Understanding Psychological Safety in Health Care and Education Organizations: A Comparative Perspective

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Psychological safety plays a vital role in helping people overcome barriers to learning and change in interpersonally challenging work environments. This article focuses on two such contexts—health care and education. The authors theorize differences in psychological safety based on work type, hierarchical status, and leadership effectiveness. Consistent with prior research, the authors employ cross-industry comparison to highlight distinctive features of different professions. The goal is to illuminate similarities and differences with implications for future psychological safety research. To do this, the authors review relevant literature and present analyses of large data samples in each industry to stimulate further research on psychological safety in both sectors, separately and together.

Fifty years ago, the concept of "psychological safety" was introduced as a critical factor in helping people learn new behaviors and overcome defensive routines (Schein & Bennis, 1965). Psychological safety today is seen as especially important for enabling learning and change in contexts characterized by high stakes, complexity, and essential human interactions, such as hospital operating rooms (Edmondson, Bohmer, & Pisano, 2001) and intensive care units (Nembhard & Edmondson, 2006). As these prior studies show, psychological safety plays a vital role in helping people overcome barriers to learning and change in interpersonally challenging work environments.

This article focuses on the role of psychological safety in two high-stakes and challenging contexts—health care and education—and uses comparative data to expose opportunities

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for future research on psychological safety, learning, and human development. Our approach is consistent with human development research in that we focus on the climate in which people work as a factor in how a person responds and adapts (e.g., Lerner, 2015). Psychological safety likely interacts with person-level characteristics to influence how individuals engage in their work and thus their ability to alter their professional practice (Kahn, 1990). Consistent with relational development systems theory, such as that of Lerner and Callina (2013), our work reflects the perspective that how an individual engages in her environment affects her ability to adapt and grow, which, in turn, has an impact on the context. The reflexive nature of the person–context interaction suggests that a context with high psychological safety can catalyze a positive self-fueling cycle for adult development. As Brandtstädter (1998, p. 169) put it, "developmental regulations," when mutually beneficial, can promote adaptive responses including learning.

As shown in numerous studies, psychological safety, defined as the degree to which people view the environment as conducive to interpersonally risky behaviors like speaking up or asking for help, is a salient variable in work environments in which learning matters (for a review, see Edmondson & Lei, 2014). Prior research shows that psychological safety varies significantly among workgroups within organizations, which has practical and theoretical implications for learning and human development (e.g., Edmondson, 1999). Indeed, even when people are motivated to change their practice, perceptions associated with the risk of such change may inhibit their ability to act on their motivations (e.g., Wanless, Patton, Rimm-Kaufman, & Deutsch, 2013). Our intention here is to pave the way for future work using a developmental lens to investigate how relationships between individuals and their work contexts can enable flexibility in their own development (cf. Baltes, Lindenberger, & Staudeinger, 2006; Lerner, 1984).

Specifically, we offer a comparative perspective of psychological safety in health care and education. We draw upon prior research in both contexts and explore data from two large-scale surveys that included, but were not limited to, indices of psychological safety. To set the stage for our exploration, we first review relevant research to identify important similarities and differences between the health care and education contexts. These similarities and differences are then summarized in Table 1. Second, we introduce our two data sets and present exploratory analyses that highlight similarities and differences in three areas relevant to the study of psychological safety: hierarchy, leadership effectiveness, and work type. Finally, we discuss the implications of our exploratory analyses for future research and practice on psychological safety and on the conditions that enable human development, growth, and learning more generally.

Setting the Stage: Understanding the Contexts of Health Care and Education

In health care and education, expert workers, such as physicians, nurses, teachers, and principals, face tremendous uncertainty and challenge to deliver high-quality services to those in significant need of their care. Both contexts are enveloped by high-stakes accountability systems and by professional norms, organizational structures, and local markets that make psychological safety especially relevant and yet, unfortunately, also especially elusive. Understanding each of these aspects of the health care and education contexts can help set the stage for the exploratory investigation that follows.

TABLE 1
Comparing Characteristics of Health Care and Education Organizations

Characteristic	Health Care	Education
Challenging high-stakes work	The work affects patient health, sometimes in life or death circumstances	The work affects student learning, shaping character and future livelihoods
Crucial role of front line professionals	Physicians, nurses and other clinical roles	Teachers
Nested organizational structures	Groups of clinicians within clinical units within hospitals or integrated delivery systems	Classrooms within schools within school systems
Salient hierarchical structure	Professional status hierarchy (within disciplines: subspecialists, specialists, generalists; among disciplines: physicians, nurses, paraprofessionals)	Organizational hierarchy (principals, teachers, paraprofessionals)
Powerful professional norms	Value autonomy	Value autonomy
	Respect status and expertise	Respect status and expertise

Challenging, High-Stakes Industries

In health care, concerns about patient safety, along with the growing complexity of care delivery processes, make psychological safety research particularly relevant. It is well established that many patients are harmed each year by errors and process failures (Kohn, Corrigan, & Donaldson, 2000), and psychological safety has been shown to be a crucial element in organizational efforts to detect and prevent these problems (e.g., Edmondson, 1996; Edmondson, Roberto, & Tucker, 2001). Current estimates suggest that preventable adverse events occur for one third of patients who are hospitalized (Classen et al., 2011). To ensure the quality of care, especially for patients with multiple health conditions ("comorbidities"), diverse experts must coordinate their decisions and treatments (Vogeli et al., 2007). Further, immense cost pressures in the industry require that key players find ways to dramatically reduce costs without sacrificing the quality of care (Institute of Medicine Committee on the Learning Health Care System in America, 2012). Enactment of the Affordable Care Act (ACA) in 2010 created additional stresses in the industry as the number of people with insurance coverage increased as did expectations for access to services (U.S. Department of Health and Human Services Health Resources and Services Administration National Center for Health Workforce Analysis, 2013).

In public education in the United States, the challenges are equally acute. Many students are not well served by the industry (Ayscue & Orfield, 2014) with a persistent and pernicious gaps in achievement between low- and higher income students and between students of color and Whites (see Jeynes, 2015 for a review). Recent policy responses to these challenges have emphasized accountability (e.g., No Child Left Behind), each including higher demands on teachers regarding instructional practice, content expertise, and performance (Andreas, 2012; Hargreaves, 2003) and focus on what Day and Gu (2007) called "performativity"—that is, increased school accountability, competition, and autonomy. Thus, educators working in this high-stakes context

have faced increasing pressure to learn how to change their practice to help students reach new (and often moving) achievement targets.

