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Surgical Perioperative Leadership: The Association Between Leadership Style and Team Job Satisfaction

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This is to certify that the doctoral dissertation by

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Abstract

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MEd, Fitchburg State University, 1992

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

The perioperative operating room (OR) is a highly complex, fast-paced environment where countless transactions must be executed with efficiency, speed, and accuracy, and where mistakes of any kind could lead to adverse patient outcome, injury, or death. The surgeon, as leader of the procedure and the OR team, sets the overall climate of the OR and determines how willing (or unwilling) team members are to speak up about potential errors or unsafe patient conditions. This exploration of the relationship between perioperative surgeon leadership style and OR team member job satisfaction fills a gap unaddressed in the literature using items from The Multifactor Leadership Questionnaire (MLQ) and the Safety Attitudes Questionnaire- OR version (SAQ-OR). The MLQ has been used to confirm the intersection of transformational leadership style and positive team behavior in the perioperative surgical OR. The SAQ has proven reliable and valid in the OR for the domain of job satisfaction as measured by OR team members. In this study, 227 OR team members were recruited from LinkedIn professional groups and Facebook groups and completed an electronic survey. Data were analyzed using multifactor regression analyses. Results indicated that passive avoidant surgeon leadership style had the only significant relationship to OR team member job satisfaction. The importance of this study is apparent in findings suggesting that when leaders work to improve their interactions in ways that increase team members' job satisfaction, they improve team members' health, well-being, and overall life satisfaction.

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Dedication

It is with genuine gratitude that I dedicate this work to my Walden University Dissertation Chair, Dr. Denise Horton, for being a mentor, guide, and friend through this process. Dr. Horton models, through her 41-year distinguished service as an Army psychologist and in the way she shows up for her students with honesty, care and good humor, that we have the power and the ability to change the world for the better as she has.

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There were many times when I considered giving up on this process. Every time, my husband, Jon Briccetti, insisted that I see it through. His abiding love, partnership and commitment to our family, and the happiness within 'our four walls,' are the most treasured gifts of my life. And finally, to our smart, ridiculously funny, delightful and just plain fantastic children: Sierra, Hunter, Jamison, Trey, Dylan, Joshua, and Josephine: Thank you all for your support, encouragement, and for bringing such joy and texture to my life. I love you all so very much.

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Chapter 1: Background

Introduction

In the perioperative operating room (OR), highly-specialized medical practitioners across numerous disciplines must work quickly and collaboratively in a high-stakes, dynamic environment. Team members balance standardization of the surgical process with unpredictability, complex technological skill, and experience. They rely on effective leadership, strong communication, and an overarching trust in the team's shared commitment to patient well-being. A surgeon's leadership of the team matters, and its assessment is among the first steps in promoting a strong safety climate in the perioperative OR (Rosenstein, 2011).

Job satisfaction is a key element of retention in any role, and it has long been established that positive perceptions of teamwork are associated with better job satisfaction (Posner & Randolph, 1979). The data regarding the impact of surgical leadership, teamwork, and safety culture on nurses' job satisfaction are plentiful, especially as these data lament the compounding impact of lowered job satisfaction on the critical nursing shortage (Bednash, 2000).

There have been substantive measures of nurse leaders' (typically chief nursing officers') transformational/transactional leadership style and its impact on the job satisfaction of the nursing team members (McGuire & Kennerly, 2006). There are observational measures of transformational/transactional leadership style and its impact on OR team performance. To my knowledge, no measures, to date, have been focused on: (a) surgeon leadership style, (b) its impact on the job satisfaction of the full complement

of OR team members, and (c) as rated by the OR team members themselves. The question of how surgeon leadership style is associated with job satisfaction, as rated by the perioperative OR team, remains unanswered. In this study, I addressed a gap between surgeon leadership style (i.e., the independent variable) and the job satisfaction (i.e., the dependent variable) of team members in the perioperative OR by identifying the elements of the transformational leadership model that vary with team member job satisfaction.

Beyond the value of shedding light on strategies for increasing positive outcomes for patients, the results of this study may inspire meaningful dialogue between surgeon leaders and their team members. Topically, it extends beyond clinical detail and the scientific and methodological practice and into the space of human interaction and its impact on organizational culture and climate. Surgeons have historically tied themselves to their skill and technique but have lagged in the critical examination of their craft and the potential to impact social change (Flin, Youngson, & Yule, 2015).

Walden University's Social Change Impact Report (2014) defined social change as the ability to impact people's lives at local and global levels. The results of this study have the potential to mitigate adverse events, improve health and recovery, and save lives (see Leach, Myrtle, & Weaver, 2011; Sacks et al., 2015; Wahr et al., 2013). Findings from this study regarding leadership style and job satisfaction can be applied outside of the OR as well. As surgeon leaders and team members work to improve their interactions in ways that increase job satisfaction, they also improve their health, well-being, and overall life satisfaction (Faragher, Cass, & Cooper, 2005; Spector, 1997; Tait, Padgett, & Baldwin, 1989).

This chapter will include a discussion of the background of this study, a related problem statement, and an overview of the purpose of the study. Associated research questions and hypotheses as well as the theoretical foundation, nature of the study, and sources of information will be included, along with a summary of analytical strategies employed. Finally, I will provide a brief definition of key terms, assumptions, scope, delimitation/ limitations, and a statement of the significance of the study to the discipline of surgical leadership as related to improving patient outcomes.

Background

It has long been established that surgeon leadership is an integral component of OR teamwork, central to the function of the team and to the empirical measurement of teamwork in the OR (Hjortdahl, Ringen, Naess, & Wisborg, 2009; Hull, Arora, Kassab, Kneebone, & Sevdalis, 2011; Wahr et al., 2013). The surgeon leader sets the climate of the OR and influences how willing (or unwilling) team members are to speak up about potential errors, unsafe conditions, or suggestions for improvement (Leach et al., 2011). Improving surgical climate leads to better patient outcomes. Sacks et al. (2015) reviewed 47 studies between 1980 and 2015 in order to investigate the impact of work on surgical culture on patient outcomes. Focusing on teamwork, communication, and safety climate, each of the 47 studies demonstrated positive outcomes in at least one of these three domains. While each of the three domains had positive impact on patient outcomes, two of the studies showed a direct impact on postoperative complications and mortality (Forse, Bramble, & McQuillan, 2011; Pettker et al., 2009).

While it is widely viewed that the perioperative OR is a particularly complex climate, given the multiple stakeholders, their differentiated training and experience, and the complex interplay of leadership and hierarchy, research related to surgeon leadership reveals a great deal of variation in its definition (Sacks et al., 2015). Parker, Yule, Flin, and McKinley (2011) conducted a meta-analysis of literature regarding applied leadership assessment tools, theoretical models, or research methodologies, but no consistent definition or best practice of effective surgical leadership emerged from their study. In the absence of a shared view of surgeon leadership, Henrickson-Parker, Yule, Flin, and McKinley (2012) aimed to operationalize the behaviors most salient to the role of the perioperative surgeon leader. The authors developed an empirically-derived taxonomy of leader behaviors in the general OR, generating a total of 258 separate elements of perioperative surgical leader behavior, which they logged and categorized into one of seven facets of leader behavior related to the efficient management of the general OR. These seven facets were guiding and supporting, communicating and coordinating, managing tasks, directing and enabling, maintaining standards, making decisions, and managing resources (Henrickson-Parker et al., 2012).

This taxonomy, however, does not consider the higher-level nontechnical skills of people and teams in the OR such as inspiring others, offering developmental feedback and guidance, and heightening others' desire to succeed (Avolio, Bass, & Zhu, 2004). Moreover, Kissane-Lee, Yule, Pozner, and Smink (2016) found that surgeons demonstrate the leader behaviors connected to patient safety with relative infrequency and rarely exhibit those behaviors most preferred by surgical residents. Of the 40

residents surveyed in these authors' work, 62% said they encountered an authoritarian style of leadership, but only 9% of them preferred that style. The majority preferred explanatory (53%) or consultative (41%) styles of leadership, which are more aligned with the elements of transformational leadership style that will be outlined in Chapter 2. Responding to these deficiencies and the absence of a cohesive model for the consistent practice of behaviors that are known to decrease avoidable error and the incidence of adverse events in the OR, Hu et al. (2016) shifted the focus from surgeon leadership behaviors to leadership *style* because it is considered a more enduring construct.

Pioneers in the field of leadership style and its impact on people and organizational systems, Bass, Avolio, Jung, and Berson (2003) built upon existing evidence that the measurement of transformational and transactional leadership styles can predict the subsequent performance of individuals and teams. These authors developed the Multifactor Leadership Questionnaire (MLQ). Hu et al. (2016) applied Avolio et al.'s (2004) MLQ to explore the intersection of transformational and transactional leadership style with team outcomes in the perioperative surgical OR. The authors combined this framework of leadership style and its impact on full OR team performance with previous evidence that surgical leadership was integral to patient outcomes (Rosenstein, 2011),

Horwitz et al. (2008) used the MLQ with surgeon trainees to identify medical residents' most pressing need for training. In their study, a sample of 40 medical residents scored themselves higher on the transactional management-by-exception scores and lower on the transformational individual consideration scores, compared to a national average. This existing normative sample was provided by Mind Garden, the owning

entity of the MLQ (Avolio et al., 2004). The surgical residents' scores also demonstrated a positive correlation between transformational leadership and self-ratings of effectiveness, subordinate ratings of job satisfaction and "extra effort" (Horowitz et al., 2008). These findings underscored the urgent call for leadership preparation in medical training and established the MLQ as a valuable tool for related curriculum development. Horwitz et al. (2008) also collected demographic data on the respondents, who were rating themselves. The only significant findings were in the category of management by exception, in which males self-rated their leadership style higher than did females.

Hu et al.'s (2016) seminal introduction of surgeon leadership style (with associated, assigned behaviors) as a variable in patient outcomes resulted in findings that a transformational leadership style in the OR is associated with improved team behavior and that it has the potential to improve the efficiency and safety of perioperative care. Sexton et al. (2006) demonstrated the effective use of the Safety Attitudes Questionnaire (SAQ) in a variety of healthcare environments, including ORs, critical care units, ambulatory clinics, and inpatient settings. In their study, the model proved reliable and valid across all clinical areas for the safety domain of job satisfaction as measured by professional caregivers. Additional details on these findings and their application in the perioperative OR will be provided in Chapter 2.

