a preponderance of individuals valuing high dual involvement in work and nonwork roles. The ability to control work schedules was often mentioned as a contextual facilitator that fostered occupational engagement and longevity. For example, the access to compressed workweeks (nurses); part year work (teachers); flexible hours (social workers); or limited emergency call and shorter hours (specialty choice for doctors) were highlighted as positive attributes of the job contexts. These attributes fostered occupational labor market participation, hardiness, and retention. Conversely, the lack of access to control over work hours, schedules or workload was sometimes viewed as barriers to resiliency in other occupations that were more male or gender-balanced workforces. Examples include peak and cyclical hours in accounting, long hours in engineering or highly demanding medical specialties such as surgeons. Shortages in these occupations could be countervailed and resiliency enhanced by providing work resources offering greater schedule control.

A second cross-cutting theme for proactively facilitating occupational resiliency was the importance of strengthening the work context to foster open access and use of positive workplace social supports to perform job tasks and squash cultures demanding sacrifice of personal and family well-being in order to succeed in the profession. Workplace social support, the belief that one is cared for by others and can get help as needed for job tasks, is a resource that buffers poor performance in work and nonwork (Kossek, Pichler, Bodner, & Hammer, 2011). Our review showed that support could be from many sources: co-workers, supervisors, staff, or even customers such as parents in schools. It could be in the form of formal or informal networks as highlighted in the nursing review or support from family for occupational choice in the case of police.

A third theme was the importance of active employer preventative and stress management initiatives to reduce risk for resiliency depletion for jobs that had high negative exposures (e.g. social stigma due to demographic minority status; constant contact with death and pain, poverty and social problems; increased health risks from trauma, or physical injury). Examples included mindfulness training for dancers, implicit bias prevention training for entire units to prevent marginalization of women or other underrepresented minorities in STEM, and PTSD prevention for police/firefighters, and stress management for social workers.

A fourth theme was that for particularly for occupations with many cognitive demands ranking as highly important, the regular integration of employer and professional initiatives to promote lifelong learning and skills currency fostered occupational resiliency and reduced risk of job obsolescence. Examples include employer support of educational updates in changing tax regulations in accounting, the assurance of time-off to attend workshops to keep abreast of the latest medical techniques for doctors, or opportunity to attend university

classes to learn the latest technological trends for engineers to avoid skills obsolescence. Such work context supports fostering ongoing education to encourage cognitive development or replenishment fostered occupational longevity.

In sum, a multi-level model should include work context factors such as integration of work–life supports to control hours and load; social support to carry out work and nonwork performance roles; active integration of occupationally preventative health and stress management initiatives particularly for jobs with higher physical and accumulative emotional stress risk; and active encouragement of lifelong training for cognitively demanding rapidly changing jobs. These are examples of cross-cutting work context moderators that facilitate buffering resources for occupational resilience. Having conducted our management literature review, and reviewed a sample of occupations using ONET data and disciplinary reviews, in the remainder of this paper, we summarize content themes for our framework.

Summary of Resiliency Content Themes

First, our multi-method review shows that *resilience is individually and occupationally determined as part of a multi-level system*. We argue that specific occupational tasks and contextual demands may imply different connotations of what exactly "resilience" means and how occupational contexts might be actively designed to foster resiliency. Our mixed-method review also showed that the job analysis literature – which takes a more technical and quantitative approach (as captured by O*NET) – is not well linked to the literature on disciplinary trends in resiliency demands, which sometimes obscured linkages between the changing nature of work and resiliency. Yet, the integration of approaches suggests that when the quantitative O*NET review is coupled with the qualitative interdisciplinary reviews for a sample of occupations, one is aware of the need to simultaneously clarify the importance of types, breadth, and configurations of job demands for performance and examine varying occupational contextual demands. Increasingly, all occupations may need some form of emotional, cognitive or physical resilience, just in differing degrees with awareness of context-specific triggers.

Second, across occupations we found that *resilience involves multiple conceptual strands related to accessing resources (trait, capacity processes)* that are not mutually exclusive and can be combined. Given the overlapping definitions and conceptualizations of resilience we found spanning literatures and occupations, our review suggests that resilience should be viewed as a multifaceted global meta-construct (Johns, 2006).

Third, although commonly conceptualized as "the capability to cope with or the psychological capability to 'bounce back' from adversity, risk, significant change, conflict, or failure" (Luthans, 2002, p. 702), *resilience was not only viewed in the context of negative triggers but positive ones as well across all*

occupations. Furthermore, all occupations have some exposure to occupational risk, which has not really been mainstreamed in how we design occupations today to foster resilience. The types of triggers may vary and the ratio of positive and negative triggers may also diverge, but frameworks of resilience for future study of resilience should examine both positive and negative triggers. For example, teachers became more resilient through work-affirming events much like doctors and nurses built up resilience by helping patients.

Fourth, although resilience has primarily been viewed as a cognitive construct—particularly in the careers literature, and primarily as an emotional construct in the positive psychology literature, it was evident that there are at least three common components (*cognitive, emotional, and physical*) *across occupations that were present for all jobs with variation in the extent of occupational exposure*. Emotional triggers demanding resilience were not only important for social workers in dealing with the situations in which they are placed (e.g. natural disaster relief), but were also important for doctors and nurses in dealing with patient deaths, or teachers working with children who have disabilities or family challenges. Emotional resilience was also important for police or firefighters who may have seen someone get injured or killed. While at face value, emotional triggers may seem to be less important in say accounting or engineering, this review and management studies in general are increasingly showing that emotional intelligence has some importance for all employees to have sustainable careers.

Similarly, physical resilience is not only important for occupations with obvious physical demands (e.g. police, firefighters) but also manifested importance in some less obvious occupations. For example, we are learning that even "safe" occupations like office jobs involved in engineering and accounting are subject to physical risk from obesity and heart attacks from a sedentary lifestyle.

Fifth, *resilience was frequently viewed in a dynamic context, although few studies account for this dynamism*. That is, resilience was discussed in regard to events unfolding over time or a response to an accumulation of situational chronic stressors. For example, cumulative stress represents the "pile-up" of stressors over time (Grzywacz & Almeida, 2008). In their definition of resilience for teachers, Gu and Day (2007) described resilience as a "dynamic practice." Additionally, some of the triggers identified—burnout, for example—are likely consequences of other triggers (e.g. cumulative stress or familial strain), further highlighting the causality of dynamic processes through which resilience gains importance. By and large, many of the career resilience studies and positive organizational behavior studies addressing resilience have not utilized longitudinal designs (cf Peterson et al., 2011) or examined how resilience might wax and wane, and how "smart" contexts can positively support this dynamism.