In health care and education, then, those closest to the delivery of a crucial human service confront high expectations for changing their practices amid scarce resources and intense scrutiny. Those on the front lines (whether clinic or classroom) who must improve outcomes for customers (whether patient or student) must serve others amid multiple external mandates and heterogeneous client needs that call for changes in professional practices. The increasing pressure, anxiety, and uncertainty they face are just the kinds of conditions that Schein and Bennis (1965) argued decades ago warrant a psychologically safe work environment.

Professional Norms

In health care and education unfortunately, professional norms have emerged over the years that create barriers to speaking up or asking for help, both of which are hallmarks of a psychologically safe work environment. In health care, team-based efforts focused on learning and improvement can be thwarted by the challenge of speaking up across status lines (Edmondson, 2003). When such status differences are not overcome, errors and other service delivery problems can happen. According to a seminal report, "counterproductive hierarchical communication patterns that derive from status differences" are partly responsible for many medical errors (Institute of Medicine, 2003, p. 361). Additionally, autonomy is a long-valued norm in medical practice. Many clinicians refrain from critiquing each other's practice, inhibiting identification of hazardous conditions and the spread of best practices and thwarting improvement (Gaba, 2001). Further, expectations that physicians are capable of acting autonomously also inhibit physicians from speaking up and asking for help (Singer et al., 2009).

Similar norms exist in education. Recently studies have investigated how school professional climate affects teachers' willingness to remain in the profession, particularly in light of current demands (see Simon & Johnson, 2015 for a review). When the climate is characterized as respectful, trusting, and collaborative (Bryk, Sebring, Allensworth, Easton, & Luppescu, 2010; Ronfeldt, Loeb, & Wykoff, 2013) teachers are more likely to report higher levels of efficacy and satisfaction and to stay in the profession (Allensworth, Ponisciak, & Mazzeo, 2009; Johnson, Kraft, & Papay, 2012). And yet schools often lack a positive climate. Like health care, teachers still tend to value autonomy even when structures to promote collaboration are put in place (Datnow, Park, & Kennedy-Lewis, 2013; Imants, Wubbels, & Vermunt, 2013). Teachers often refrain from opportunities for improvement, including feedback seeking and giving, due to teacher norms of egalitarianism and autonomy that keep teachers in their classrooms and unwilling to suggest that they or their peers have differentiated expertise (Donaldson et al., 2008; Weiner, 2011).

The professional culture in health care and education thus presents barriers for adult learning. Individuals perceive threats to self when they take risks that might embarrass or expose their vulnerabilities; such threats are eased when the work environment feels psychologically safe (e.g., Singer, Hayes, Gray, & Kiang, 2015; Tucker, Berg, Callaghan, & Hsia, 2007). These threats reflect the norms that envelop the work in each industry (e.g., Starr, 1982). If, as human development research suggests, low tolerance for risk can hinder adult development (e.g., Wang, Kruger, & Wilke, 2009), then it follows that psychological safety can play a role in easing fears associated with taking risks such as seeking out help, and, in certain circumstances, help people to adapt their practice and learn.

Nested Organizational Structures in a Local Market Context

In addition to similarities in professional norms, these sectors share features related to how work is organized with implications for psychological safety. In both industries, the work is nested in multiple organizational structures. In schools, the work of students and teachers is nested in classrooms, which are nested in schools, nested in districts within states, and the federal level envelops the entire system. In health care, the work of a clinical team, whether in a clinic, patient care unit, or operating room is nested in a clinical department or division within a hospital, which may sit within a hospital system or accountable care organization (ACO) within a state and, perhaps, across states as well. The public nature of the service coupled with the clustering of local community needs in a highly nested structure means that effective practices in one location may not translate elsewhere, raising the urgency for solutions that address particular needs and can be transferred—again, the kinds of learning challenges in which psychological safety may be particularly helpful. Table 1 summarizes our observations about similarities across the contexts and provides definitions of key terms.

Motivating Three Areas of Empirical Exploration

Given the above observations about similarities in education and health care organizations, we now turn to three salient constructs for the study of psychological safety in both contexts: hierarchy, leadership effectiveness, and work type. Below, we address each dimension, reviewing the relevant literature and considering its application to education and healthcare to frame the empirical investigation that follows.

Hierarchy and Psychological Safety

Prior research suggests that hierarchy, the degree of authority, and respect afforded to individuals based on their position in a social system, inhibits psychological safety (e.g., Nembhard & Edmondson, 2006) and that adults underperform on learning tasks in an evaluative learning environment (when a higher-status person is evaluating them) (M. C. Higgins, 2001). Status differences may amplify perceptions of evaluation on the job and can stem from formalized systems of evaluation and credentialing—systems that play a significant role in both sectors. In health care, career paths are highly siloed. People advance within clinical professions, rarely between them, and the status hierarchy between professions is well established, with physicians enjoying greater professional status than nurses, who occupy higher status roles than ancillary professions such as respiratory therapists, and so on. Even among physicians, there is a status hierarchy, with primary care physicians considered lower in status than specialists and with many subspecialists considered higher still than specialists.

In education, specific requirements vary by state, but all teachers need formal teaching credentials to teach in a public school. Once in a school, though teachers may advance to levels such as "teacher leader" or "department head," there is no set teacher pathway. Despite the stratified status hierarchy that envelops the system in which teachers teach—one in which superintendents, for example, are often addressed as "doctor" in public—there is tremendous uncertainty as to how to progress in one's career. This hierarchy, coupled with the intense accountability environment, can create a sense of vulnerability, even fear, limiting teachers' motivation to speak up or

share their needs for growth (Stillman, 2009; Valli & Buese, 2007). In short, in both contexts, a hierarchical work environment may impede psychological safety at times when it is most needed.

Leadership Effectiveness and Psychological Safety

Given the significance of evaluation in individuals' ability to develop and learn, it is important to consider how leader effectiveness might affect psychological safety and, in turn, learning and development. Prior research shows that leader behaviors such as acknowledging fallibility and proactively seeking input are associated with increased psychological safety in intensive care units (Nembhard & Edmondson, 2006). Prior research also suggests that psychological safety is greater when leaders actively reduce status gaps between themselves and lower-level personnel (Nembhard & Edmondson, 2006), and when leaders maintain mutual support, acceptance, and respect (Singer et al., 2015).

In education, prior research on the relationship between psychological safety and leader effectiveness is limited. However, research shows that teachers greatly value principals who are deemed effective and that such leaders powerfully affect school climate (Bryk et al., 2010) including teacher turnover (Boyd, Grossman, Ing, Lankford, & Wyckoff, 2011). These findings suggest the possibility that leader effectiveness, as perceived by teachers, affect many aspects of the work environment, likely including perceptions of psychological safety.