There are substantial data regarding nurses, nursing teams, and nurse leaders' transformational leadership style and its impact on the job satisfaction of nursing team members (McGuire & Kennerly, 2006). As nurses' overall satisfaction increases, the quality of care they provide patients and the degree to which they are engaged with and

committed to their institution increases (Mahmoud, 2008; Manning, 2016). Yet, while nurses may take on many roles in the perioperative OR, anesthesiologists, surgical technicians (i.e., scrub techs), certified registered nurse anesthetists (CRNAs), physician assistants, and others may also be present in addition to specialty roles such as perfusion technicians. The nurses on the OR team are a subset of the larger OR team. Understanding the impact of perioperative leadership style on the larger OR team members' job satisfaction extends current research to include the unit of measurement that represents the actual, full complement of the perioperative OR team as well as the collective of members interacting with and led by the surgeon.

With numerous job satisfaction measures available, it is critical to employ consistent, reliable methods for measuring the job satisfaction of OR team members. Sexton et al. (2006) confirmed the use of the SAQ as a psychometrically-sound instrument for evaluating six safety-related climates/cultural domains: teamwork climate, safety climate, job satisfaction, perceptions of management, working conditions, and stress recognition. Makary et al. (2006) developed the SAQ-OR version with the goal of bolstering efforts to improve patient safety through the measurement of teamwork because good teamwork has long been associated with improved job satisfaction (Posner & Randolph, 1979). Since then, the SAQ-OR has become among the most widely used measurements of job satisfaction as an element of overall OR safety climate (Pinheiro & de Sousa Uva, 2016; Sexton et al., 2006).

The majority of existing data regarding surgeon leadership style and job satisfaction do not control for demographic variables that may be salient to both. Horwitz

et al. (2008) found a significant relationship between the gender of the surgical resident and the associated self-assessment of transformational/transactional leadership style. Additional works have focused on the demographic variables associated with the leader's gender and her or his leadership style (Walumbwa, Wu, & Ojode, 2004). In this study, I examined the impact of peripheral variables by examining effects of rater (i.e., OR team member) demographics such as gender, race/ethnicity, age, OR team role, and years of experience in the OR. Previous research has indicated that these may be factors in job satisfaction, specifically as it relates to healthcare (Doede, 2017; Trinkoff, 2015; Zheng, Talley, Faubion, & Lankford, 2017).

With this research, I aimed to close the gap between surgeon leadership style and job satisfaction of team members in the perioperative OR by identifying the elements of the transformational/transactional leadership model that correlated with team member job satisfaction. The results of this study will build on Hu et al.'s (2016) findings that transformational surgeon leadership styles can improve safety and efficiency in the perioperative OR.

Problem Statement

Surgeon leadership is an integral component of OR teamwork and is central to the function of the team (Hjortdahl et al., 2009; Wahr et al., 2013). The surgeon leader sets the climate of the OR and influences how willing (or unwilling) team members are to speak up about potential errors, unsafe conditions, or suggestions for improvement (Leach et al., 2011). Improving the surgical climate leads to better patient outcomes (Sacks et al., 2015). Surgeons with transformational style tendencies support other team

members more frequently and contribute to positive team performance, likely improving the efficiency and safety of the OR (Hu et al., 2016). Surgeons with transactional and passive style tendencies more frequently display negative behaviors in the OR such as throwing tantrums or yelling at OR team members (Winlaw, Large, Jacobs, & Barach, 2011). Such disruptive behaviors can threaten the psychological safety of the team, compromise patient safety, and impede team members' willingness to speak up and/or report mistakes (Winlaw et al., 2011).

Job satisfaction is a key element of retention in any role and is connected to overall well-being at work (Wright & Bonett, 2007). As nurses' (both in an out of the perioperative OR) overall satisfaction increases, the quality of care they provide patients also increases (Mahmoud, 2008). The problem that I addressed in this study was the paucity of data regarding the full OR team (inclusive of nurses), the lack of extant literature identified in which the interaction of surgeon perioperative leadership style, as rated by OR team members and OR team member's job satisfaction was examined.

Purpose of the Study

The purpose of this quantitative study was to examine the relationship between perioperative surgical leadership style and the job satisfaction of OR team members using validated, reliable assessment instruments previously applied to the perioperative OR. The findings of this study offer insights for training and development efforts that may improve the efficiency and safety in the perioperative OR (see Undre et al., 2007). Extending existing findings about the relationship between leadership style and nurse job satisfaction to how leadership style drives all OR team members' job

satisfaction may set the stage for surgeon leaders to improve their own leadership style (and the style with which they develop surgical residents) in ways that facilitate OR team member satisfaction (AbuAlRub & AlGhamdi, 2012). This is important for OR team members because of the relationship between job satisfaction, health, well-being, and overall life satisfaction (Faragher et al., 2005; Spector, 1997; Tait et al., 1989).

Research Questions and Hypotheses

Research Question 1: Is the leadership style of the surgeon leader associated with OR team member job satisfaction?

$H_1$1: The leadership style of the surgeon leader is associated with OR team member job satisfaction.

$H_0$1: The leadership style of the surgeon leader is not associated with OR team member job satisfaction.

Research Question 2: Is transformational surgeon leadership style related to OR team member job satisfaction?

$H_1$2: Transformational leadership style is related to job satisfaction.

$H_0$2: Transformational leadership style is not related to job satisfaction.

Research Question 3: Is transactional surgeon leadership style related to OR team member job satisfaction?

$H_1$3: Transactional leadership style is related to job satisfaction.

$H_0$3: Transactional leadership style is not related to job satisfaction.

Research Question 4: Is passive/avoidant surgeon leadership style related to OR team member job satisfaction?

$H_1$4: Passive/avoidant leadership style is related to job satisfaction.

$H_0$4: Passive/avoidant leadership style is not related to job satisfaction.

Research Question 5: What type of leadership style is most associated with job satisfaction?

$H_1$5: Transformational leadership style is more strongly associated with job satisfaction than the other leadership styles.

$H_0$5: Transformational leadership style is not more strongly associated with job satisfaction than the other leadership styles.

Data were collected via a web link that led participants to a custom survey incorporating MLQ items and SAQ items related to job satisfaction. Demographic items were included as well. I conducted data analysis using SPSS Statistics Standard, Version 21.0 (International Business Machines, 2013). Three types of analyses were conducted: (a) descriptive statistics (e.g., means, standard deviations) were calculated to examine the distribution of the variables to ensure that there were no outliers or variables with little variance; (b) correlations were conducted to explore the relationships between and among the leadership styles, job satisfaction, and potential covariates (i.e., age, gender, race/ethnicity, years of experience in the OR, and role of the OR team member), with comparative testing for categorical variables; and (c) regression analyses were conducted to test the four main hypotheses (i.e., Research Questions 2–5). The dependent variable was job satisfaction, and the independent variables were the transformational, transactional, and passive/avoidant leadership scales. The covariates of age, gender, race/ethnicity, years of experience in the OR, and role of the OR team member were also

included in these regression analyses to control for known variables related to satisfaction.

Theoretical Framework for the Study

The theoretical framework for this study was Bass's (1985a) theory of transformational leadership. Focused on leadership style over a discreet set of behaviors, this theory highlights the strong forces of leadership that motivate individuals to perform at their full potential because it is inspired by the support, encouragement, and engagement of visionary leaders (Bass & Steidlmeier, 1999). Acknowledging the widespread call for change in the nontechnical capabilities of surgeon leaders across specialties, transformational leadership theory has been applied to the examination of preferred and desired behaviors that the surgeon leader is called to display and possess (Hu et al., 2016). A summary of relevant leadership styles that comprise the transformational leadership model will appear with a more detailed review in Chapter 2.

According to Bass (1998), there are three core leadership styles: transformational, transactional and passive/avoidant. A transformational leadership style is apparent in those leaders who sustain a high level of positive expectation for members of their teams and organizations and who believe in people's capacity to perform at the individual and collective best level of effort. Through their actions, words, and presence as models, transformational leaders are committed to their team members' individual needs and development. They inspire, empower, and support people to navigate and succeed in complex, dynamic, and intense environments (Bass, 1998).

A transactional leadership style is reflected in those leaders who are focused on constructive (contingent reward style) and corrective (management-by-exception style) transactions (Avolio et al., 2004). Transactional leaders name objectives and promote performance according to achievement or mastery of those objectives. Full range leaders demonstrate the best of both transformational and transactional leadership styles (Avolio et al., 2004).

Passive/avoidant leaders demonstrate a differentiated transactional style that employs corrective, or management-by-exception, behaviors that can be experienced as passive and reactive to the people they lead (Avolio et al., 2004). Passive/avoidant leaders do not clarify outcomes, specify expectations, or agreements and withhold stated goals. This reactive style often has a negative effect on the individuals who experience it and on the outcomes the leader and/or team are aiming to achieve (Avolio & Bass, 1991; Avolio et al., 2004).

The MLQ evolved from Bass' extensive collection of work and measures a full range of leadership competencies complementary to the integration of transactional leadership behaviors into the transformational style (Avolio et al., 2004). Originally a 142-item instrument, it has been shortened to the 45-item MLQ-5xSHORT, which is the current and only version of this instrument in print (Avolio et al., 2004). The MLQ-5xSHORT is commonly referred to as the MLQ, the MLQ5X, or the MLQ Standard (Avolio et al., 2004). The application of this theory and types of data gathered using this instrument, specifically to the study of perioperative surgical leadership style, tested its application to behaviors and elements of perioperative leadership style that promote a

positive climate of psychological and physical safety, including the job satisfaction of OR team members (Nielsen, Yarker, Randall, & Munir, 2009).

Nature of the Study

This was a cross-sectional, multivariate regression study, which is a common platform for assessing leadership style, particularly when rating others. Past studies of nontechnical skills, teamwork, and leadership in the OR relied largely upon observational methods of coding and then rating of perioperative surgeon behaviors. The challenges of securing interrater reliability and internal consistency are matched by the ethical, legal, and logistical challenges of videotaping individual surgeries (Sevdalis, Hull, & Birnbach, 2012).