Sixth, *across occupations, all had some triggers for resilience that were identifiable as* "occupational pressure points" *occurring in a job-specific context,*

while other triggers were context-generalizable across occupations. Therefore, the review suggests that resiliency models and studies need to include both context-general and context-specific measures. The latter we label "occupational pressure points" or tensions that are distinctive to the occupation. For example, studying work–life pressures without examination of data on year-end close pressures for accountants would overlook an inherent job-specific context challenge. It is an example of occupations that have regular resilience risk exposure to cyclical schedules with peaks and valleys, or work "cycler" occupations (Kossek & Lautsch, 2012). In contrast (but equally important) might be to include measures of which aspects of stress, burnout, and role overload from adversity come from general context triggers such as a lack of social support, under-staffing, or a lack of job control.

Lastly, *work-related issues which spilled over into or involved the nonwork domain surfaced across nearly multiple occupations.* Most of the time, this spillover was more negative than positive in regard to long work hours, although there are obvious positive benefits of income, positive job experiences, flexible schedules, and learning skills that might be transferable to home. Thus, a holistic view of resilience in models and strategies must incorporate the work–nonwork interface. An updated view of resilience examines an individual's joint adaptation to job stress and personal life challenges (Leppin et al., 2014)

The review showed a wide variation in the gender and work–life demography of these occupations, suggesting that a lack of attention to facilitating positive work and nonwork relationships in occupational setting will continue to promulgate demographic imbalances in these fields. In sum, the preceding review suggests that the different forms of resilience reflect different ways individuals can garner resources to respond to triggers across the manner in which different occupations are enacted structurally and culturally.

An Occupational Resilience Framework

Drawing on the previous analysis, Figure 2 depicts a multi-level integrated occupational resilience framework. O*ccupational resilience* is the synthesis of an individual's traits, capacities or coping strategies, and processes for positively adapting to adversity and risk in ones' occupational and organizational contexts. Grounded in job resource theories discussed above (e.g. Hobfoll, 1989), it reflects the multiple ways in which individuals access resiliency resources (traits, capacity, processes of appraisal and adaptation, access to resources) in order to respond to stress triggers (cognitive, emotional, or physical), which can be positive or negative, job-specific or general, to adapt performance across work and nonwork domains over one's career. Our multi-level model of occupational resilience provides a basic, dynamic framework where stressors are mediated by resilience and
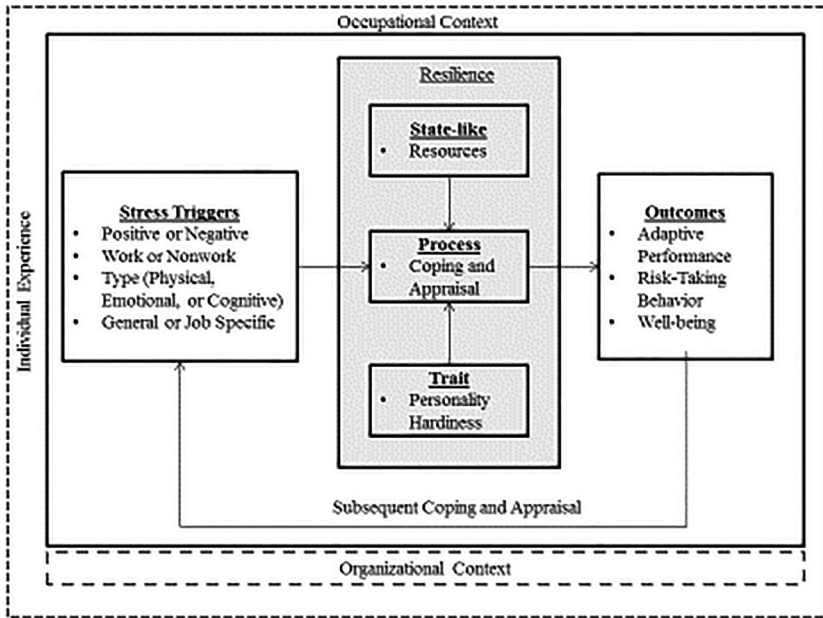
Figure 2   An Integrated Occupational Resilience Framework.

moderated by occupational and organizational contexts to shape outcomes. Outcomes may be positive or negative with cross-over across work and nonwork domains. This continuous cycle of stressors influencing outcomes will occur over time and career stage. It will be constantly influenced by resilience such as individual hardiness, the state-like resources and capacity the individual may garner to apply to the situation, and processes involved in determining the appraisal of the stressor and adaptation. This time-based process model encompasses the breadth of occupational resilience in addition to recognizing the multiple ways resilience has been conceptualized across job contexts.

Just as resilience has been studied across numerous disciplines, and often considered in a domain-specific context such as family systems resiliency models focusing on family stress contexts or public health models focusing on poverty systems, so do we believe our model should generalize. Specifically, from the management perspective, the model should generalize across occupations, although scholars and practitioners will have to pay particular attention to some of the issues raised in this review to determine the most relevant stressors, resources, and situational contexts upon which to focus.

Occupational Resilience as a Trait

Our review noted that the positive psychology and organizational behavior literatures view resilience as the ability to bounce back from adversity (Luthans, 2002). In our model, we conceptualize this "adversity" as the independent variable or a stressor which can be positive or negatively valenced, and the "bounce back" or adaptively perform as the dependent variable. The review showed that these triggers (general or job-specific, cognitive, emotional or physical) may be either work or nonwork stressors. Similarly, the ability to adaptively perform can foster additional positive outcomes as resilience can represent "a personality dimension that is believed to confer resistance against the effects of psychological stress" (Contrada, 1989, p. 896). We argue here that this individual difference variable would—in a vacuum—explain why some individuals are able to better respond to and overcome (or recover from and sustain) adversity. Consistent with Contrada's definition, those who have a higher propensity to resist the effects of psychological stress are more likely to bounce back more quickly or turn adverse events into positive outcomes. Interestingly, meta-analytic evidence suggests that some personality dimensions—including emotional stability—are subject to change and increase over time (Roberts, Walton, & Viechtbauer, 2006). In developing the model, we draw a boundary condition by assuming that this trait-based conceptualization of hardiness will remain relatively stable over time, since we also integrate state-like aspects of resilience in the discussion of the model below. However, scholars interested in personality traits are invited to contest this assumption and examine whether resilience personality traits identified in the review (e.g. hardiness, optimism) increase, decrease, or remain stable over time in future research. The interaction between individual traits and occupational, organizational and family context should also be included in such studies.