Thus, in education and health care, leader effectiveness may be a critical dimension of an individuals' sense of psychological safety and their ability to grow and adapt at work. If the importance of leadership holds amid the strong headwinds associated with professional norms and organizational structures that generally inhibit adaptability and adult development, then leader effectiveness may indeed be a significant lever for psychological safety and change.

Work Type and Psychological Safety

Finally, work type may be an important factor to explore in these settings as it varies greatly across units within healthcare (e.g., surgery, primary care) and education (e.g., middle school, high school) organizations. This variability affects the complexity and uncertainty of the work itself,and so the need for adaptability and growth at work. In health care, a typical primary care physician manages a panel of about 2,300 patients (Alexander, Kurlander, & Wynia, 2005). Among these will be patients who are generally healthy as well as those who suffer from multiple, complex, mental and/or physical chronic conditions. The primary care workload is thus complex and variable; different combinations of patients with different combinations of conditions may fill a physician's daily schedule, requiring adaptability and vigilance. Although protocols exist for the standard treatment of common conditions, patients frequently require customized care.

In education, teachers are generally responsible for a classroom of 20 to 30 students each year, and students' needs, skills, backgrounds, and motivations vary (Simon & Johnson, 2015). As a result, the degree of uncertainty and complexity facing teachers trying to teach a particular concept or implement a new curriculum can be enormous (Wanless et al., 2013). Despite decades of attempts to standardize teaching approaches, the work of teaching diverse students in classrooms continues to demand customization. It is precisely in these kinds of high-variability contexts where the need for improvisation and individualized attention is greatest and where psychological safety may be most valuable (Edmondson, 2012).

TABLE 2
Constructs Studied and Compared Across Two Industry Contexts

Construct	Definition	Health Care	Education Manifestation
Psychological safety	The degree to which people view the environment as conducive to interpersonally risky behaviors like speaking up or asking for help	Implications for clinician willingness to ask for help or report mistakes—and thus for patient safety and quality of care	Implications for teacher willingness to ask for help from and share practices with colleagues—and thus for student learning
Work type	Salient differences in the categories of work within the industry context	e.g., cardiac surgery, oncology, pediatrics, emergency care, etc.	e.g., elementary school, middle school, high school
Hierarchical status	The degree of authority and respect afforded to individuals based on their position in a social system	Status is highest for subspecialists, then specialists, then generalists; Status is highest for physicians, then nurses, then ancillary care providers	Status is highest for superintendents, then principals, then teachers, then teacher assistants
Leadership effectiveness	The degree to which people respect and value their leaders in a social system	Ratings of the effectiveness of the clinical leaders of various patient care units	Ratings of school principal effectiveness

To further investigate these three dimensions—hierarchy, leadership effectiveness, and work type—we turn next to our data and exploratory analyses. Table 2 summarizes the constructs we explore.

METHOD

Data Sources

We explored psychological safety in two large survey-based data sets, one in education and one in health care. Both surveys included items to assess psychological safety and allowed us to explore the dimensions of hierarchy, leadership effectiveness, and work type. Our goal is not to treat the health care and education contexts as equivalent but to explore factors in each associated with psychological safety given the construct's salience for enabling people to adapt, learn, and grow. In this section, we describe each data set and share some exploratory findings.

Education Data Set

As presented in Table 3, the education data set was collected in New York City (NYC) public schools between 2008 and 2011 from yearly confidential surveys of teachers deployed by the district starting in 2007. The survey was first deployed electronically and in traditional paper format, with only the electronic surveys including the psychological safety items. Of those electronic surveys ($N = 25,329$) 606 teachers did not answer the psychological safety questions (98% response

TABLE 3
Overview of Methods for Exploratory Study

	Education	Health Care
Context	New York City public schools (2008–2011)	U.S. Veterans Health Administration medical centers (January 2011)
Study Sample	550 principals, 20,000 New York City teachers, 130,000 students in 545 schools	28,998 VA personnel from 141 medical centers surveyed as part of a multipurpose survey of all VA personnel nationally
Data Tools	Survey utilizing previously validated psychological safety questions in education context	Learning Organization Survey (LOS)-27 which included validated psychological safety questions for a healthcare context
Control Variables	Average teacher tenure	Supervisory level
	Prior performance	Workgroup
	% free and reduced price lunch	Professional discipline
	% minority	Gender
	% of English language learners	Race
	Physical safety	Ethnicity
	Perceptions of principal effectiveness	Age range
Level of analysis	Group	Individual
Analysis	Multi-level longitudinal random effects model	Multi-level cross sectional random effects model and multivariate analysis of variance (MANOVA)

rate), creating our core sample.[1] Additionally, we used only those schools where a minimum of 40% of teachers responded to the psychological safety items, in any given year.[2] This decision aligns with similar research (e.g., Bridwell-Mitchell & Lant, 2013; Leana & Pil, 2006) and made it possible for us not to impute data. The final sample was approximately 20,000 New York City teachers, in 545 schools, over 3 years.

We also compared sample characteristics to those schools not selected for study and found no significant differences. Therefore, like the district itself, the sample schools enrolled approximately 55% students identifying as Hispanic, 44% Black, 19% Asian, and 20% White. On average, 17% of students received special education supports and 81% received free and reduced price lunch. Teachers had a mean of 10 years of teaching experience with about 30% of students receiving proficient scores in reading or math.

Data Collection: Education

District survey items examined teacher perceptions of academic expectations, communication, safety, and psychological safety in their building, as well as demographic questions on teacher and student populations (e.g., teacher experience, % of English language learners, etc.). The

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[1]In later years, psychological safety questions were included in all 58,940 surveys with a 96% and 97% response rate, respectively.
[2]Unable to obtain teacher-level identifiers, we could not track individual teachers over time.

psychological safety questions were validated in another large urban district (Higgins et al., 2012) and included "in this school, it's easy to speak up about what is on your mind," "people in this school are eager to share information about what does and doesn't work," and "people in this school are usually comfortable talking about problems and disagreements." Teacher responses were on a 4-point Likert-type scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). We created unstandardized composites using teacher-level data ($\alpha = .89$) and aggregated to create a mean composite score for each school, *i,* for each year, *j,* of survey data.

Data Analysis: Education

The exploratory quantitative analysis we present utilizes a multilevel, longitudinal, random effects model (Singer & Willett, 2003). Such a model is appropriate given the nested nature of the teachers within schools and within time points. As highlighted in Table 3, we control for a number of school-related factors known to affect school climate and performance.