I chose the MLQ as the measurement instrument for this study because it reflects the most current thinking in developing individual leaders and the collective capacity for transformational leadership in organizations as well as in the political, nongovernmental, educational, and military realms (Aarons, Ehrhart, Farahnak, Sklar, & Horowitz, 2015; Brannen, 2016; Skogstad et al., 2015; Tafvelin, Armelius, & Westerberg, 2011). Beyond its fundamental purpose as an assessment instrument, the MLQ has been extensively used to identify opportunities for training and development (Antonakis, Avolio, & Sivasubramaniam, 2003). More specifically, Hu et al. (2016) utilized the MLQ in an exploration of surgeon leader and team behaviors in the general OR, although it has not yet been used in conjunction with the SAQ or SAQ-OR version.

The MLQ contains 45 items that isolate and assess key leadership and effectiveness attributes linked to organizational and individual success. These items

aggregate into nine categorical leadership components representing a full range of transformational/transactional leadership styles (including passive/avoidant, which is a subset of transactional). Using a 5-point scale (where 0 = *Not at All* and 5 = *Frequently, If Not Always*), OR team members will rate how frequently, or to what degree they have observed the surgeon leader demonstrate the specific attributes that comprise the nine components. In this study, OR team members completed the MLQ rating sheet for one surgeon on their team.

The SAQ-OR has become the most frequently used instrument for full scale measurement of job satisfaction as an element of overall culture in the perioperative OR (Sacks et al., 2015). Participants responded to the five items measuring their own experiences in the OR using a 5-point scale in which A = *Disagree Strongly*, C = *Neutral*, and E = *Agree Strongly*. In this case, OR team members included physician assistants, perfusion or other specialists, anesthesiologists, nursing, and technical team members present in the OR. OR team specialist roles may vary by area of specialty.

In this study, I gathered quantitative data electronically from members of surgical OR teams. Participants were recruited through LinkedIn professional groups and Facebook groups. LinkedIn and Facebook have been established as effective tools for gathering empirical data for research (Fenner & Piotrowski, 2017; Lintott & Reed, 2013; Ranard et al., 2014; Unkelos-Shpigel, Sherman, & Hadar, 2015).

The independent variables measured by the MLQ included transformational leadership score, transactional leadership score, and passive/avoidant leadership score. The dependent variable was job satisfaction, which was measured by the five relevant

SAQ-OR items. Covariates included include gender, race/ethnicity, age, OR team role, years of experience in the OR, and number of hours spent with the surgeon being rated.

Definitions of Terms

Adverse events: Incidents that happen in a medical setting that harm the patient in some unanticipated way are known in the literature and in the field as adverse events. The World Health Organization (WHO; 2002) has taken a profound leadership role in developing practices that promote a climate of safety and minimize avoidable errors that can lead to adverse events.

Cascading effect: A key element of transformational leadership lies not only in the ability to produce augmented results in performance and productivity, but also the degree to which the transformational leader develops other transformational leaders as a byproduct of modeling these key stylistic approaches. Transformational leaders catalyze possibility, thus unleashing potential in individuals, systems, and processes through developing and inculcating a mindset of continuous improvement (Avolio et al., 2004).

Climate: Also referred to as surgical *culture* in the literature; the organizational or team climate in the OR, which encompasses the interpersonal, social, and organizational (or human) factors that affect the surgical environment and patient care (Sacks et al., 2015).

Contingent reward: Leader behaviors that reinforce individuals for accomplishing tasks and meeting specified goals. The reinforcement, or reward, is contingent because it is provided in exchange for fulfillment of leader expectations (Bass & Avolio, 1993a).

Full range leaders: These leaders demonstrate the best of both transformational and transactional leadership styles (Bass, 1998).

Idealized influence: Transformational leaders generate trust and admiration in the people they lead, creating an idealized image. Individuals aim to identify with this idealized image, and develop strong feelings about the leader, allowing themselves to be developed, encouraged, and inspired by the leader. Beyond the merely charismatic leader who is often self-focused, the transformational leader inspires others from within. Transformational leaders are socially-oriented, and willing to restrain the use of their own power to support people in their development, and in the achievement of their highest-level goals and potential (Avolio et al., 2004).

Individualized consideration: To elevate and promote the realization of their followers' needs and aspirations, the transformational leader must first know what those needs are. Transformational leaders take the time to know their followers as individuals, and to elevate the potential of each person on their team as an individual. Transformational leaders develop organizational cultures that promote individual development; this type of leader thus affects change at a systemic level that positively impacts individual experience (Avolio et al., 2004).

Inspirational motivation: Transformational leaders inspire others in small and large ways to work toward what is important to the shared vision of all stakeholders. These leaders provide a picture of what is possible, asking people to join and enhance that vision, adding their own sense of purpose and meaning to it (Bass, 1998).

Intellectual stimulation: Followers of transformational leaders are asked to question assumptions, challenge old solutions to new problems, explore possibilities, and most of all, to challenge the status quo. These followers are asked to re-think past values and to question their own beliefs, as well as the beliefs of the leader. In this way, individuals develop the skills and habits that promote the capacity to solve future unknown problems. An individual or team's top-level performance, when the leader is not present, is a marker of true transformational leadership (Avolio et al., 2004).

Management by exception: Leader behaviors that are based upon the coercion or punishment of people for their errors (Bass, 1998).

Nontechnical skills: In the surgical OR, nontechnical skills refer to those skills not directly related to the surgical process. The movement to identify and develop nontechnical skills in surgeons is relatively young and has been led by The Accreditation Council for Graduate Medical Education (ACGME). The ACGME (2011) identified a series of discreet, nontechnical competencies for addition into graduate medical programs: interpersonal skills and communication, medical knowledge, patient care, practiced based learning, professionalism, program improvement, and systems-based practice.

Passive/avoidant leadership styles: Passive/avoidant leaders demonstrate a differentiated transactional style that employs corrective, or management-by-exception behaviors that can be experienced as passive and reactive to the people they lead. Passive/avoidant leaders do not clarify outcomes, specify expectations and agreements,

and withhold stated goals. This style often has a negative effect on the people who experience it (Bass, 1998).

Transactional leadership styles: Transactional leaders aim to influence people's performance based on a social contract. At its highest level, the transactional leadership contract can be summarized as, "When you do x, you'll get y," or "If you don't do x, you won't get y." Contingent reward and management by exception are both transactional leadership styles (Bass, 1998).

Transformational leadership style: Supporting people and encouraging new ways of thinking are central to the transformational leadership style. Transformational leaders demonstrate a composite of behaviors that are measured by the MLQ, which include attributed charisma, idealized influence, inspirational leadership, intellectual stimulation, and individualized consideration (Bass & Avolio, 1993a, 1993b).

Voice behaviors: Common in organizational psychology, the term *voice behaviors* refer to leaders' or team members' nonrequired use of their voice to raise concerns, offer productive challenges, or propose ideas for improvement (Morrison, 2011). In the perioperative OR, voice behaviors may be measured to examine team member dynamics, efficiency, and the degree to which there is a strong climate of safety (Hu et al., 2016).

Assumptions

A central assumption of mine in this study was that participants responded honestly and candidly to survey items and that they had the required knowledge and experience to respond appropriately to the items on both the MLQ and the SAQ-OR instruments. The phenomenon of employees not responding honestly to surveys for fear

of retribution is not new (Giacalone, Knouse, & Montagliani, 1997). It is a particular challenge given existing data that surgical team members experience fear speaking up in the perioperative environment (Sherazi et al., 2014). This may have been compounded by my survey methodology of contacting OR team members through Facebook or LinkedIn, especially if participants were unconvinced of the anonymity of the survey process. There was no way to determine if respondents felt pressure to respond or did not trust the anonymity of the process.

Another assumption related to the generalization of the sample of this study as representative of the general population, given the potentially limited geographic dispersion of participants. There are over 500 million members of LinkedIn, and over 1.8 billion Facebook users worldwide (Brailovskaia & Margraf, 2016). Given the focus of the research outcomes and the potential for differences in educational priorities, safety standards, and expectations of differentiated roles in the perioperative OR outside of the United States, I included participants from the United States only.

It was assumed (and instructed) that respondents focused their responses to MLQ rater items on their identified surgical leader's perioperative leader indicators and not on those behaviors and interactions outside of the OR setting. Outside of the OR, OR team members may interact with surgeons in a variety of settings, including continuing education, social occasions, and staff meetings. I assumed that participants truly contained their responses to their own experiences inside of the OR setting.

Scope and Delimitations

In this study, I used only one instrument to measure leadership style, and one to measure job satisfaction. Reliance on a single measure of the complex constructs of leadership style and job satisfaction bounded this study because the MLQ and SAQ-OR version did not represent an exhaustive list of measures used to examine leadership style and job satisfaction. There are conflicting perspectives on the best platform for a survey of this kind, with empirical data supporting both higher response and response bias rates for online as well as traditional paper and pencil survey methods (Hohwü et al., 2013). Cole, Bedeian, and Field (2006) conducted a multigroup confirmatory factor analysis (*N* = 4,909) of 20 of the MLQ items to assess measurement equivalence between the paper and pencil and online formats. The authors found low configural, scale-based, metric and measurement error and relational consistency across platforms. I used the online platform in this study to mitigate cost and to effectively reach as many potential participants as possible (see Scott et al, 2011). I assumed that the use of LinkedIn and Facebook groups as the sole recruitment tools limited the breadth of participants to those who are LinkedIn members and Facebook users and who have joined professional groups related to OR Team concerns.

Limitations

A key limitation was the possibility of reduced participants due to the constraints of work time. OR personnel can be in the perioperative OR for multiple hours, in some cases, with minimal breaks. Preoperative time may be spent preparing for subsequent cases, and postoperative time committed to case review, administrative, and/or staff

development. This time-bound schedule leaves little time for completion of survey instruments, making them a low priority (Tucker & Edmondson, 2003).

Another limitation was the length of the survey instrument, which may have contributed to a common feeling of survey fatigue. The MLQ rater form and the SAQ-OR inventory may have taken up to 15 minutes to complete. Also, the fact that I employed a convenience sample in this study prevented generalization of the findings to the population at large. In addition, individuals may have responded to the study because they had a particular interest, strong opinion, or substantively positive or negative experience related to surgeon leadership and/or job satisfaction in the perioperative OR. Finally, the instrument relied on recall of the participant, which may have led to bias in responses.

While assurances of respondent anonymity are made to promote honest and candid responses, participants may have been inclined to favorably respond based on concerns about repercussions in their place of employment (King, Vidourek, Merianos, & Singh, 2014). On the other hand, the participants may have responded in ways to make their surgical leader appear more favorable (Grimm, 2010). Participants may also have responded according to their guesses or assumptions about the purpose of the study. These demand characteristics may have altered the way participants responded.