Occupational Resilience as a Capacity

Yet, we have argued that by only considering individual resiliency traits, one overlooks that triggering events do not occur within a vacuum. As a result, there might be a variety of resources upon which an individual may draw to deal with such an event. Resources have been defined as "those objects, personal characteristics, conditions, or energies that are valued by the individual" (Hobfoll, 1989, p. 516). Hobfoll's COR theory warns that environmental factors may deplete individual resources. In broader terms, this observation is consistent with long-standing research—including work on social information processing theory (Salancik & Pfeffer, 1978), ecological systems theory (Bronfenbrenner, 1977), theory on situational constraints (Peters & O'Connor, 1980) and occupational health job-demands literatures (Tetrick et al., 2012)—all of which argue that the context in which situations occur can significantly alter outcomes. Because our review of resilience indicated

that both work and nonwork factors come into play, we conceptualize the state-like dimension of resilience as resources grounded within the work–home resources model (ten Brummelhuis & Bakker, 2012). The model developed by ten Brummelhuis and Bakker categorizes resources along two dimensions: source (contextual versus personal) and transience (structural vs. volatile). In addition to work-related resources, which are likely to enhance resilience (e.g. skills, knowledge, and experience) or buffer strain (e.g. job control, social support, stress initiatives, education and training), nonwork resources (including partners/spouses and social networks) can also enhance resilience and buffer strain. Depending on the situation which evokes the need for "resilience," some of these resources will be more valuable and relevant than others. In particular, some of the more volatile resources—including physical and cognitive energy and various forms of social support (e.g. advice and respect)—are likely to influence the outcome of adverse events. Particularly in instances where personality hardiness, for example, is equal across individuals, those greater equipped requisite resources are likely to bounce back more easily, sustain high ongoing job demands, or even thrive from the effects of adversity. Consistent with the notions from positive organizational behavior, these resources are expected to be "state-like" in nature. Future research should pay particular attention to the occupational context, as this review has demonstrated the many ways in which access to and the nature of work resources supporting resilience can vary. As an illustration, social support provided by principals is likely to be an integral variable to consider in the context of teacher resilience, whereas co-worker social support and instrumental back up may be more important in a nursing context.

Occupational Resilience as a Process

Resilience as a process inherently involves the passage of time. In traditional terms, individuals are exposed to multiple work and family adversities over time, some of which may simultaneously occur with one another. Depending on the outcomes, resource spirals might occur. Loss spirals occur when there is a lack of resources to offset resource loss. "If resources are used to prevent loss of other resources, such loss would be predicted to lead to decreases in the likelihood of possessing necessary resource reserves" (Hobfoll, 1989, p. 519). Loss spirals in work–home dynamics have been empirically demonstrated. In a longitudinal study using three waves of data, work pressure led to work–home interference and exhaustion and exhaustion led to more work–home interference and work pressure (Demerouti, Bakker, & Bulters, 2004).

On the positive side, gain spirals can also occur. Xanthopoulou, Bakker, Demerouti, and Schaufeli (2009) found reciprocal relationships among job resources, personal resources, and work engagement. Similarly, the growing body of work on daily recovery has found psychological detachment or

smart phone use each evening can increase or decrease work engagement the following morning, respectively (e.g. Lanaj, Johnson, & Barnes, 2014; Sonnentag, Mojza, Binnewies, & Scholl, 2008). Another study found that daily resilience can also buffer the relationship between daily task conflict and daily strain-based work-to-nonwork conflict (Martinez-Corts et al., 2015). When employees were more resilient, the impact of daily task conflict was weakened.

Occupational and Organizational Contexts

Our framework depicts resilience as being nested in an occupational and organizational context. The review showed that across the occupations reviewed, there was wide variation in the triggers that were job content-specific (e.g. managing death and trauma in nursing; avoiding technological obsolescence in engineering) and job content-general demands related to role enactment (e.g. low job control, social support, high work–nonwork conflicts) in which different forms of resilience are enacted. This conceptualization is aligned with early work on occupational stress that identified two main types of triggers or sources requiring resilience emanating from either content of the work or content or the role (Kahn & Byosiere, 1992). Occupational context also pertains to the examples of prevailing norms values we reviewed such as the culture of caring demanded by nursing or the emotional labor demanded by teaching and social work. We found considerable variation in work design in terms of the ability to control work hours, schedules, and overwork, as well as the degree to which there was control over the pace, and pressure of work, or the need to constantly innovate or multi-task. Such variation in control over occupational job demands must be front and center in studies of resilience.

Consideration of occupational context also involves examination of how job contexts can vary over time in shaping resiliency demands and outcomes, which often can involve interaction with nonwork pressures. In particular, there may be peak times in careers where occupational demands may overlap at times that have high personal life demands that have not been fully addressed in research. Such critical time points in life and career may create "occupational work –life pressure points."

A common occupational pressure point, for example, is the structural overlap between the biological clock and the tenure clock for professors. Another illustration is doctors trying to grow their practice or for individuals trying to make partner in a company while at the same time trying to find time to date to find a life partner, let alone figure out the timing to start a family. Some of the solutions for these occupational pressure points being offered by firms, such as the recent announcement that some Silicon Valley employers will allow employees to freeze fertility eggs (Sydell, 2014), send the cultural message that occupational hegemony prevails over personal well-being,

nonwork relationships, and children. Such actions, while appreciated to be sure by some workers, are social media Band-Aids that do nothing to foster occupational resiliency by essentially changing the relationship between the design of work and nonwork demands to reduce adversity created by prevailing occupational stressors.

Most of the issues discussed above in regard to occupational context may be mirrored at the organizational level. Yet, it is important to note that even in tough industries and occupations, not all organizations are the same in the resiliency munificence of work context. Variation exists also at the organizational level in cultural values and norms regarding how the way the workplace is structured to prevent or foster job resilience.