Health Care Data Set

The VA administered a 27-item version of the Learning Organization Survey (LOS-27) in January 2011. The LOS-27 includes 27 items related to seven dimensions of organizational learning in three categories: supportive learning environment, leadership that reinforces learning, and learning processes and practices. The survey was originally developed by Garvin and colleagues (Garvin, Edmondson, & Gino, 2008) and revised by Singer and colleagues (Singer, Moore, Meterko, & Williams, 2012) to optimize its contents for use in healthcare settings and reduce its length. Psychometric analysis of response patterns in this sample supported data validity. Survey items in the supportive learning environment building block address psychological safety. These include "People in this workgroup are eager to share information about what doesn't work as well as to share information about what does work" and "If you make a mistake in this workgroup, it is often held against you." These items ask respondents to rate how accurately the item describes their work unit on a 7-point scale (*highly inaccurate* to *highly accurate* with *neither accurate nor inaccurate* as a midpoint). The survey also includes demographic and background questions including age, gender, race, ethnicity, time at institution, level of supervisory responsibility, work setting, and professional discipline. Responses of individual Veterans Administration (VA) personnel were combined to create a dimension score, which was tested in exploratory ($\alpha = .89$) and confirmatory analysis ($\alpha = .94$).

Data Collection: Health Care

The survey was administered electronically as one of three modules in a multipurpose survey of all VA personnel. Of those who accessed the survey, 35% randomly received the LOS-27. A total of 287,218 VA personnel were eligible for the multipurpose survey in which the LOS-27 was one module they might receive. Thirty-five percent (100,526) of VA personnel surveyed were randomly assigned to the LOS-27 module, and 28,998 (28.8%) responded. More than 27,000 VA personnel from 141 medical centers, including more than 1,700 physicians, 7,600 nurses, and 4,400 other clinical personnel, responded to the survey. Remaining respondents were administrative and wage-based personnel.

Data Analysis: Health Care

To explore variation across medical centers, we computed aggregate averages based on the respondents from each medical center and tested aggregation assumptions following similar research (Vogus & Sutcliffe, 2007). To compare variance explained within and between medical centers, we used hierarchical linear models (HLM) to account for the clustering of respondents within workgroup and workgroup within medical centers. To compare experience of organizational learning by level of supervisory responsibility we conducted a one-way multivariate analysis of variance (MANOVA) at the level of individual respondents with level of supervisory responsibility as the independent variable. To explore differences in experience of organization learning within medical centers by profession and workgroup, we conducted a two-way between-groups MANOVA at the individual level, in which eight workgroups and two professional disciplines (nurses and physicians) were the independent variables. Each model also included for the remaining control variables as shown in Table 3.

RESULTS

How Psychological Safety Varies in the Workplace

Our findings revealed differences in organizational patterns of variance in psychological safety. Specifically, we examined the level of analysis at which psychological safety varies in our two datasets. Data from the VA show that, of the total variation in perceptions of psychological safety, a composite indicator comprising a set of closely related items, 3.5% was explained by the combination of workgroup and medical center, which we term the system level. Workgroup explained 66% of this system-level variation, whereas the medical center level explained the other 34%.

In contrast, using an unconditional model within the framework of our multilevel longitudinal statistical framework and examining variance in psychological safety among teachers in New York City schools over 3 years, we found that about 78% of the variation is attributable to differences across schools with the remaining 22% being attributed to differences among teachers within the school. As teachers were the only respondents with questions that directly assessed psychological safety and union agreements precluded tracking individual teachers over time, our ability to assess group differences within organizations among teachers over time was limited.

Hierarchical Status and Psychological Safety

We find that in health care and education, differences in hierarchical status are associated with differences in psychological safety. In both industries, those with greater status had higher levels of psychological safety, See Figure 1. In the health care data, psychological safety differed across supervisory levels. Examining psychological safety at each of six supervisory levels in VA medical centers we find that with each increase in supervisory level comes an increase in mean psychological safety. Comparing the mean psychological safety reported by executives (managers

Psychological Safety in VA Medical Centers by
Supervisory Level

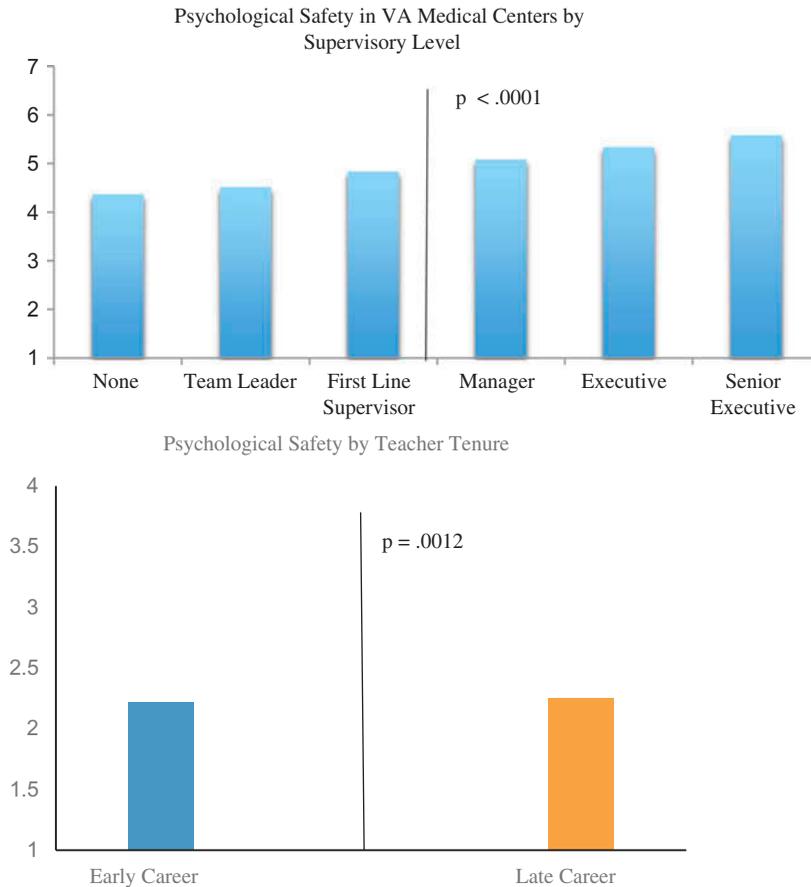Psychological Safety by Teacher Tenure

FIGURE 1   Comparisons of psychological safety by status hierarchy.

and above) versus nonexecutive frontline positions, we find the mean on a scale of 1 to 7 for executives is 5.12 and for nonexecutives is 4.43, a statistically significant ($p < .001$), moderate difference of about two fifths of a standard deviation.