A final limitation of this study was in the potential of the independent or dependent variables to confound with other unknown mediating or moderating variables. This may have been the case in organizational settings in which other variables may coexist that impact job satisfaction beyond those having to do with leadership style, such

as organization-specific climate issues (Huang et al., 2016). Other potentially confounding variables known to impact job satisfaction may include satisfaction with the performance appraisal process, disposition, psychological distress or positive mood, engagement level, belief that a psychological breach of contract has taken place with the employing organization, and career commitment (Blau, 1999; Carlson, Hunter, Ferguson, & Whitten, 2014; Judge, Heller, & Mount, 2002; Rayton & Yalabik, 2014; Zhang, Wu, Miao, Yan, & Peng, 2014).

The model I used for this research did not allow for directionality of the association between the independent and dependent variables. That is, it was unclear whether passive/avoidant surgeon leadership style impacts job satisfaction, or that job satisfaction impacts leadership style. An experimental model would need to be undertaken to determine causality. These delimitations and limitations will be considered further in the Recommendations for Further Research section of Chapter 5.

Significance

Historically, surgical training has focused on individual excellence in surgical skill and technique over what are referred to in the literature as nontechnical skills, such as leadership, communication, and team development (Rao et al., 2011). Multiple researchers have pointed out the deleterious effects of poor nontechnical skills of surgeons on patient outcomes, citing a resulting increase in morbidity and mortality (Bartholomew, 2006; Catchpole et al., 2007; de Leval, Carthey, Wright, Farwell, & Reason, 2000; Glick, Rizzo, Stern, & Feinberg, 2006; Rosenstein & O'Daniel, 2005; Wahr et al., 2013). Additional effects of poor surgeon nontechnical skills include loss of

team member concentration, perioperative interruptions, increased length of procedure, and increased rate of error made by both surgeons and team members (Bartholomew, 2006; Catchpole et al., 2007; Carthey, de Leval, Wright, Farwell, & Reason, 2003; de Leval et al., 2000; Elbardissi, Wiegmann, Hendrickson, Wadhera, & Sundt, 2008; Glick et al., 2006; Rosenstein & O'Daniel, 2005). These errors are particularly present in a working climate in which deficient coordination and communication, poor teamwork, suboptimal collaboration, impaired relationships, and disruption exist (Barach et al., 2008; Carthey et al., 2003; Catchpole et al., 2007; Catchpole, Mishra, Handa, & McCulloch, 2008; de Leval et al., 2000; Elbardissi et al., 2008; Mazzocco et al., 2009; Nurok et al., 2011). This negative impact on patient safety is compounded by a longstanding culture of health care that has tolerated disruptive physician behavior and intimidation (Bognár et al., 2008; Porto & Lauve, 2006; Rosenstein & O'Daniel, 2005).

In 2000, the Institute of Medicine released a seminal report on the relationship between nontechnical skill and safety in healthcare. Their call to action, "To Err is Human: Building a Safer Health System," was the catalyst for widespread improvement in patient safety through the development and implementation of coordinated, consistent improvement mechanisms (Kohn, Coorigan, & Donaldson, 2000). The authors proposed that the behaviors related to poor nontechnical skills undermined a culture of safety. Surgeons and teams, who do not examine, then urgently work to improve nontechnical skills and surgeon leadership, will be challenged to retain reliable levers for safety and sustained outcomes for patients (Hickson & Jenkins, 2007; Hickson, Pichert, Webb, & Gabbe, 2007; Leape & Fromson, 2006; Leape et al., 2012). Many organizations have

begun to answer this call to action. Most notably, the ACGME (2011) identified five discreet nontechnical competencies for addition into graduate medical programs, including interpersonal skills and communication, medical knowledge, patient care, practiced based learning, professionalism, program improvement, and systems- based practice.

Around these competencies, the ACGME has developed a comprehensive education, training, and evaluation process aimed at improving the nontechnical skills of resident and practicing physicians (Amis, 2011). The results of this study contribute to the increasing body of knowledge aimed at shaping surgical leadership style as an element of early training curricula. Inside of the perioperative OR, the findings from this study may open a new dialogue between OR team members that contributes to the ongoing development of practicing surgeons and their team members. Enhanced teamwork skills and a positive sense of teamwork among members contribute to a decrease in avoidable errors and the reduction of adverse events in the perioperative OR (Wahr et al., 2013). For the individual OR team member, the results of this study may contribute to increased levels of job satisfaction, which is positively linked to overall life satisfaction, health, and well-being (see Faragher et al., 2005; Spector, 1997; Tait et al., 1989).

Job satisfaction ratings increase in psychologically safe climates (Luthans, Norman, Avolio, & Avey, 2008). When organizations or teams have higher degrees of psychological safety, they have stronger safety climates, and strong safety climates save lives (Sexton, 2002). The unique contribution of this research was my examination of the

connection between surgeons' perioperative leadership style and OR team job satisfaction. The findings of this study gave voice to the full complement of the OR team and provided critical data points regarding the variables connected to job satisfaction that can be used in training and development practices. With this study, I aimed to improve workplace well-being, a fundamental element of social change (Wright & Bonett, 2007).

Summary

In this study, I investigated the association between surgeon leadership style and job satisfaction in the perioperative OR. I aimed to close a gap between perioperative surgeon leadership style and OR team member job satisfaction by identifying the elements of the transformational/transactional leadership model that correlated to and varied with team member job satisfaction. The relevance of this study to the field of counseling psychology is apparent in a series of findings suggesting that when surgeon leaders and OR team members work to improve their interactions in ways that increase job satisfaction, they also improve their health, well-being, and overall life satisfaction (Faragher et al, 2005; Spector, 1997; Tait et al., 1989).

In the next chapter, I will review the extant literature on the transformational leadership model, including its broader context within organizational leadership theory as well as its specific application to surgical leadership. The existing connections between leadership style and job satisfaction will be examined, with particular focus on those pertaining to overall surgeon leadership and surgeon leadership in the perioperative OR.

Chapter 2: Literature Review

Introduction

Surgeon leadership is central to the functional experience of the OR team and is a moderator of surgical error (Elbardissi et al, 2008; Hjortdahl et al., 2009; Rosenstein, 2011; Wahr et al., 2013). When OR team members have a positive experience of teamwork in the perioperative OR, it positively affects patient outcomes and is directly tied to a lower incidence of patient complication and/or death (Makary et al., 2006; Mazzocco et al., 2009). The results of this study provide insight for training and development efforts that may improve the efficiency and safety in the perioperative OR (see Undre et al., 2007).

Surgeons with transformational style tendencies support other team members more frequently and contribute to positive team performance, likely improving the efficiency and safety in the OR. Surgeons with transactional and passive style tendencies more frequently display negative behaviors in the OR such as throwing tantrums or yelling at OR team members (Hu et al., 2016).

In this quantitative study, I examined the association between perioperative surgical leadership style and the job satisfaction of OR team members, using validated, reliable assessment instruments previously applied to the perioperative OR. I also explored the association of demographic variables (i.e., gender, race/ethnicity, age, OR team role, years of experience in the OR, and hours spent with surgeon being rated) with the OR team member job satisfaction.

Extending existing findings about the relationship between leadership style and nurse job satisfaction to how leadership style drives all OR team members' job satisfaction may set the stage for surgeon leaders to improve their own leadership style (and the style with which they develop surgical residents) in ways that facilitate OR team member satisfaction (AbuAlRub & AlGhamdi, 2012). This is significant for OR team members as job satisfaction is connected to overall life satisfaction, health, and well-being (Faragher et al., 2005; Spector, 1997; Tait et al., 1989; Wright & Bonett, 2007).

The literature I have cited thus far in this study has established the relevance of the problems associated with surgical leadership style and its impact on the job satisfaction of OR team members. The following sections in this chapter will include a presentation of the literature search strategy, theoretical foundation, and literature review as related to key variables and concepts.

Search Strategies

For this literature review, I sourced peer-reviewed articles from several databases, including Google Scholar, Academic Search Complete, Thoreau Multidatabase Search, CINAHL, MEDLINE, PubMed, PsycARTICLES, PsycBOOKS, PsycCRITIQUES, PsycEXTRA, and PsycINFO. The key search terms used included, but were not limited to: *surgeon leadership, surgeon leadership behavior, surgical leadership, surgical leadership behaviors, surgical non-technical skills, perioperative leadership skills, perioperative leadership non-technical skills, perioperative leadership style, perioperative surgical leadership, perioperative surgical leadership style, Multifactor Leadership Questionnaire and surgeon leadership, Multifactor Leadership Questionnaire*

and surgeon leadership style, Safety Attitudes Questionnaire and leadership, Safety Attitudes Questionnaire and leadership style, and *job satisfaction*. When the terms were modified to *nurse leadership*, the resulting resources were in the hundreds of thousands, with over 60,000 published in the past 7 years. Relevance criteria for sources selected for the literature review included that they were peer reviewed, represented research conducted within the past 5 years, and that the research population included OR team members (including nurses). I gave articles meeting the relevance criteria priority for the purposes of the literature search, although several earlier sources were cited for historical context.

The following literature review will include summaries of theoretical frameworks and concepts, including Bass's (1985a) seminal work on transformational leadership style. The literature review will provide insights into my choice of transformational leadership theory; the impact of leadership style on OR team members and their job satisfaction; and the higher-level consequences of surgeon leadership style, such as OR climate and patient outcomes.

What is Surgeon Leadership and Why Does It Matter?

The publication of "To Err is Human: Building a Safer Health System" (Kohn et al., 2000) set the course for an urgent exploration into the need and impact of surgical leadership. Subsequently, Gawande's (2010) work on the importance of surgical leadership in creating safe environments for patients led to the development of the standardized Surgical Safety Checklist (Haynes et al., 2009). Gawande's focus on creating mechanisms, such as surgical checklists and briefing and debriefing tools,

through which the surgeon leader and all team members shared accountability for patient safety, resulted in notable improvements in patient outcomes and uncovered what has become increasingly clear about the impact of surgeon leadership on the OR team: Effective perioperative teamwork is essential for safe practice and is key to quality patient care (Leape et al., 2012).