We can demonstrate through application of the challenge-hindrance stressor framework (Cavanaugh, Boswell, Roehling, & Boudreau, 2000) several examples related to use of electronic devices for work during nonwork hours. These examples illustrate not only how such stressors for telepresence may be appraised as either negative (hindrances) or positive (challenges), but they may be moderated by the degree to which the organizational context is designed to foster resiliency. Challenge stressors—including time pressure and increased responsibility—"though stressful, can sometime be considered by employees to be opportunities to learn and achieve," whereas hindrance stressors including role conflict and role ambiguity "result in high levels of strain and are appraised negatively by employees as barriers to achieving personal goals" (Pearsall, Ellis, & Stein, 2009, p. 19).

Take the common challenge many professionals face—electronic tethering to work email and cell phones during nonwork hours. In some organizations, the cultural values favor being constantly connected and constant expectations of responding to work communications during personal time. Such job adversity creates occupational risk for reduced resilience and burnout. Constant, workplace telepressure—"preoccupations with and urges for responding quickly to messages from clients, coworkers, or supervisor" (Barber & Santuzzi, 2015, p. 172) where workers perceive no control over how to manage this job demand might originally be appraised as a hindrance stressor, preventing evening recovery and contributing to feelings of fatigue the next morning. However, with repeated exposure over time, if an employee and team members are empowered and given some choice to control when they respond and able to place limits on the amount of time they are available, it is possible that employees may become more resilient to such telepressure.

Another example demonstrates how resiliency relationships between such telepresence demands may vary over time. As a study of evening daily smart phone use by Lanaj et al. (2014) found, such job demands may first be appraised as a positive stressor, particularly for new employees or those trying to be promoted, where employees can demonstrate commitment to

their organization or supervisor by "staying connected" late in the evening. However, over time as depletion increases and an employee becomes less resilient, evening smart phone use might instead become appraised as a hindrance. Future research should examine how organizational context and interactions with time, career stage, and job type relate to the identification of positive and negative different types of stressors, and how organizational and occupational contexts can be designed to foster resilience.

Outcomes

Figure 2 depicts outcomes such as performance, risk taking, and well-being which can include work and family performance (Kossek, Noe, & Colquitt, 2001), as well as willingness to take on risk in personal and professional life (e.g. start a family, get married; encourage an aging parent to move in or nearby; take on a big job challenge; go back to school) and well-being on and off the job. Examples of other outcomes scholars might study could include occupational and job turnover (and family and relationship turnover such as divorce or breaking up with a long-time boyfriend or girlfriend), family and personal well-being, and career and life success. The framework highlights the need for future research to update theories of resiliency to move beyond seeing it as a piecemeal concept, but rather one that is facilitated or depleted by the occupational and organizational context in which an individual works, given their personal and professional resources.

Additional future research directions. The integrated framework is intended to be generative of future research. It is not intended to be the final word on occupational resilience, but is an opening statement. Both management and non-management focused research can design studies to begin empirical tests based on the review. Research should include different and new emerging forms of resilience and resiliency triggers and contextual moderators in the same study, given that resilience encompasses multiple conceptual strands. Below, we offer suggestions for multi-level and other occupational-specific and comparative studies; three specific directions for future research; and future issues to explore in conceptualizing and measuring occupational resiliency.

Developing Occupational Resiliency Clusters and Examining Triggers and Outcomes "in situ".

We examined 11 specific occupations in our review. We identified common cross-cutting themes which should be examined in specific occupational and organizational contexts in future research Specifically, more research should be done "in situ: on specific occupational premises to identify job-specific

positive and negative triggers or stressors; and specific types of salient emotional, physical, or cognitive demands and their bundling relationships. Research can also further delve into how occupational resilience is a dynamic phenomenon that occurs within and across career stages and identify occupational pressure points or tensions and how they differentially impact workforce subgroups such as men and women, or cultural minority and majority employees. The specific work and nonwork domain pressures distinctive to occupations are ripe for more systematic examination. We also identified many other contextual moderators such as access to training and other resources fostering healthy work contexts.

Although we found many common as well as unique trends across the occupations some of which are noted at the end of each occupational section, here are additional emerging patterns important for future research. What seemed to be as particularly important from this review is to identify the degree to which occupational demands and work and nonwork demands seem to be constantly at odds as a trigger and outcome of resilience. Future work is also needed to identify the degree to which many resilience forms, such as cognitive, emotional and physical were either bundled or distinctive to a job. The gender demography context also seemed to be important, particularly for understanding of work–nonwork relationships impacting resilience as over half the occupations we examined were clearly male or female dominated.

Future research can identify additional categorizations, including a broader service versus non-service distinction or a back-end or front-end customer contact role distinction, as this may be associated with emotional labor demands as well as face time demands which may limit job flexibility. Relatively speaking, resilience may be more critical in service occupations where employees deal with clients, customers, or patients on a daily basis. Evidence for this supposition includes previously documented negative effects including the role of customer mistreatment on call center employees (Wang et al., 2013) and the depleting effects that emotional labor has on bus drivers (Wagner, Barnes, & Scott, 2014).

Additionally, although not an occupational group *per se*, resilience may be studied in the context of managers given their important roles as "linking pins" in connecting upper management with subordinates (Lorinkova & Perry, 2014, p. 7) and their role as "gatekeepers" of various human resource policies, (Sikora & Ferris, 2014) including those related to work–life and stress management, and their likely high administrative burdens.

Future Research Scenarios for General and Specific Occupational Demands

In order to foster additional future studies, we created a table (see Table 4) that summarizes some ideas for research studies for general occupational resilience studies as well as scenarios which may be more "targeted," or occupational-

specific and are applicable to some occupations but not to others. We include the type of resilience which might be explored, in addition to the type of study design which might be employed.

Moreover, future research might examine how occupational and organizational context may moderate resilience using and clustering jobs according to some of the triggers emerging from each occupationally specific review. For example, studies might compare and contrast resilience in occupations that are notorious for lacking workplace social support or challenging work–life norms compared to those that have more positive and complimentary systems in place. Or examination of a cross-section of "cycler occupations" known for demanding work cycles with peaks and valleys and the different ways context interacts with these demands. Future work might also design studies to compare the design, customization, and evaluation of interventions across occupational contexts to help manage exposure to and transitions from trauma or death.