In the education data set, though we cannot examine differences in supervisory level due to the relatively flat career path of teachers, tenure is a salient dimension in this profession along which to consider status differences (e.g., Donaldson, 2013). Consistent with the general result of increases in psychological safety with increases in status, we find that teachers with more experience feel more psychologically safe than more novice colleagues ($\beta = -.14$, $p < .05$). Here, when we use the model to predict the impact of teacher tenure on psychological safety controlling for other school level factors, we see that, on a scale of 1 to 4 for psychological safety, novice teachers (i.e., those with up to 4 years of experience) have a mean psychological safety of 2.22 ($SD = .015$) while their late-career colleagues (i.e., beyond 10 years) have a mean psychological safety of 2.25($SD = .020$) ($t = 3.031$, $p = .0024$).

Leadership Effectiveness and Psychological Safety

In the health care data, perceptions of leadership[3] correlated significantly with perceptions of psychological safety ($r = .74$, $p < .001$), suggesting differences in hospital-level psychological safety based on health care worker perceptions of executive's effectiveness.

For the education data, we compared results for two subsets of the school data using the same modeling techniques as previously highlighted. In one sample, teachers reported that their principal was highly effective whereas the other gave less positive reports. There was a significant difference in school-level psychological safety (rating 1–4) based on teachers' perceptions of the principal's effectiveness (i.e., $M = 2.96$, $SD = .024$ for teachers with effective principals, $M = 2.54$, $SD = .022$ for teachers with less effective principals) ($t = -13.46$, $p < .001$).

Work Type and Psychological Safety

With respect to work type, we find disparate results based on industry. In health care, there does not appear to be much of a relationship between psychological safety and the type of work in which participants are engaged. Mean psychological safety by workgroup ranges from 4.2 out of 7 for emergency medicine ($SD = 1.7$), intensive/critical care ($SD = 1.6$), and imaging/laboratory/pathology ($SD = 1.7$) to 4.6 ($SD = 1.7$) for mental health. Although significant ($p < .001$), these differences are not large. Similarly, among professional disciplines, means range from 4.4 for nurses and administrative/wage workers ($SD = 1.6$ and 1.7, respectively) to 4.6 for physicians and other clinical personnel ($SD = 1.7$ and 1.6, respectively); these small differences are also significant ($p < .001$).

In education, significant differences exist in the degree of psychological safety experienced by participants based on what level of school (i.e., elementary, middle or high school) they work in, controlling for other school-level factors. Again, though the teaching profession is fairly flat with respect to teachers' roles and responsibilities, this pattern does not hold true across school levels. Elementary schoolteachers often serve as generalists teaching multiple subjects to the same children, whereas high school teachers are generally content experts, teaching a particular discipline to different groups of students each day. These differences are reflected in their comparative psychological safety with elementary schoolteachers feeling significantly less psychologically safe ($M = 3$, $SD = .013$) than teachers in high schools ($M = 3.12$, $SD = .021$) ($t = -4.38$, $p < .001$) see Figure 2.

DISCUSSION

Our exploratory findings examined relationships between psychological safety and hierarchy, leadership, and work type and show similarities and differences between the two contexts. These findings point to opportunities for future research in each domain and for the study of psychological safety more generally.

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[3]Leadership effectiveness was measured using four items inquiring about the managers' role in leading organizational learning by listening, seeking input, and providing forums and resources that promote dialogue.

Psychological Safety in VA Medical Centers by
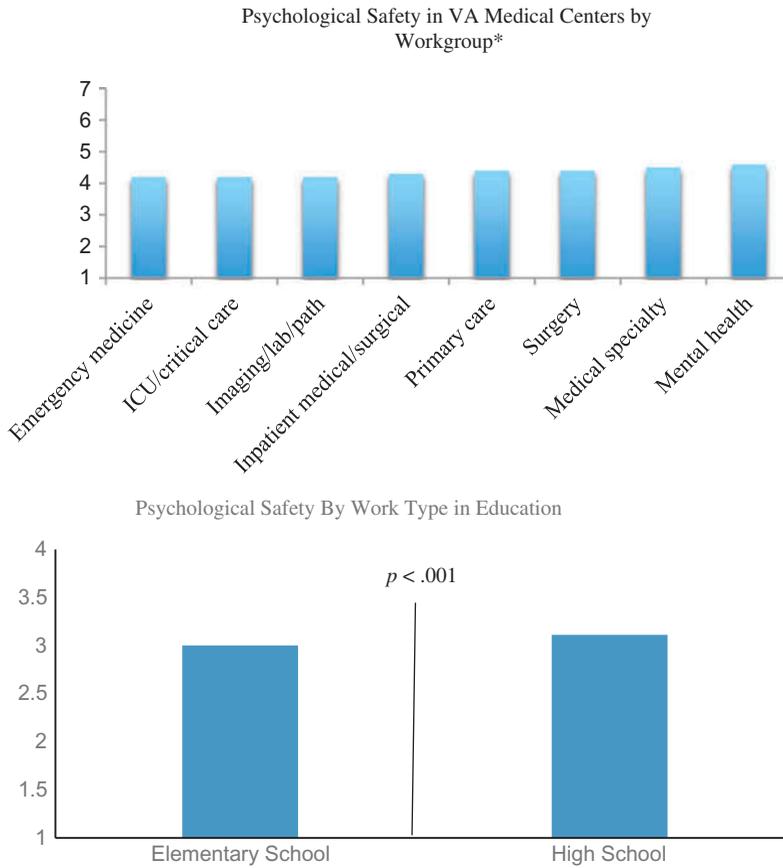Workgroup*

Psychological Safety By Work Type in Education

FIGURE 2 Comparisons of psychological safety by work type. *All
differences significant at the *p* < .001 level.

First, we consider the locus of variation in psychological safety in these two contexts. Our
results revealed differences across the two settings in the locus of the phenomenon of psycholog-
ical safety: in health care, significant variation in psychological safety occurs among workgroups
within medical centers, as opposed to among medical centers. In short, psychological safety is
a group-level phenomenon. In contrast, in education, variance exists across rather than within
schools. There are at least two possible reasons for this difference between industries. First, in
terms of organizational workforce size, the two settings present substantial differences. Notably, a
patient care unit in a large hospital and an entire school may have a similar number of employees.
Thus, though the salient community of colleagues in a hospital might be those in the same clinical
division or unit, in a school it would be the school-wide faculty. Additionally, the degree of inter-
dependence within subgroups (clinical areas) inside hospitals is high; inside schools, however,
there are few meaningfully-interdependent subgroups; classrooms are run by individual teachers
with high autonomy. Future research on the interrelationship between groups within the larger

organization might lend further insight into the locus of the phenomenon of psychological safety and answer questions such as the following: is there a critical mass of groups necessary to produce a psychologically safe organization?