When OR team members exhibit fewer positive teamwork behaviors, patients are at a higher risk of complication or death (Bognár et al., 2008). In the perioperative OR, positive teamwork behaviors are present when team members feel safe sharing information, including raising concerns, asking for clarification, posing procedural questions, or offering data regarding a potential adverse event (Mazzocco et al., 2009). Team members are less likely to speak up when their surgeon's leadership is poor or behavior is disruptive (Bognár et al., 2008).

Based on the WHO's (2002) standard practice, the surgeon should lead the three perioperative debriefs (i.e., the "sign in," perioperative "timeout" and nursing "sign out" before patient leaves the OR); however, it is not always the applied practice in day-to-day reality. When the surgeon does lead the debriefs or timeout portions of the Surgical Safety Checklist, OR team members are significantly more likely to pause and focus on the checks than when they are led by another member of the team (Russ et al., 2015). This variability in practical application of the Surgical Safety Checklist may impede its potential benefits or increase the specific patient risks it aims to mitigate (Russ et al., 2015).

If this is the case, it is puzzling that surgeons are not consistently leading the Surgical Safety Checklist process. Wauben et al. (2011) suggested that a potential explanation for this dynamic can be found in consistent data suggesting that surgeon leaders often overestimate their own leadership skills (Arora et al., 2011; Horwitz et al., 2008; Mills, Neily, & Dunn, 2008; Souba, 2004a). Surgeons often report higher ratings of teamwork effectiveness than do other members of their teams, and they believe themselves to be communicating and collaborating more effectively than their team members believe them to be (Mills et al., 2008; Wauben et al., 2011). A longstanding stigma of surgeon as king, with little emphasis on development of positive leadership behaviors, begins in surgical training where, until the past decade, there has been no leadership component (Patel et al., 2010).

Even today, surgical leaders are often evaluated and promoted based on their technical performance and not on their ability to lead teams (Sevdalis et al., 2012). A culture of *resident hazing* and learning by "fire" has long been the training standard and has resulted in an institutionalized culture of tolerance of disruptive behaviors, more pronounced in surgeons than physicians (Cochran & Elder, 2015; Wahr et al., 2013). Teamwork distractions increase the likelihood of surgical error and are linked to adverse events involving errors in care and patient mortality (Elbardissi et al., 2008; Rosenstein, 2011). At worst, disruptive behaviors create a culture of intimidation and fear, in which errors arise from team members fearing to speaking up, raising potential errors, or asking for clarification when needed (Cochran & Elder, 2015; Sherazi et al., 2014). The perioperative OR is the most likely setting for adverse events related to disruptive

behaviors, which create stressful surgical environments that increase patient mortality and morbidity (Arora et al., 2011; Bognár et al., 2008). Even with decades of progress in examining the impact of surgeon leadership, definitions of surgical leadership remain disparate. Although largely undifferentiated by perioperative leadership versus surgeons' leadership of people and teams outside of the OR, the most relevant definitions in the literature are further discussed in the following paragraphs.

Souba (1998, 1999, 2004b) led the dialogue around defining surgical leadership, focusing early on the surgeon as *being* a leader, versus *doing,* or demonstrating, technical excellence alone. This thread of deeper meaning and connection to team members, as human beings with developmental needs and aspirations, is evident in Souba's work. These shared fundamental tenets in transformational leadership include knowing people, investing in and serving their learning and development needs, and addressing issues in a thorough, productive way (Souba & Day, 2006). Edmondson (2003) defined surgical leadership as the applied coordination of action when team members are unsure of what to do. The author focused on the importance of the surgeon leader "seeing the whole" and applying expertise to the accomplishment of its parts, by making meaning of experiences, offering feedback and clarification, and asking for input from others.

Healey et al.'s (2004) focused their definition of surgeon leadership on the importance of providing assertive direction to team members. Flin et al. (2015) identified four decision-making styles for surgical leaders: autocratic, consultation, joint, and delegation. Sevdalis et al. (2012) suggested the role of a surgeon leader is to ensure adherence to best practices, time management routines, and resource allocation protocols.

Providing feedback with authority and assertiveness is a key behavior underscored by these authors. Catchpole et al. (2008) integrated Souba's (1998, 1999) original thinking about leadership as a presence or style and began to lay the foundation for the advancement of the transformational leadership model, shifting the focus to the more nontechnical leadership of team members as human beings, over (transactional) management of their technical processes. With behavioral markers, such as reflecting on team member suggestions, inspiring and coaching team members, and involving them in decisions, these authors saw leadership as team member centric, yet retaining the responsibility of managing by authority and assertiveness as part of their definition of surgeon leadership. Yule, Flin, Paterson-Brown, Maran, and Rowley (2006) and Yule et al. (2008) made a full break from transactional elements of the managing process and fully focused on surgeon leaders as models of ethical and high standards of care, while being considerate of the needs of the team members as the primary focus.

Measurement of Surgeon Nontechnical Skills

As the process of defining surgeon leadership evolved, so did its measurement. There are currently three mechanisms for collecting nontechnical data in the perioperative OR: observation, interview, and questionnaire studies.

Observation studies. Observation studies incorporate behavioral rating scales for real or simulated cases in which behaviors related to leadership could be observed and coded. The Non-Technical Skills for Surgeons (NOTSS) is currently the only behavioral rating scale specific to the perioperative evaluation of surgeon leaders (Parker et al, 2011). The NOTSS incorporates leadership as one of four nontechnical skills.

Dimensions of leadership in the NOTSS include setting and maintaining standards, supporting others, and coping with pressure (Parker et al, 2011). To complete the NOTSS, surgeon raters observe simulations or view video recordings of surgical cases and specific nontechnical and leadership behaviors. Their ratings are assessed for reliability and internal consistency, then compared to expert raters scores (Parker et al, 2011). In this study, expert raters included the designers of the surgical simulations, who were practicing surgical team members with up to 10 years of expertise in behavior rating and assessment of technical and nontechnical skills. Overall, the NOTSS system is noteworthy for having a consistent internal structure, even when raters have minimal training for some but not all four leadership categories (Yule et al., 2008).

The Observational Teamwork Assessment for Surgery (OTAS) and the Oxford Non-Technical Skills (NOTECHS) are two other observation-based tools designed to assess perioperative teamwork. The OTAS incorporates a task checklist and team-based behavioral assessment (Parker et al, 2011). In the OTAS, leadership is defined as providing direction, assertiveness, and support between and among team members, and the assessment does not refer specifically to the surgeon leader's perioperative behavior, although it may be reflected within it (Parker et al., 2011). There have been challenges with interrater reliability with OTAS in the one study in which reliability and validity data were collected (Parker et al., 2011). The surgical version of the NOTECHS was adopted from the aviation industry (Parker et al, 2011). This instrument categorizes team skills into four domains: cooperation/teamwork, leadership/management, situational awareness/vigilance, and problem solving/decision making. The NOTECHS has been

used to demonstrate the importance of nontechnical skills in the OR through data uncovering the relationship between lower nontechnical scores and increased technical errors (Mishra, Catchpole, Dale, & McCulloch, 2008; Mishra, Catchpole, & McCulloch, 2009).

Beyond the challenges of a doctoral student securing permission to video record a surgical procedure, securing surgeon and technical behavioral raters, and training them appropriately, there are reasons for not selecting an observational method of study. As defined in the NOTSS, NOTECHS, and OTAS, nontechnical skills have been found to vary across disciplines. What is considered NOTSS leadership in a cardiac OR and NOTSS leadership in an orthopedic OR may be drastically different. Moreover, there may be additional variables, such as type or complexity of procedure, or the precise skills required for a specific procedure, that account for the variation in ratings of nontechnical skills (Parker et al, 2011).

Interview studies. Yule et al. (2006) interviewed consulting surgeons by having them verbally describe and review leadership behaviors during critical cases. Leadership was signaled by these reported behaviors: following OR protocol, altering behaviors according to surgical trainee's needs, establishing rapport with OR team members, remaining calm under pressure, emphasizing the urgency of a situation, being accountable for a patient in a crisis, and delegating tasks to others. Edmondson (2003) interviewed members of a cardiac surgical team relative to the introduction of a new surgical technique and its degree of efficient implementation. The author found that the technique was most effectively implemented when the surgeon leader offered a

motivating rationale for the change in technique, talked through team member concerns, and openly discussed signals of hierarchy, status, and power during the training process (Edmonson, 2003).

Among the most noted measures of surgeon leadership is the Surgeons' Leadership Inventory (SLI), a taxonomy and rating system derived from 10 focus group interviews with OR team members discussing surgeon leadership (Parker et al., 2011). Behavioral markers were culled from the interviews and applied to one of eight categories. Categories and their associated behaviors were then tested with six surgeons for face validity and coded against five video recorded surgical cases for reliability. Eight elements of surgeon leadership were identified, including maintaining standards, managing resources, making decisions, directing, training, supporting others, communicating, and coping with pressure (Parker, Flin, McKinley, & Yule 2013).

Questionnaire studies. The Operating Room Management Attitudes Questionnaire (ORMAQ) is adapted from the aviation industry and measures teamwork and leadership in the OR (Schaefer & Helmreich, 1994). Its outcome categories include autocratic, delegatory, explanatory, and consultative styles as factors of behavioral ratings (Schaefer & Helmreich, 1994). The SAQ is a remodeled version of the ORMAQ that measures leadership as an element of collaboration, but not as a standalone construct (Makary et al., 2006). The SAQ-OR version is the most common platform for assessing job satisfaction in OR team members, and I used this version for that purpose in the present study (Sexton et al., 2006).

The MLQ evolved from Bass's extensive work on transactional and transformational leadership styles and is considered the most extensively used instrument for leadership research (Horwitz et al., 2008). The MLQ measures a full range of leadership competencies complementary to the integration of transactional leadership behaviors into the transformational style. Originally a 142-item instrument, the MLQ has been shortened to the 45-item MLQ-5xSHORT, which is the current, classic, and only version of this instrument in print (Bass et al., 2004). The MLQ-5xSHORT is commonly referred to as the MLQ or the MLQ Standard (Heinitz, Liepmann, & Felfe, 2005). The questionnaire or survey method of study is common for determining individual and collective perspectives and perceptions toward others' leadership styles (Parker et al., 2011). Additional information about the MLQ and its measurement of transformational leadership style follows in this chapter.