Resilience Linkages to Adaptive Performance, Risk-taking, and the Work–Nonwork Interface

Adaptive performance, risk taking, and the work–nonwork interface were key themes that we identified as topical areas for future research that combine multiple elements building on the themes from the review. First, we discuss adaptive performance as a positive outcome within the occupational resilience framework. We also highlight the different forms of resilience associated with adaptive performance and view this discussion in both generalizable and occupation-specific lenses. Second, we address risk taking as another outcome within the framework, which is valuable not only for highlighting positive outcomes but also for illustrating the dynamic aspects of resilience. Third, our final section focuses in particular on the interaction between the work and nonwork domains which was clearly a growing trigger and outcome across occupations as work pressures continue to generally rise.

Adaptive performance. Adaptive performance is the ability to adapt performance to changing job demands and stressors. Pulakos, Arad, Donovan, and Plamondon (2000) developed a taxonomy of eight sub-dimensions of adaptive performance, which are highly relevant to occupational resilience research. These tasks include: handling emergencies or crisis situations, handling work stress, solving problems creatively, dealing with uncertain and unpredictable work situations, learning work tasks and procedures, demonstrating interpersonal adaptability, demonstrating cultural adaptability, and demonstrating physically oriented adaptability. Each of these dimensions may have respective resilience linkages. For example, handling emergencies or crisis situations likely involves cognitive, physical resilience, and emotional resilience simultaneously. Or solving problems creatively would be to rely most

Table 4 Examples of General and Occupation-Specific Future Research Studies

General	Work–family conflict was identified as an influence which requires employees to be resilient. (FSSB) (Hammer et al., 2009) may function as a resilience-related resource which allows for supervisor specific support of nonwork roles to enable employees to thrive over time.
	Occupation: All
	Design type: Lagged panel data, multi-level
	Resilience focus: Emotional
General	Recent research has demonstrated contingencies associated with prospect theory, such that that time pressure reverses risk-taking behavior (e.g. Saqib & Chan, 2015). To what extent do the amount and type of resilience-related resources possessed affect risk-taking propensity among entrepreneurs, managers, or anyone with key decision-making responsibilities?
	Occupation: All
	Design type: Lab
	Resilience focus: Cognitive
Targeted	Under-represented groups in certain occupations (e.g. women in male-dominated professions and vice versa) may need to be more resilient to avoid leaving the profession, whereas others may self-select into certain occupations based on salient characteristics of the occupational demographic and occupational work–life characteristics. Gender and work–life job demands should be considered as relevant moderators.
	Occupation: Engineers, nurses, and academics
	Design type: Qualitative/ethnographic
	Resilience focus: Cognitive and emotional
Targeted	The safety literature has emphasized the dangers that hazardous working conditions impose on workers. Over time, safety incidents should make workers more resilient by contributing to organizational learning (organization-level), the strengthening of safety climates (workgroup-level), and by promoting safe on-the-job behaviors (individual-level). Interventions may be designed to promote these outcomes.
	Occupation: Construction, nurses, doctors, and firefighters/police
	Design type: Quasi-experimental and multi-level
	Resilience focus: Cognitive
Specific	Athletes and global business executives are required to travel frequently with the expectations of performing at the highest levels. An occupational health perspective can consider the degree to which travel takes a physical and mental toll. The "teams" associated with each athlete (e.g. the agent, the manager/promoter, and family and friends) can buffer these effects.
	Occupation: Professional athletes and global executives
	Design type: Daily diary, actor-partner longitudinal modeling
	Resilience focus: Physical and mental

Specific	With numerous daily commitments including interviews, press conferences, and performances, actors may be subject to harsh criticism for their work. Those higher in psychological hardiness (i.e. trait hardiness) are likely better able to handle the negative critiques. Occupation: Performing artists Design type: Day reconstruction study with non-same source data from a dyad partner in supporting occupational role Resilience: Emotional

heavily on cognitive resilience. Physical adaptability is focused on physical resilience.

Other sub-dimensions apply to the framework in more occupational-specific contexts and might be examined for resiliency demands within and across jobs. For example, handling emergencies or crisis situations requires "reacting with appropriate and proper urgency in life threatening, dangerous, or emergency situations" (Pulakos et al., 2000 p. 617). This dimension would be particularly applicable to social workers who have been thrust into areas which have been devastated by natural disasters. Nurses and doctors also deal with emergency or "code" situations on a near daily basis where patients require immediate assistance and care.

Firefighters, police officers are among the occupations that will be more likely to display physically oriented adaptability, or "adjusting to challenging environmental states such as extreme heat, humidity, cold, or dirtiness" and "frequently pushing [the] self physically to complete strenuous or demanding tasks" (Lorinkova & Perry, 2014, p. 7). These dimensions dovetail, in part, with our recommendation to consider different forms of resilience beyond the cognitive aspects as well as to consider how the employer can take steps to foster resilience in for these jobs that regularly must respond to emergencies and crises. These illustrate how future research on adaptive performance can dig deeper by examining the specifics of resilience across job dimensions.

Risk taking. The literature on risk-taking traces all the way back to the 1950s with study of the underlying motivation as to why some individuals were more willing to engage in risky behaviors compared to others (e.g. Atkinson, 1957). This notion was further developed with Kahneman and Tversky's (1979) prospect theory, which argued that the framing of a decision choice would determine the risk behavior of the individual. Decisions are considered riskier to the degree to which: "(a) their expected outcomes are more uncertain, (b) decision goals are more difficult to achieve, or (c) the potential outcome set includes some extreme consequences" (Sitkin & Pablo, 1992, p. 11). Although risk taking was included as one of the sub-dimensions of London's (1983) career resilience, the management literature has most often considered risk-taking in different stream, with scholars focusing on corporate or organizational

risk taking and entrepreneurial risk taking (e.g. Brockhaus, 1980; Bromiley, 1991; March & Shapira, 1987; Li & Tang, 2010; Martin, Gomez-Mejia, & Wiseman, 2013). From an occupational standpoint, a body of research has accumulated on the risk-taking propensities of middle managers (e.g. Glaser, Stam, & Takeuchi, 2015; March & Shapira, 1987), where most felt pressured to take risks in order to be seen as innovators, as long as the risk was not viewed as gambling.

Integrating risk taking into our review of resilience, since it is included as an outcome we included in our integrative approach, we argue that risk-taking perceptions will play a primary role in the appraisal, process-based portion of the proposed framework. Consider, for example, the empirical model tested by Sitkin and Weingart (1995) which examined how outcome history and problem framing predicted risky decision-making behavior and was mediated by risk propensity. That is, positive previous outcomes increased individuals' risk propensity, which in turn increased risky decision-making behavior.