Second, our investigation into the association between hierarchy and psychological safety revealed similarities across these sectors. In the health care and education datasets, we found small but significant differences between status and employees' sense of psychological safety, consistent with prior research on the significance of perceived status hierarchy on individuals' comfort level speaking up and asking for help (Nembhard & Edmondson, 2006). Further, psychological safety in both contexts was higher with even small bumps in status, suggesting that status may be an especially salient dimension to how people experience their work environment. These small but significant differences in the relationships between status and employees' sense of psychological safety in education and health care suggest a need for further study of how more senior colleagues who feel comfortable speaking up can interact with others to promote learning and improvement. Future research that examines the underlying mechanisms at work, including understanding potential differences between status as related to formal positional authority, as explored in the healthcare data set, versus status as related to job tenure, as explored in the education data set—could reveal meaningful insights about the sources and nature of threats to psychological safety at work. Indeed, perceived status differences may vary by context and by interactions with previously underexplored variables such as race and gender.

In terms of leadership effectiveness, we find that, in both sectors, workers' perceptions of their leaders' ability to facilitate positive work environments affects psychological safety. Such findings suggest that the association may indeed be particularly robust and warrant additional research—particularly regarding the kinds of behaviors that would be indicative of leader effectiveness, which we were not able to adequately examine with our data. We also note some contextual differences in that leaders in school settings wield considerably more authority over teachers than hospital administrators typically have over front-line clinicians. Therefore, future research might explore whether leader behaviors in reporting relationships versus behaviors by leaders who are distant from one's actual work yields different results. We propose that perceptions of leaders who evaluate one's work directly would be especially relevant to consider when trying to understand perceptions of psychological safety and concerns about experimenting with new ways of working. However, the effects of other factors associated with status or power might also be relevant to consider in understanding psychological safety.

With respect to work type, our results differed across the two data sets. Although the health care work type did not seem to matter much for psychological safety, in education, it was a relevant dimension; teachers in elementary schools, for example, felt much less psychologically safe than teachers in high schools. We suggest that some of these differences may reflect the kinds of pressures that the nature of the work requires—for example, differences among teachers who need to understand multiple subjects as opposed to being a content expert in one, as is the case in the upper grades. And, in the health care data set, differences were explored across domains of expertise rather than between generalists versus experts, though that could be examined as well in future research.

Although this article did not study the impact of psychological safety on outcomes such as patient health or student learning, as has been done in prior research (e.g., Tucker et al., 2007), it provided further insight into where the phenomenon is shaped in these settings. Further, we offer suggestive evidence of leadership's important role in shaping a work climate that fosters

adaptability and learning. Under immense pressure to change in systemic ways to better serve individuals and society, the health care and education sectors are hampered by norms of autonomy and hierarchical structures that limit the flow of help seeking and ideas that support learning and change. We have argued, drawing on prior research, that these conditions make psychological safety particularly important for explaining performance differences and a potentially useful focus for intervention.

CONCLUSIONS

Our exploratory findings and our comparison of these two contexts point to areas for future research on psychological safety as well on factors that enable human development at work more generally. In particular, our results provide suggestive avenues for research on the kinds of intervention techniques that might prove useful to cultivating psychologically safe work environments to support adult learning. First, given the finding in both data sets that higher status is associated with greater psychological safety, we propose that future research investigate a cascading model to shape intervention efforts. As prior research in psychology has shown, implementing new initiatives in complex service operations is difficult because of the many dimensions of change required (e.g., Tucker et al., 2007). Further, creating adaptability in entrenched settings may hinge upon providing social support for individuals as they try out new ways of working (Wanless et al., 2013). Thus, we propose that future research on psychological safety should examine the effectiveness of interventions that train administrators in providing support, such as validation, previously associated with psychological safety (Wanless et al., 2013). Further, we suggest that interventions might need to be thoughtfully cascaded through the nested structures of work to affect those closest to the "customer." More generally, there is a dearth of research on intervention techniques designed to spur psychological safety and adult learning.

Similarly, having argued and provided suggestive evidence that psychological safety varies significantly across groups within health care and between educational organizations, future research might be well served by examining how interacting subgroups influence each other's work environment. There may be interaction effects based on between-group dynamics, including perceived differences across work groups or levels within a larger system (e.g., between high schools and elementary schools in a school district and between nurses and physicians in a medical clinic). Such differences could affect individuals' motivation and willingness to engage in personal growth and development, giving rise to either positive or negative learning cycles for individual professionals and for the organization as a whole.

Additionally, conditions associated with high-stakes human services work, notably the salience of external accountability and changing workforce demographics suggest other important research questions. One possible avenue is to examine employees' perceptions of accountability in their environment as suggested by Edmondson (2012); very little research has examined how psychological safety interacts with other dimensions of workplace culture such as accountability (for an exception, see M. C. Higgins & Weiner, 2015). The conditions that support adult learning and development are unlikely to be limited to psychological safety, which frees people up to engage in learning behavior but does not necessarily motivate it. Considering psychological safety as a moderating variable is likely the most promising direction for future research in this area (e.g., Bunderson & Boumgarden, 2010). Further, considering the fluid nature of

human capital as residents rotate through hospitals and as teachers and principals rotate through schools, we need to understand the stability of psychological safety in work groups with changing membership. Understanding the dynamics of group composition and psychological safety would further research and recognize the increasingly dynamic nature of professional service work.

Finally, given the finding that psychological safety may be low for those early in their careers and/or in lower-status positions, future research and practice should aim to understand how to create psychological safety for those who lack power or status in organizations. This may include studying how norms of autonomy that impede adult learning are incubated. One promising possibility is that early interventions might help reduce counterproductive norms embedded in certain contexts. For example, the best timing to improve psychological safety at work could be before work even begins—at the preparatory level, in medical school and residency programs, in teacher certification programs—so that people learn ways of working that may help them navigate the strong headwinds that reduce psychological safety at work.

In considering how to build upon the comparisons and exploratory findings we present here, we acknowledge limitations in our approach and data sources. First, though our research has taken a developmental perspective throughout, we have focused on one side of the story—that is, on the context in which people work. In keeping with human development research and specifically, relational developmental systems theory by scholars such as Lerner and Schmid Callina (2013), future research could examine individual-level and contextual differences that may affect adaptability in complex and changing professions like health care and education. In particular, it is likely that not all interchanges between an individual and his or her context, even when psychologically safe, comprise adaptive developmental regulations supporting an individual's ability to adapt effectively and develop. Thus, though we have focused on contextual factors that influence individual adaptability, we concur with developmental theorists such as Lerner (2015) that it is valuable to consider the influence of individuals and their self-regulatory processes, background, and characteristics on the context, as well as the reverse.