Transformational Leadership Model

In an effort to mitigate for the transient nature of behaviors, which can be practiced consistently or infrequently, and are easily replaced with default, or habitual, behaviors, the transformational leadership theory explores leadership styles (Bass & Avolio, 1997; Russ et al., 2015). Fundamental to this theory is the ability of leaders to choose to adopt a style based on deeply held values and beliefs, their behavioral preferences, and the cultural context or norms of their organizations (Marquis & Huston, 2009).

Transformational leadership theory highlights the strong forces of leadership that motivate individuals to perform at their full potential, as it is inspired by the support,

encouragement, and engagement of visionary leaders (Bass & Steidlmeier, 1999). The transformational leadership model has deep roots in the political, industrial, and military sectors (Bass, 1985a). Building on Downton's (1973) model distinguishing revolutionary, rebellious, reform, and ordinary leaders, Burns (1978) applied these characteristics to the political schema of the time. The author suggested that transactional political leaders motivated people by promising the exchange of rewards for services completed, such as the exchange of jobs for votes, or favoritism for campaign contributions.

Zaleznik (1977) drew the dialogue deeper regarding the role of managers, purporting that managers' goals should be set according to what can be rationally expected from their performance. Bass (1985a) applied this model of transactional leader to the military, industrial, public, and educational sectors, and more notably introduced a focus on the individual employee's needs. Bass proposed that part of a leader's role is knowing what associates want from their work and aiming to ensure that happens when the associate successfully meets detailed objectives. Bass's (1985b) view of the transaction continued to evolve to a higher- level exchange of reward, or promised reward, for solid effort and/or performance, responding to the needs of individual associates, if and when they complete their stated objectives.

Bass (1985b) found the transactional elements of the model lacking. What about the leader who aims to develop people to their next level of capability, or maturity? What about the leader who commits to teaching and modeling a style of leadership that connects people to the vision and mission of their organization (or cause), and inspires the same in others? Bass (1985b) described these leaders as transformational in their

desire to raise the level of awareness of the importance of achieving critical outcomes, and their part in realizing the strategies and plans for reaching them. Bass (1985b) underscored the need for leaders to support individuals in rising above their own self-interest for the good of the organization, or its mission. Most importantly, Bass (1985b) saw the transformational leader as integral in developing people's thirst for higher level thinking, process, and integration of personal achievement with autonomy, affiliation at work, and at home.

Bass quickly found that this style of leadership brought out the best attributes in followers (Bass & Avolio, 1991). Transformational leadership caused individuals to more personally identify with the organizational mission and feel accountable for accomplishing it, becoming more motivated, raising their degree of self-efficacy and their willingness to take on higher and higher levels of challenge (Shamir, 1990). However, transformational leadership is not the right answer, nor is transactional leadership the wrong one. It is in the integration of a transformational and transactional leadership style that a leader best builds trust, respect, and the drive to work collaboratively toward outcomes (Bass & Avolio, 1991).

The move from transactional models of leadership to a higher order model for how leaders can motivate, accelerate, and sustain performance reflects an essential shift from seeing people as objects to manipulate and manage, to seeing them as active, dynamic human assets to join, grow, and lead (Winlaw et al., 2011). In the OR, this change has come slowly. Outdated models for hazing new surgeons and a tacit acceptance of disruptive behaviors such as outbursts, yelling at or bullying OR team

members, have too long survived the changing times (Porto & Lauve, 2006; Rosenstein & O'Daniel, 2005). Even in the face of substantive data that shows the negative impact of those behaviors on productivity, safety, teamwork, job satisfaction, and patient outcomes, these behaviors are often written off by the surgeons themselves as acceptable and expected (Bognár et al., 2008; Porto & Lauve, 2006; Rosenstein & O'Daniel, 2005).

Transactional Leadership Style

A transactional leadership style is evident in leaders who are focused on constructive ("contingent reward style") and corrective ("management-by-exception style") transactions. Transactional leaders name the objectives and promote performance according to achievement or mastery of those objectives. Full range leaders demonstrate the best of both transactional and transformational leadership styles (Bass, 1990).

Passive/avoidant leaders demonstrate a differentiated transactional style that employs corrective, or "management-by-exception" behaviors that can be experienced as reactive to the people they lead (Bass & Avolio, 1991). Passive/avoidant leaders do not clarify outcomes, specify expectations or agreements, and withhold stated goals. This style often has a negative effect on the followers who experience it (Bass & Avolio, 1991).

Although suboptimal on its own, transactional leadership as part of the full range transformational leadership model is essential (Bass & Avolio, 1997). Effective transformational leadership styles incorporate the transactional process, clarifying outcomes and expectations to build a shared understanding of what all people are working towards (Bass & Avolio, 1997). Transactional leadership can help individuals be

clear about direction and set a course for success; however, alone, it is limited in its ability to drive substantive, sustained levels of performance in followers (Bass & Avolio, 1997). When fundamental transactional leadership behaviors are integrated into a transformational leadership style for a full range leadership experience, people make an extra effort and are more effective and satisfied (Avolio et al., 2004).

Transformational Leadership Style

Calling on the full range leadership model, transformational leaders may use the transactional leadership style to set direction, accomplish lower order outcomes, and come to know the individual needs of the team or organization (Avolio et al., 2004). To accomplish higher order objectives of more complexity, intensity, and/or where the stakes are higher (such as those found in the perioperative OR), the transformational leader seeks to understand and respond to people's need for higher level meaning in their work, as well as their commitment to their own and development and that of others (Avolio et al., 2004). In this way, the transformational leader motivates people to accomplish more than they previously thought possible, supports them in creating and realizing their own goals, and works with a shared eye on their individual success and the success of the enterprise (Avolio et al., 2004).

Transformational leaders accomplish results by coming to know their people as individuals, inspiring them by their demonstration of sincere commitment to those who work with them (Avolio et al., 2004). This type of leader models dedication to a shared mission, a willingness to take risks, and a desire to achieve at a high performing level. Through their actions, transformational leaders are committed to their team

members' individual needs and development. These leaders inspire, empower, and support people to navigate and succeed in complex, dynamic, and intense environments. Transformational leaders develop individuals, elevating their needs and encouraging them to reach for higher and higher levels of accomplishment (Avolio et al., 2004). They view mistakes as learning opportunities, and push people to use them as catalysts towards new perspectives, possibilities, and innovations. People trust transformational leaders to overcome challenges, calling on their hard work, willingness to put self-interest aside, and ability to leverage both previous mistakes and successes (Avolio et al., 2004).

Beyond the cascading effect, transformational, transactional and passive/avoidant styles of leadership have larger, systemic impacts on organizational outcomes (McGuire & Kennerly, 2006). Figure 1 provides a process map of how transformational leadership styles and their associated leadership behaviors can the impact followers, and their subsequent influence on organizational outcomes.

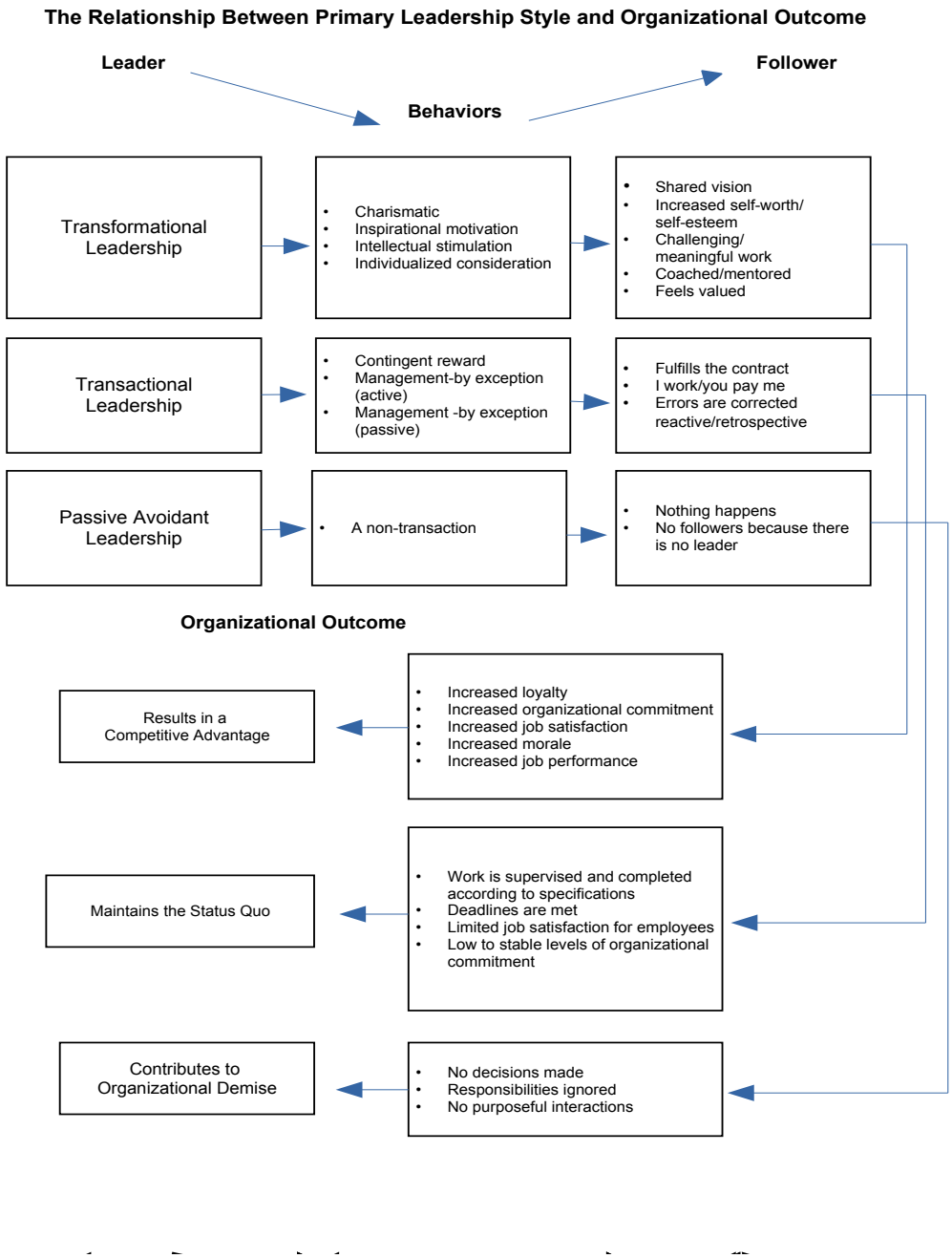

Figure 1. The relationship between transformational, transaction, and passive/avoidant leadership style and organizational outcome. From "Nurse Managers as Transformational

and Transactional Leaders," by E. McGuire and S.M. Kennerly, 2006, *Nursing Economics*, *24*(4), pp. 179-185.