In the context of the occupational resilience framework, a positive outcome such as higher well-being, adaptive performance or positive outcomes from risk-taking, should subsequently affect appraisals of future stressors. One interesting occupational example to consider is the usage of workarounds in nursing. Workarounds occur when individuals bypass steps of a process in order to navigate around certain process blocks (see Halbesleben, Wakefield, & Wakefield, 2008 for a review). In nursing, one example of a common work around has been studied with medicine infusion pump devices where nurses will override a safety alert warning that the dosage exceeds the recommended amount (i.e. the "guardrail") in order to continue the administration of a medication dosage. In general, overriding the alert (as opposed to reprograming the pump) is warranted because the doctor prescribed an amount that was intended to exceed the guardrail or perhaps the guardrails are out of date and need to be reprogrammed. The workaround will increase the speed at which the medication administration process can be completed, allowing the patient to receive the medication in a timelier manner and the nurse to deal with other aspects of the generally heavy workload. However, there are instances where studies have found the medication entry was done incorrectly and an adverse drug event will occur because the nurse should have not taken the risk of the workaround and take the time to reprogram the device. Thus, while previous successes of workarounds (absent adverse drug events) are likely to build resilience to handling the stressors of the ambient noise from the alarms or the need to increase the speed in which one cares for a patient in order to be able to go onto the next, workarounds represent a significant risk-taking behavior. From an occupational perspective, for jobs designed with high autonomy, risk-taking behaviors are likely to increase. The role of resilience in this specific form of risk-taking

behavior in healthcare and other work contexts would be an interesting line of inquiry for management scholars to pursue perhaps comparing workarounds and risky behaviors used across varying hierarchical occupational groups that must work together (e.g. doctors compared to nurses compared to aides).

Relevant to our framework's suggestion that stressors can be framed as positive or negative, research on risk taking has also demonstrated that choices framed positively will result in risk-averse behaviors, whereas choices framed negatively will result in risk-taking behaviors (Fiegenbaum & Thomas, 1988; Levin, Schneider, & Gaeth, 1998). Yet, contingencies exist as research by Seo, Goldfarb, and Barrett (2010) demonstrates that pleasant or unpleasant feelings can attenuate these relationships. Following loss, the tendency for individuals to make risky decisions decreased or disappeared. After individuals experienced gains, their tendency to avoid risk either disappeared or in some cases reversed when pleasant experiences were experienced.

These findings suggest that helping individual facing occupational triggers effectively learn and accurately process outcomes from risk-taking behaviors and appraise positive and negative stressors, such emotions and cognitions, may have implications for future risky actions at work. Similarly, time pressure (which many occupations have) was found to reverse the effects where individuals become more risk seeking over gains and more risk-averse over losses (Saqib & Chan, 2015). Saqib and Chan explain that this occurs because time pressure reduces the psychological distance between decision-makers and outcomes. As a result, individuals will inflate the probabilities of the best possible gain or worst possible loss and subsequent happiness with intermediary gains and losses will be reduced or increased, respectively. In line with occupational contextual influences, the attenuated relationship became further reduced when job-level autonomy was high.

Examination of risk-taking behaviors (and the cognitive processes underlying them) also can shed light on the development of loss and gain spirals in terms of the occupational resilience framework. Given the argument that occupational stressors will be appraised as either positively or negatively, gain spirals can occur exponentially following a positive outcome where a subsequent stressor will be appraised positively. The stressor will be responded to with risk-taking behavior, yielding another positive outcome, and the cycle will again repeat itself. Alternatively, loss spirals can occur following negative outcomes when stressors are appraised as negatively and risk-taking behavior results in further negative outcomes. Yet, these examples represent the extremes.

Most likely, there will be an ebb and flow of positively versus negatively appraised stressors in addition to an ebb and flow of positive and negative outcomes. Thus, future research on risk-taking behavior should examine the repetition of these cycles to determine boundary conditions and contextual moderators (like negative leader or team social support and job time

pressures). Because resilience spans both work and nonwork domains, domain familiarity (Sitkin & Pablo, 1992) should be taken into account as individuals may have different risk-seeking propensities at work compared to at home. Because these cycles operate over time, experience sampling methodologies or longitudinal studies would be beneficial.

Lastly, while most of the occupational risk-taking literature focuses on job risk, risk taking should increasingly include personal risk taking such as deciding to buck occupational norms in a cut-throat work environment and cut back on one's work hours and short-term career ambition in order to start a family, and invest in caregiving, (Fels, 2004) . Many work–life policies go underutilized because career-oriented workers perceive some occupational risk and stigmatization (lower pay, promotion, or job loss) for their use. We elaborate further on the work–nonwork interface below.

The work–nonwork interface. Many concepts from the work–family literature can be integrated into the occupational resilience framework. Like many scholars, we use the term "work–family" and "work–life" loosely in order to broadly incorporate untraditional family structures and other dimensions of nonwork (e.g. Keeney, Boyd, Sinha, Westring, & Ryan, 2013). Since many supervisors are the gatekeepers to a supportive work–family environment, sources of within-occupation variation include access to family-supportive supervisor behaviors (FSSB), defined as "behaviors exhibited by supervisors that are supportive of families" and personal life. These critical behaviors are crucial to creating a work–family supportive context, characterized as emotional support, instrumental support, role modeling behaviors, and creative work–family management (Hammer, Kossek, Yragui, Bodner, & Hanson, 2009, p. 837). When work contexts have family-supportive supervisors, individuals are likely to experience lower work–family conflict (Kossek et al., 2011). These studies have identified a persistent perceptual gap where a third of supervisors might report that they engage in higher levels of FSSB, while the appraisal of their subordinates is that they do not.

Congruent with the work–home resources model (ten Brummelhuis & Bakker, 2012), FSSB may be positioned as a resilience-related resource. Similarly, a strong work–family culture, or "the shared assumptions, beliefs, and values regarding the extent to which an organization supports and values the integration of employees' work and family lives," (Thompson, Beauvais, & Lyness, 1999, p. 392) may serve as a contextual factor where resilience becomes more important in job contexts where there are weaker work–family supportive cultures or worse yet occupational climates where one has to regularly make family sacrifices in order to be viewed as performing ones' job well (Kossek et al., 2001).