Second, we are limited in the data we used to explore these ideas in many respects including, but not limited to, the fact that many of the two surveys' items were similar but not perfectly equivalent. Yet we note that the core construct of interest, psychological safety, was based upon the same base set of questions used in prior research and is shown to be robust to variations in items. Relatedly, the nature of the data collected has an additional limitation in being exclusively survey based. In the future, we recommend mixed methods be employed because, as human development scholars suggest (e.g., Lerner, 2015), qualitative combined with quantitative methods are valuable for gaining insight into person–context interactions, such as those proposed in this article. Diverse methods and studies are needed to fully understand the dynamics of high plasticity and adaptability that are hallmarks of human development.

Understanding the conditions that enable workers in health care and education to navigate the intense, varied, and complex needs of their organizations and constituencies is critical to their own career success and to the well-being of those they serve. We have argued here, using a comparative lens, that psychological safety is one important dimension of the adult work environment—especially under conditions of high stakes, complexity, and uncertainty—that can enable human development, growth, and learning and that warrants additional research. Our primary contribution is to call attention to how those working in schools and hospitals face similar pressures in their surrounding ecosystems and confront similar features of the work, both of which render psychological safety important. Our exploratory findings provide preliminary evidence that those

on the front lines of providing these crucial human services oftentimes feel the least psychologically safe. Through these observations along with our suggestions for future research, we hope our comparative lens will help shape future work on psychological safety.

REFERENCES

Alexander, G. C., Kurlander, J., & Wynia, M. K. (2005). Physicians in retainer ("concierge") practice. *Journal of General Internal Medicine*, *20*(12), 1079–1083. doi:10.1111/j.1525-1497.2005.0233.x

Allensworth, E., Ponisciak, S., & Mazzeo, C. (2009). *The schools teachers leave: Teacher mobility in chicago public schools*. Chicago, IL: University of Chicago, Consortium on Chicago School Research.

Andreas, S. (Ed.). (2012). *International summit on the teaching profession preparing teachers and developing school leaders for the 21st century lessons from around the world: Lessons from around the world*. Washington, DC: OECD Publishing.

Ayscue, J. B., & Orfield, G. (2014). School district lines stratify educational opportunity by race and poverty. *Race and Social Problems*, *7*(1), 5–20. doi:10.1007/s12552-014-9135-0

Baltes, P. B., Lindenberger, U., & Staudinger, U. M. (2006). Life span theory in developmental psychology. In R. M. Lerner (Ed.), *Handbook of child psychology: Vol 1. Theoretical models of human development* (6th ed., pp. 569–664). Hoboken, NJ: John Wiley & Sons.

Boyd, D., Grossman, P., Ing, M., Lankford, L. S., & Wyckoff, J. (2011). The influence of school administrators on teacher retention decisions. *American Education Research Journal*, *48*(2), 303–333. doi:10.3102/0002831210380788

Brandtstädter, J. (1998). Action perspectives on human development. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology: Vol 1. Theoretical models of human development* (5th ed. pp. 807–863). Hoboken, NJ: John Wiley & Sons.

Bridwell-Mitchell, E. N., & Lant, T. K. (2013). Be careful what you wish for: The effects of issue interpretation on social choices in professional networks. *Organization Science*, *25*(2), 401–419. doi:10.1287/orsc.2013.0840

Bryk, A. S., Sebring, P. B., Allensworth, E., Easton, J. Q., & Luppescu, S. (2010). *Organizing schools for improvement: Lessons from Chicago*. Chicago, IL: University of Chicago Press.

Bunderson, J. S., & Boumgarden, P. (2010). Structure and learning in self-managed teams: Why "bureaucratic" teams can be better learners. *Organization Science*, *21*(3), 609–624. doi:10.1287/orsc.1090.0483

Classen, D. C., Resar, R., Griffin, F., Federico, F., Frankel, T., Kimmel, N., . . . James, B.C. (2011). "Global trigger tool" shows that adverse effects in hospitals may be ten times greater than previously measured. *Health Affairs*, *30*(4), 581–589. doi:10.1377/hlthaff.2011.0190

Datnow, A., Park, V., & Kennedy-Lewis, B. (2013). Affordances and constraints in the context of teacher collaboration for the purpose of data use. *Journal of Educational Administration*, *51*(3), 341–362. doi:10.1108/09578231311311500

Day, C., & Gu, Q. (2007). Variations in the conditions for teachers' professional learning and development: Sustaining commitment and effectiveness over a career. *Oxford Review of Education*, *33*(4), 423–443. doi:10.1080/03054980701450746

Donaldson, M. L. (2013). Principals' approaches to cultivating teacher effectiveness: Constraints and opportunities in hiring, assigning, evaluating, and developing teachers. *Educational Administration Quarterly*, *49*(5), 838–882. doi:10.1177/0013161X13485961

Donaldson, M., Johnson, S.M., Kirkpatrick, C.L., Marinell, W.H., Steele, J.L., & Szczesiul, S.A. (2008). Angling for access, bartering for change: How second stage teachers experience differentiated roles in schools. *Teachers College Record*, *110*(5), 1088–1114.

Edmondson, A. C. (1996). Learning from mistakes is easier said than done: Group and organizational influences on the detection and correction of human error. *Journal of Applied Behavioral Science*, *32*(1), 5–28.

Edmondson, A. C. (2003). Speaking up in the operating room: How team leaders promote learning in interdisciplinary action teams. *Journal of Management Studies*, *40*(6), 1419–1452. doi:10.1111/joms.2003.40.issue-6

Edmondson, A. C. (2012). *Teaming: How organizations learn, innovate and compete in the knowledge economy*. San Francisco: Jossey-Bass.

Edmondson, A. C., Bohmer, R. M., and Pisano, G. P. (2001). Disrupted routines: Team learning and new technology implementation in hospitals. *Administrative Science Quarterly*, *46*, 685–716.

Edmondson, A. C., & Lei, Z. (2014). Psychological safety: The history, renaissance, and future of an inter-personal construct. *Annual Review of Organizational Psychology and Organizational Behavior*, *1*(1), 23–43. doi:10.1146/annurev-orgpsych-031413-091305

Edmondson, A. C., Roberto, M., & Tucker, A. L. (2001). *Children's hospital and clinics (A)* (Harvard Business School Case 302-050).

Gaba, D. M. (2001). Structural and organizational issues in patient safety: A comparison of health care to other high-hazard industries. *California Management Review*, *43*(1), 83–102. doi:10.2307/41166067

Garvin, D., Edmondson, A. C., & Gino, F. (2008). Is yours a learning organization? *Harvard Business Review*, *86*(3), 109–116.

Hargreaves, A. (2003). *Teaching in the knowledge society: Education in the age of insecurity*. New York, NY: Teacher College Press.