Transformational Perioperative Surgeon Leadership

Transformational leadership theory has long been recognized as the most widely used framework to examine leadership styles (Judge & Piccolo, 2004). It reflects the most current thinking in developing individual leaders and the collective capacity for transformational leadership in organizations, as well as in the political, non-governmental, educational, and military realms (Aarons et al., 2015; Brannen, 2016; Skogstad et al., 2015; Tafvelin et al., 2011). Beyond its fundamental purpose as an assessment instrument, the singular instrument associated with transformational leadership theory, the MLQ aims to identify opportunities for training and development. It has been used extensively for that purpose (Antonakis et al., 2003).

Transformational leadership theory and the MLQ have only recently been used to explore leadership style in the perioperative OR. Acknowledging the widespread call for change in the nontechnical capabilities of surgeon leaders across specialties, Horwitz et al. (2008) used the MLQ as an assessment tool for surgical residents to identify areas for leadership training. Sixty-five surgical residents self-rated on the MLQ, scoring significantly higher on the transactional management-by-exception style, and

significantly lower on the transformational individualized consideration scores than the national average. The authors noted that as residents proceeded with their training, they tended to increasingly display transformational styles of leadership. One outcome showed a significant difference by gender of the self-rater, transactional management-by-exception scored significantly higher for males than females.

Hu et al. (2016) utilized the MLQ in an exploration of surgeon leader and team behaviors in the general OR in an effort to determine if surgeon leader development had the potential to improve the efficiency and safety of the OR. The authors applied transformational leadership theory to the examination of the impact of leadership style on team member behavior. Hu et al. video recorded perioperative team behaviors in five separate surgical procedures, then coded according to the SLI and re-categorized into the transformational leadership model (Parker et al., 2013). The authors found that transformational leadership was associated with improved team performance in the OR (Hu et al., 2016). Extending the application of transformational leadership theory and the types of data gathered using this instrument specifically to the study of perioperative surgical leadership style served to test its foundation when applied to behaviors and elements of leadership style that promote job satisfaction of OR team members.

Perioperative Leadership Style and Job Satisfaction

Many researchers have positively linked job satisfaction to overall health, well-being, and life satisfaction (Faragher et al., 2005; Spector, 1997; Tait et al., 1989). In healthcare organizations, as in any organization, job satisfaction is often the only language that exists to measure employee well-being, happiness at work, or the degree to

which individuals feel emotionally safe with their leaders, partners, and teams (Wright & Cropanzano, 2000). Job satisfaction increases in a psychologically safe organizational climate, and psychologically safe climates have stronger safety climates (Christian, Bradley, Wallace, & Burke, 2009; Luthans et al., 2008). Stronger safety climates save lives (Sexton, 2002).

The empirical link between transformational leadership and increased job satisfaction has been long established (Bono & Judge, 2003; Medley & Larochelle, 1995; Morrison et al., 1997; Nielsen, Randall, Yarker, & Brenner, 2008; Podsakoff, MacKenzie, Moorman, & Fetter, 1990). Job satisfaction is a central aim of transformational leaders, who actively work to identify the core values of the people they lead in an effort to unify the team around a shared purpose. These leaders see developing people as essential to their role, unleashing their potential, and fostering pluralistic leadership among and between all levels of a system in ways that create effective team members with high degrees of job satisfaction (Bass, 1998).

The relationship between perioperative surgeon leadership style and job satisfaction of OR team members has been elusive. There are substantial data regarding nurses, nursing teams, and nurse leaders' transformational leadership style and its impact on the job satisfaction of nursing team members (McGuire & Kennerly, 2006). Specifically, the more a nurse leader exhibits a transformational leader style, the higher the degree of job satisfaction among nursing team members (Acree, 2006; Nielsen, Yarker, Randall, & Munir, 2009). In the perioperative OR, there is an increase in job satisfaction with the more frequent use of, and increased importance placed on, a surgical

safety checklist, which is most effective when led by the surgeon leader (Hill, Roberts, Alderson, & Gale, 2015; Russ et al., 2015). Transactional styles, such as management-by-exception, are associated with lower job satisfaction scores among nurses (Cummings et al., 2005). The passive/avoidant style of transactional leadership garnered the lowest scores of nurse job satisfaction. Lower scores of nurse satisfaction are associated with poor patient outcomes and higher mortality (Bormann & Abrahamson, 2014; Cummings et al., 2008).

Transactional forms of nurse leadership have a more negative impact on job satisfaction than transformational forms have a positive impact on nurses' job satisfaction (Skogstad et al., 2015). This is important because as nurses' overall satisfaction increases, the quality of care they provide patients, the degree to which they are engaged with and committed to their institution also increases (Mahmoud, 2008; Manning, 2016). Moreover, if nurses are more satisfied in their jobs, then patients are more satisfied with their care, and nurses are more likely to stay in their roles (Campbell, Fowles, & Weber, 2004).

While nurses may take on many roles in the perioperative OR, anesthesiologists, surgical technicians (scrub techs), CRNAs, and physician assistants may also be present, in addition to specialty roles, such as perfusion technicians, nonsurgical MDs. The nurses on the OR team comprise a subset of the larger OR team. Understanding the impact of perioperative leadership style on the larger OR team members' job satisfaction extended current research to include the unit of measurement that represents the actual, full

complement of the perioperative OR team, and the collective of members interacting with and led by the surgeon.

With numerous job satisfaction measures available, it is critical to employ consistent, reliable methods for measuring the job satisfaction of OR team members. Sexton et al. (2006) confirmed the use of the SAQ as a psychometrically sound instrument for evaluating six safety-related climates/cultural domains. These domains include teamwork climate, safety climate, job satisfaction, perceptions of management, working conditions, and stress recognition. Makary et al. (2006) developed the SAQ-OR version with the goal of bolstering efforts to improve patient safety through the measurement of teamwork, because good teamwork has long been associated with improved job satisfaction (Posner & Randolph, 1979). Since then, the SAQ-OR has become among the most widely used measurements of job satisfaction, as an element of overall OR safety climate (Sexton et al., 2006).

The Impact of Demographic Variables

Existing data regarding leadership styles, perioperative leadership, and job satisfaction do not include the measurement of key demographic variables that may be salient to both. Eagly, Johannesen-Schmidt, and van Engen (2003) found significant differences between women and men's transactional and transformational leadership styles. Horwitz et al. (2008) applied those results were to the perioperative OR and found a significant relationship between the gender of the *surgeon* and the associated transformational/transactional leadership style as assessed by the surgical resident. This and previous works have focused on the demographic variables associated with the

leader's gender, and her or his leadership style (Walumbwa et al., 2004). To my knowledge, no other demographic variables associated with full OR team members (respondents) have been examined in relation to ratings of surgeon leadership and its connection to job satisfaction.

In this study, I controlled for OR team member demographic variables—gender, race/ethnicity, age, OR team role, years of experience in the OR—as they have been shown to be related to satisfaction. Additionally, I controlled for hourse spent with surgeon being rated. Controlling for these variables allowed for the examination of the relationship of leadership style with job satisfaction while removing their effects.

Summary

In this study, I addressed the gap between surgeon leadership style and job satisfaction of team members in the perioperative OR by identifying the elements of the transformational/transactional leadership model that correlate with team member job satisfaction. These data built on the Hu et al. (2016) finding that transformational surgeon leadership styles can improve safety and efficiency in the perioperative OR. It incorporated new findings about the full OR team, including but not limited to, nursing team members. The impact of variables associated with OR team member respondents was examined for significance, as it related to surgeon leadership style and its impact on job satisfaction. In Chapter 3, I offer an explanation of the methodology for this study, including a thorough review of the target population, sampling, recruitment procedures, and a data analysis plan. Threats to validity and ethical assurances are outlined, as well.

Chapter 3: Research Method

Introduction

The purpose of this quantitative study was to examine the relationship between perioperative surgical leadership style and the job satisfaction of OR team members. I controlled for specific demographic variables associated with OR team members, including age, gender, race/ethnicity, years of experience in the OR, OR team member role, and hours spent with surgeon. In this chapter, I will outline the research design and rationale and provide a detailed methodological overview, including population sampling, recruitment, participation, and data collection procedures. This discussion will also provide information regarding the instruments used, specifically the MLQ and SAQ-OR, and a detailed procedures and data analysis section. Finally, I will review the threats to validity, and the ethical procedures and concerns.

Research Design and Rationale

The independent variables for this study were transformational leadership score, transactional leadership score, and passive/avoidant leadership score. The dependent variable for this study was job satisfaction. I included the covariates of age, gender, race/ethnicity, years of experience in the OR, role of the OR team member, and hours spent with surgeon in these regression analyses to control for known variables related to satisfaction.

This was a correlational study, which is a common platform for assessing leadership style, particularly when rating others (see Avolio et al., 2004). Past studies of nontechnical skills, teamwork, and leadership in the OR relied largely upon observational

methods of coding and then rating the perioperative surgeon behaviors. The challenges of securing interrater reliability and internal consistency are matched by the ethical, legal, and logistical challenges of videotaping individual surgeries (Sevdalis et al., 2012). As a student researcher, my choice of the survey method of data collection was the most feasible approach. The survey method selected for this study provided a direct source of data with OR team members rating their surgeon leaders. This survey method is common for determining individual and collective perspectives and perceptions towards surgeon leadership styles (Parker et al., 2011), making it appropriate for the current study.

Procedures

Population and Sampling Procedure

In this study, I targeted individual surgical OR team members using a convenience sampling method. I chose this procedure due to a lack of available methods for random sampling of individual OR team members. Participants were selected on the basis of the following criteria: (a) accessibility; (b) being 18 years of age or older and able to provide informed consent to participate; (c) their current employment by a hospital or medical treatment facility as a member of a perioperative surgical team in the U.S.; and (d) their current role as a nurse, anesthesiologist, surgical technician (i.e., scrub tech), CRNA, physician assistant, or a specialty OR team role, such as perfusion technician. I did not collect surgeon data because the surgeons would have been providing a self-rating. Previous findings suggested surgeons rate their own leadership skills and behaviors more favorably than do their OR team members (Mills et al., 2008;

Wauben et al., 2011). Including their self-rated data would likely have skewed the results of this study.