Growing evidence over several decades suggests that certain industries are likely to be more sensitive to work–family issues and supportive of facilitating positive work–life relationships compared to others, yet much of this research

seems to have stalled. A handful of studies from the mid-1990s took an institutional perspective and empirically demonstrated that firms within the same industrial sectors or those progressive and cosmopolitan human resource leaders have a higher rate of adoption of work–family policies (e.g. Goodstein, 1994; Ingram & Simons, 1995; Kossek, Dass, & DeMarr, 1994; Milliken, Martins, & Morgan, 1998). Yet, much of this research seems to have stalled and perhaps should be revived to support attention to occupational determinants of work–life resiliency.

For example, studies from that era examined economic sector variation, arguing that work–family issues should be more salient to public sector organizations "because of their goal of delivering social service and because they are not held to exclusively economic standards of performance," Ingram and Simons (1995, p. 1469) indeed found evidence that public sector organizations were more responsive to work–family issues compared to private sector organizations, but relatively little recent scholarly empirical work has compared variation in sectors' authentic embracement of work–family support beyond the media hype. Yet, clearly, some occupations and sectors have persistent structural and cultural imperatives that promote regular tensions in the design of work to negatively impact nonwork roles for employees who are more involved in caregiving and nonwork demands, placing these workers at greater occupational risk for negative performance outcomes. Such workers also face greater resiliency and adversity adaptability demands. This in turn may lower work and nonwork well-being and performance, and lower risk-taking behaviors to seek more job challenges. For example, one study recently reported that it only takes about two years for women in a high-powered companies like Bain consulting to lower their career ambitions (Gadiesh & Coffman, 2015). Having a supportive supervisor and seeing the occupational demands as fitting into the women's career aspirations were key factors. Study of variation in occupational work–life norms, resilience demands, and impacts on performance, well-being and risk taking merits future empirical research.

Given that occupations are nested within industries, there are also sources of occupational variation beyond sector-related differences. However, this level of analysis has been largely absent from the work–family or the resiliency literatures. Notable exceptions are the works of Golden (2009) and Dierdorff and Ellington (2008). Combining data from the O*NET database and the U.S. General Social Survey (GSS), Dierdorff and Ellington (2008, pp. 888–889) found across 126 occupations that "simply knowing the occupations in which individuals work accounts for significant variance in their reported levels of work–family conflict" and that specific occupational features accounted for a large proportion of the between-occupation variance in work–family conflict. Focusing specifically on scheduling flexibility, Golden (2009) found that there was greater access for managerial and professional

occupations, occupations with long hours, private sector jobs, and salaried and nonunion jobs. Using data from the 2001 U.S. Current Population Survey (CPS) Supplement on Work Schedules and Work at Home, he found that engineers, lawyers, and judges were among the occupations with the most access to flexible scheduling, whereas construction workers and non-college and university teachers were among the occupations with the least access. Interestingly, however, the occupations characterized as having the most access to flexible scheduling also tend to be the ones characterized by long working hours and by expectations that employees are expected to conform to the "ideal worker" standard by putting work first before family or other nonwork-related needs (Dumas & Sanchez-Burks, 2015; Golden, 2009). Future research should consider whether resilience is more necessary in the work–family context in high-prestige and other occupations characterized by overwork. Despite the exemplar studies noted above, there have been few attempts to examine work–family issues from an occupational perspective.

Although relatively little work has compared macro occupational differences in impacts of how the structure and culture of work shape nonwork engagement, and its impacts on resilience, clearly, it is needed. Occupational culture about values regarding "ideal workers" and norms and the implications of this for the cultural messages of support for available work–life polices such as career and work flexibility have been understudied as harming or facilitating resilience and its outcomes. Providing employees with the ability to customize careers and supporting initiatives to move leaders from ambivalence to embracement of new ways of working to challenge occupational norms could moderate resiliency. This is suggested by a recent multi-level study of 20 firms adopting reduced workloads to retain talent (Kossek, Ollier-Malaterre, Lee, Pichler, & Hall, 2015). The implementation widely varied of the same supportive practice, and was characterized by unique ideographic (and often fluid social construction) and pressures across industry environments. Perhaps this is because supporting career customization "often means redirecting some time and involvement from the work domain to the personal domain" (Valcour, Bailyn, & Quijada, 2007, p. 202). This is an underutilized way to increase resilience capacity for workers facing occupational pressure points at key life events related to the birth, marriage, and death in the family system. It is a coping strategy that many occupations may make it very culturally difficult for employees to appraise, use or experiment without risk, backlash or negative outcomes (e.g. performance, well-being).

We also encourage future research on resilience to intersect study of occupational differences with examination of gender differences. Gender has long been considered in the context of work–family issues, particularly in regard to Hochschild's (1989) seminal work on the "second shift" that female employees face with managing both work and home responsibilities. In recent years, some studies have failed to find gender-based differences in

recognition that gender roles have become increasingly more egalitarian (e.g. Nohe, Meier, Sonntag, & Michel, 2015). However, occupational distinctions may require additional focus, given that some occupations are largely female-dominated (e.g. nursing), whereas others are primarily male-dominated (e.g. engineering). Previous firm-level research examining work–family policy adoption has presented mixed evidence where the percentage of female employees in an organization has at times predicted policy adoption (Goodstein, 1994) and at other times has not yielded statistically significant results (Milliken et al., 1998). Additionally, Ingram and Simons (1995) found that the percentage of female employees did not predict policy adoption but that the percentage of female managers did predict policy adoption. Gender and occupations present a resilience-related issue in terms of employee and co-worker reactions to work–family policies. Although work–family policies are designed with the intention to alleviate work–family issues (and thus minimize adverse events, like an instance of work–family conflict), both women and men may fear utilizing policies at the risk of being ostracized or suffering career-related penalties and consequences (Coltrane, Miller, DeHaan, & Stewart, 2013; Kirby & Krone, 2002). Despite the penalties that both genders might face, stigmatization for men stems from gender-nonconformity, whereas stigma for women is based more on gender-conforming behaviors (Williams, Blair-Loy, & Berdahl, 2013, p. 221). It remains open as to whether these findings generalize across all occupations or whether the gender composition of specific occupations will influence the degree to which use of work–family policies are met with fear and stigmatization. This is an important question since as noted these policies may backfire in some cases, creating more stressors (as opposed to alleviating them) and requiring more resilience on behalf of employees. Taking a holistic view of the ideas presented above, scholars might consider both the degree of occupational overwork demanded and the gender composition of occupations in viewing how resilience affects outcomes and buffers adversity stemming from work–family relationships.