Higgins, M., Ishimaru, A., Holcombe, R., & Fowler, A. (2012). Examining organizational learning in schools: The role of psychological safety, experimentation, and leadership that reinforces learning. *Journal of Educational Change*, *13*(1), 67–94. doi:10.1007/s10833-011-9167-9

Higgins, M., & Weiner, J. (2015). *The role of psychological safety and accountability in the grand challenge of education reform* (Working Paper), Harvard Graduate School of Education, Harvard University.

Higgins, M. C. (2001). When is helping helpful?: Effects of evaluation and intervention timing on basketball performance. *Journal of Applied Behavioral Science*, *37*(3), 280–298. doi:10.1177/0021886301373002

Higgins, M. C., Young, L. A., Weiner, J., & Wlodarczyk, S. (2009). Leading teams of leaders: What helps team member learning?. *Phi Delta Kappan*, *91*, 4.

Imants, J., Wubbels, T., & Vermunt, J. D. (2013). Teachers' enactments of workplace conditions and their beliefs and attitudes toward reform. *Vocations and Learning*, *6*(3), 323–346. doi:10.1007/s12186-013-9098-0

Institute of Medicine. (2003). *Keeping patients safe: Transforming the work environment of nurses*. Washington, DC: National Academics Press.

Institute of Medicine Committee on the Learning Health Care System in America. (2012). *Best care at lower cost: The path to continuously learning health care in America*. Washington, DC: National Academies Press.

Jeynes, W. H. (2015). A meta-analysis on the factors that best reduce the achievement gap. *Education and Urban Society*, *47*(5), 523–554. doi:10.1177/0013124514529155

Johnson, S. M., Kraft, M. A., & Papay, J. P. (2012). How context matters in high-need schools: The effects of teach-ers' working conditions on their professional satisfaction and their students' achievement. *Teachers College Record*, *114*(10), 1–39.

Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, *33*(4), 692–724. doi:10.2307/256287

Kohn, L. T., Corrigan, J. M., & Donaldson, M. S. (2000). *To err is human: Building a safer health system* (Vol. 6). Washington, DC: National Academies Press.

Leana, C. R., & Pil, F. K. (2006). Social capital and organizational performance: Evidence from urban public schools. *Organization Science*, *17*(3), 353–366. doi:10.1287/orsc.1060.0191

Lerner, R. M. (1984). *On the nature of human plasticity*. New York, NY: Cambridge University Press.

Lerner, R. M. (2015). Promoting positive human development and social justice: Integrating theory, research and application in contemporary developmental science. *International Journal of Psychology*, *50*(3), 165–173. doi:10.1002/ijop.2015.50.issue-3

Lerner, R. M., & Schmid Callina, K. (2013). Relational developmental systems theories and the ecological validity of experimental designs. *Human Development*, *56*(6), 372–380. doi:10.1159/000357179

Nembhard, I. M., & Edmondson, A. C. (2006). Making it safe: The effects of leader inclusiveness and professional status on psychological safety and improvement efforts in health care teams. *Journal of Organizational Behavior*, *27*(7), 941–966. doi:10.1002/(ISSN)1099-1379

Ronfeldt, M., Loeb, S., & Wyckoff, J. (2013). How teacher turnover harms student achievement. *American Educational Research Journal*, *50*(1), 4–36. doi:10.3102/0002831212463813

Schein, E. H., & Bennis, W. G. (1965). *Personal and organizational change through group methods: The laboratory approach*. New York, NY: Wiley.

Simon, N. S., & Johnson, S. M. (2015). Teacher turnover in high-poverty schools: What we know and can do. *Teachers College Record*, *117*, 1–36.

Singer, S. J., Gaba, D. M., Falwell, A., Lin, S., Hayes, J., & Baker, L. (2009). Patient safety climate in 92 US hospitals: Differences by work area and discipline. *Medical Care*, *47*(1), 23–31. doi:10.1097/MLR.0b013e31817e189d

Singer, S. J., Hayes, J. E., Gray, G. C., & Kiang, M. V. (2015). Making time for learning-oriented leadership in multidisciplinary hospital management groups. *Health Care Management Review*, *40*(4), 300–312. doi:10.1097/HMR.0000000000000037

Singer, S. J., Moore, S. C., Meterko, M., & Williams, S. (2012). Development of a short-form learning organization survey: The LOS-27. *Medical Care Research and Review*, *69*(4), 432–459. doi:10.1177/1077558712448135

Singer, J. D. & Willett, J.B. (2003). *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence*. New York, NY: Oxford University Press.

Starr, P. (1982). *The social transformation of American medicine: The rise of a sovereign profession and the making of a vast industry*. New York, NY: Basic Books.

Tucker, M. J., Berg, C. J., Callaghan, W. M., & Hsia, J. (2007). The Black–White disparity in pregnancy-related mortality from 5 conditions: Differences in prevalence and case-fatality rates. *American Journal of Public Health*, *97*, 247–251. doi:10.2105/AJPH.2005.072975

U.S. Department of Health and Human Services Health Resources and Services Administration, National Center for Health Workforce Analysis. (2013). *Projecting the Supply and Demand for Primary Care Practitioners Through 2020*. Rockville, MD: U.S. Department of Health and Human Services.

Valli, L., & Buese, D. (2007). The changing roles of teachers in an era of high-stakes accountability. *American Educational Research Journal*, *44*(3), 519–558. doi:10.3102/0002831207306859

Vogeli, C., Shields, A. E., Lee, T. A., Gibson, T. B., Marder, W. D., Weiss, K. B., & Blumenthal, D.(2007). Multiple chronic conditions: Prevalence, health consequences, and implications for quality, care management, and costs. *Journal of General Internal Medicine. Springer*, *22*(3), 391–395. doi:10.1007/s11606-007-0322-1

Vogus, T. J., & Sutcliffe, K. M. (2007). The Safety Organizing Scale: Development and validation of a behavioral measure of safety culture in hospital nursing units. *Medical Care*, *45*(1), 46–54. doi:10.1097/01.mlr.0000244635.61178.7a

Wang, X. T., Kruger, D. J., & Wilke, A. (2009). Life history variables and risk-taking propensity. *Evolution and Human Behavior*, *30*(2), 77–84. doi:10.1016/j.evolhumbehav.2008.09.006

Wanless, S. B., Patton, C. L., Rimm-Kaufman, S. E., & Deutsch, N. L. (2013). Setting-level influences on implementation of the responsive classroom approach. *Prevention Science*, *14*(1), 40–51. doi:10.1007/s11121-012-0294-1

Weiner, J. M. (2011). Finding common ground: Teacher leaders and principals speak out about teacher leadership. *Journal of School Leadership*, *21*(1), 7–41.