Indeed, the dimension of mandated occupational overwork (working excessive hours which many occupations from law to academia have) as a pathway for career advancement and the need for interventions to foster occupational resiliency in high-prestige occupations provide a particularly useful avenue for future inquiry. Future research should build on the review here to classify occupations as overwork and underwork occupations. Future work might also examine resilience across levels of hierarchy (e.g. managers, directors, and CEOs) which could be one fruitful way to examine resilience across occupations. Within-occupation differences (e.g. the informal work contexts of organizational climate) can be examined to determine how well work and family roles are synthesized together (Kossek, Noe, & DeMarr, 1999). In expanding future research, we believe that scholars could also look at

occupational employment relationship choice as a means to compare differences in control or autonomy, and constant travel mobility and family sacrifice compared to other professions on resilience. Such studies might compare resiliency across consultants (particularly self-employed), those in large knowledge firms such as McKinsey & Co. or Booz Allen, start-ups and entrepreneurs or small businesses.

Issues to explore in conceptualizing and measuring occupational resiliency
New research concepts to explore relevant to occupational resiliency. Some new resiliency constructs have emerged that can be additionally explored in future studies to determine whether and how they explain additional variance in regard to certain outcomes. Relational energy, "a heightened level of psychological resourcefulness generated from interpersonal interactions that enhances one's capacity to do work" (Owens, Baker, Sumpter, & Cameron, 2016) holds some promise and suggests conceptual convergence between physical, emotional, and cognitive resilience forms.

Another interesting new construct is "perceived organizational support for strengths use" which "a new type of job resource [which] should help individuals achieve their work-related goals and engage in activities that stimulate their personal growth and development" (van Woerkom, Bakker, & Nishii, 2016). Conceptualized as resilience-related resources, perceived organizational support for "strengths use" also might align with perceived organizational support for being able to be authentic to one's values on the job without risk of rejection.

Finally, "citizenship fatigue", which is defined as "a state in which feeling worn out, tired, or on edge is attributed to engaging in OCB [organizational citizenship behavior]," where one is always expected to constantly engage in extra-role work behaviors (Bolino, Hsiung, Harvey, & LePine, 2015, p. 57), is an example of a possible outcome from adversity or even a form of adversity itself. Consistent with an occupational job design perspective, when individuals are expected to engage in extra-role job behaviors that they view as illegitimate tasks—"a violation of the line between what employees believe falls within their role boundaries and what does not" (Eatough, Meier, Igic, Elfering, Spector, & Semmer, 2016), this may be depleting and reflective of a newer form of adversity that should be incorporated into future research. Examination of how moderators such as gender may interact with these newer growing occupational job demands, and may perpetuate resiliency barriers to change in occupational demography should be examined in future work. For example, studies show that female academics are more likely to agree to and engage in "nonpromotable tasks" (Vesterlund, Babcock, & Weingart, 2014) such as serving on departmental service committees, and helping out such as mentoring others. These tasks, while beneficial for academic institutions, are rarely rewarded with a great promotion. In contrast,

the same study found that academic men are more likely to say no to service demands and focus on promotable job tasks such as research, thereby avoiding citizenship fatigue, which may contribute to an ongoing cycle of greater occupational resilience.

Measuring Occupations and Resiliency: Some Final Considerations

In using O*NET as quantitative way to rank variance in resiliency demands across occupations and to augment the disciplinary reviews, we discovered a clear need to triangulate and better synchronize quantitative and qualitative approaches to measuring resiliency. There is also a need to develop new measures of prestige, occupational longevity, and overwork demands. Such future efforts to find a broad conceptual categorization that may capture co-variation in job resilience demands across occupations might draw on the sociological concept of "occupational prestige," (Nakao & Treas, 1994), which is based on a combination of socioeconomic indicators that include not only income but also education, reflecting level of investment in professional training. The term "occupational prestige" could be used to describe the relative social class associated with different jobs (Hodge, Siegel, & Rossi, 1964). Future studies of occupational resiliency might develop measures that go beyond average occupational salary, given the weaknesses we noted in our review, to include occupational professional expectations of overwork and long hours (and personal or family sacrifice to other competing life devotions) and access to work–life resources as the pathway for future career success such as promotion, security, or financial success. This would tap into the trend of many firms that are increasingly requiring more of a devotion to work (Blair-Loy, 2009; Jacobs & Gerson, 2004) as a way to maintain employability or a pathway to career advancement in an increasingly tenuous gig and at-risk economy.

We were also surprised by the omissions we found in our mixed-methods reviews. For example, we had included the military in an earlier version of the paper as much has been studied on military readiness and resiliency. While it appears at face value that the military is included in O*NET, if you check on the web link for a specific military occupation, it will tell you that O*NET does not display stress tolerance or resistance data on military occupations, and suggests that the military service websites are the best sources of information. So, that is why we ultimately did not include the military as one of our occupations in the final version of this paper. However, given how we have moved to a voluntary military as a career, the inclusion of the stress and persistence data in O*NET could be a worthy endeavor. This also might enrich understanding of not only how to help with resilience in the military as a career and occupation, but also related occupations such as police and firefighters.

Lastly, our review found that much of the career resilience literature has not only neglected time and career phases, but also it has not been fully updated to reflect boundaryless organizational and occupational transitions, as well as transitions within and across different career stages between work and nonwork roles over the life course. We certainly think that some measurement of time needs to be added to measurement of occupational resiliency to match time in career, life stage with resiliency demands over time in the different phases.

Conclusion

Following a review of resilience in the management and occupational literatures, we proposed a framework for occupational resilience. Resilience will continue to remain an important concept of study in years to come as changes continue to manifest in the demographic composition of the workforce, the nature of work, the development and advancement of new technologies changing work–home relationships and increasing the pace of work. In any variety of occupational contexts, resilient individuals not only should be able to "bounce back" from adverse effects of these changes but also should be able to thrive and witness gains in personal growth and development, in the work domain, nonwork domain, or ideally, both. We hope that this review and framework will foster future occupational-specific and comparative research to better understand these complex linkages in which resilience plays a crucial role for the effectiveness of workers, organizations, and society.

Acknowledgements

Notes

1. We point out here that this portion of our review is intended primarily to introduce occupational distinctions into the literature on resilience, using O'NET data, While O*NET data were plentiful, some occupations had less available relevant literature to include in our review below as compared to others. We highlight sections where we felt the literature was less developed as fruitful areas of investigation for future research.
2. https://www.O*NETonline.org/find/descriptor/browse/Work_Styles/

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