Sample and Effect Size

To calculate an appropriate sample size for the proposed analysis, I entered the parameters of the analysis into G*Power. G*Power is a power analysis software that can determine the necessary sample size to achieve a certain level of confidence and power based on the expected effect size and type of analysis (Faul, Erdfelder, Buchner, & Lang, 2014). Based on Cohen's (1992) recommendation to use a power of .80 and alpha of .05 to balance instances of Type I and II error, I entered these parameters first.

The lack of evidence regarding a specific strength of relationship between leadership styles and job satisfaction or the corresponding interaction terms among OR team members led to my expectation of a medium effect size. As Cohen (1992) indicated, these kinds of relationships are reasonable to expect and are usually meaningful enough that an individual could notice them with the naked eye. Finally, the format of the regression analysis was specified, and the number of predictors was set to eight, in the event that all demographic variables were entered into the regression as controls and were all binary as well as the three leadership styles relevant to that analysis. Categorical control variables with more than two categories required dummy coding, which increased the number of variables in the regression and, in turn, increased the required sample size. My calculation of an appropriate sample size for all predictors determined that a sample size of 109 was required to achieve the parameters specified.

Recruiting Procedures

Mind Garden (owning entity of the MLQ) licensed to me, then generated a custom link for a version of the instrument that incorporated the demographic items that were part of this research (Appendix A), and the five "Job Satisfaction" items from the full SAQ-OR version (Appendix B). A sample of items from the standard version of the MLQ can be found in Appendix C. Documentation of permission to use these instruments and items can be found in Appendix D.

I posted the link and associated explanations in a series of LinkedIn professional and Facebook groups related to the perioperative surgical OR. LinkedIn professional groups included: The Official Member Led Discussion Group of Association of Perioperative Registered Nurses (AORN), AORN, Perioperative Nurses, Surgical Techs/First Assistants, Surgical Technologist and the Surgeon's Assistant, Worldwide Surgical Technologists, Surgical Assisting, Surgical First Assistant, and Association of Surgical Technologists. Facebook groups included but were not limited to: AORN and individual AORN chapters, Surgical Technologists, Surgical Technologist, The Life of a Surgical Technologist, National African American Surgical Technician Association, Certified Surgical Technicians, Society of Perioperative Registered Nurses, and Surgical Technicians Unite.

The first page that participants saw presented two screening questions that determined their eligibility to continue into the informed consent section. One question read, "I am at least 18 years of age," and the other, "I am currently employed at a hospital or medical treatment facility within the United States as a member of an OR team."

Participants who responded "no" to either (or both) of these screening questions were directed to a page that read: "We're sorry. You do not meet the qualifications for this survey. We sincerely thank you and appreciate your time, and willingness to participate in this research."

Prospective participants who cleared these initial screening questions with two "yes" responses were directed to the informed consent page. This page included the title of the research, a brief explanation of the background and purpose of the study, participation procedures, potential ethical concerns, and disclosure that it was doctoral research as well as an estimated length of time to complete the survey instruments. My contact information, as well as that for my Walden University dissertation committee chair, the Walden University Research Participant Advocate, and the Institutional Review Board (IRB) approval number (07-03-18-0181773) were included.

Participants accessed the link and then made a choice to cease participation at any time (before or after they provided informed consent). Participants were informed that they could review the results of the study because they would be posted on each of the known LinkedIn and Facebook group sites from which participants were recruited. I did not contact participants individually because no identifying data about them were captured at any point in the research process. Once participants clicked the link to the actual survey as a signal of informed consent, the full complement of items took approximately 15 minutes to complete.

Instrumentation and Operationalization of Constructs

The MLQ is owned by Mind Garden, and I purchased a license for research use from them that extended for 1 calendar year. Additional fees were paid to customize the electronic format. The SAQ is open sourced for research purposes, and this permission extended to the SAQ-OR. This was confirmed in writing (see Appendix D) along with documented permission to use the SAQ in any form (see Appendix D).

Multifactor Leadership Questionnaire (MLQ)

Bass and Avolio (1995) developed the MLQ. The authors built on Bass's (1985) conceptual model of transactional and transformational leadership factors. Bycio, Hackett, and Allen (1995) combined two of the factors to create the first iteration of the MLQ. Subsequent research led to the differentiation of some factors as well as additional factors. The resulting nine-factor model stands as the most recent and universally adopted version of the MLQ (also known as the MLQ5X). The MLQ represents Bass and Avolio's (1991) early conceptualization, accounts for the complexity of individual factors, and highlights the optimization of an integrated, or full range leadership style.

The MLQ contains 45 items that measure effective leadership behaviors and their associated styles (Avolio et al., 2004). The items are rated on a 5-point frequency scale (where 0 = *Not at All*; 1 = *Once in a While*; 2 = *Sometimes*; 3 = *Fairly Often*; and 4 = *Frequently, if not Always*; (Avolio et al., 2004). Thirty-six of the items are grouped into nine scales (yielding four items per scale): idealized attributes, idealized behaviors, inspirational motivation, intellectual stimulation, individual consideration, contingent reward, active management-by-exception, passive management-by-exception, and

passive/avoidant (Avolio et al., 2004). Five of the nine scales reflect transformational style: idealized attributes, idealized behaviors, inspirational motivation, intellectual stimulation, and individual consideration. Two of the scales represent transactional style: contingent reward, and active management-by-exception, and two represent passive/avoidant style: passive management-by-exception and passive/avoidant (Bass & Avolio, 2004). The remaining nine items include leadership outcomes, which are comprised of three categories: extra effort, effectiveness, and satisfaction with leadership (Bass & Avolio, 2004). Only the aggregated scales as overall styles (transformational, transactional and passive/avoidant) were used in this study.

Reliability and Validity

The MLQ is extensively researched and validated across many industries, and it has been used in thousands of research protocols and doctoral dissertations (Avolio et al., 2004). After many revisions in factor structure, the 2004 nine-factor structure represents the most commonly used and only available version of the MLQ. Table 1 provides the means, standard deviations, reliabilities, and intercorrelations for the original leadership scale scores for the MLQ. The first value in the matrix is for the initial sample and the second value is for the replication set. Cronbach's coefficient alphas are reported values in boldface along the diagonal. First values in each column represent correlations from the original set of samples (N = 1,394) and the second value in each column shows correlations from the replication set of samples (N = 1,498). Self-ratings are not included. Internal consistency reliability (Cronbach's alphas) for all of the original six scales ranged from .74 to .92, sufficiently above the acceptable minimum of .70 (Nunnelly,

1978). The notable exception is the management-by-exception scale (.63/.64). These scale's scores reflect the final 36 items that were retained in the MLQ (additional items have been added that reflect the outcomes of leadership scales of extra effort, effectiveness, and satisfaction). Table 2 presents the descriptive statistics for the MLQ 2004 normative sample, which comprise the full nine-factor model.

Table 1

1999 Normative Sample: Mean, Standard Deviations, and Intercorrelations of MLQ5X Scores

Variable	***M***	***SD***	**1**	**2**	**3**	**4**	**5**	**6**
Charisma	2.58,	.87,	**.92,**					
	2.69	.91	**.92**					
Intellectual								
stimulation	2.51,	.95,	.82,	**.83,**				
	2.54	.93	.81	**.78**				
Individual								
consideration	2.66,	.99,	.81,	.74,	**.79,**			
	2.64	.99	.82	.77	**.78**			
Contingent								
reward	2.51,	.98,	.77,	.73,	.75,	**.80,**		
	2.40	.99	.71	.67	.68	**.74**		
Management b								
Exception	1.69,	.85,	-.17,	-.09,	-.23,	-.11,	**.63,**	
	1.60	.90	-.16	-.08	-.21	.02	**.64**	
Passive/	1.02,	.79,	-.51,	-.46,	-.45,	-.38,	.24,	**.84,**
avoidant	1.09	.89	-.54	-.44	-.52	-.28	.45	**.86**

Note. Descriptive statistics for the original six factor MLQ from which the current and only current version of the MLQ5X was derived. From *Multifactor Leadership Questionnaire: Manual and Sampler Set* (3rd ed., p. 64), by B.J Avolio, B.M. Bass, and F.W.W. Zhu, 2004, Redwood City, CA: Mind Garden.

Table 2

Descriptive Statistics for the 2004 MLQ Normative Sample

	Total sample (N = 27,285)			**Higher level** (N = 4,268)		
Scale	***M***	***SD***	**Range**	***M***	***SD***	**Range**
Idealized influence: Attributed	2.94	0.76	4.0	2.97	0.71	4.0
Idealized influence: Behaviors	2.77	0.72	4.0	2.74	0.70	4.0
Inspirational motivation	2.92	0.76	4.0	2.78	0.76	4.0
Intellectual stimulation	2.78	0.71	4.0	2.70	0.69	4.0
Individualized consideration	2.85	0.78	4.0	2.83	0.66	4.0
Contingent reward	2.87	0.70	4.0	2.87	0.62	4.0

Management by exception: Active	1.67	0.88	4.0	1.68	0.88	4.0
Management by exception: Passive	1.03	0.75	4.0	1.03	0.73	4.0
Passive/avoidant	0.65	0.67	4.0	0.63	0.63	4.0
Extra effort	2.74	0.86	4.0	2.68	0.78	4.0
Effectiveness	3.07	0.72	4.0	3.05	0.71	4.0
Satisfaction	3.08	0.83	4.0	3.08	0.76	4.0

Note. Descriptive statistics for the 2004 nine-factor MLQ representing the current and only available version of the MLQ5X. Descriptive statistics are for the total sample, and for the sample of respondents rating leaders at a higher organizational level than themselves. These data are aligned with the focus of this study, as OR team members will rate surgeon leaders considered to be at a higher organizational level than themselves. From *Multifactor Leadership Questionnaire: Manual and Sampler Set* (3rd ed., p. 73), by B.J Avolio, B.M. Bass, and F.W.W. Zhu, 2004, Redwood City, CA: Mind Garden.

Further analyses supported the nine-factor leadership model and its stability within fields, industries, and a range of organizational contexts (Antonakis, 2001; Antonakis et al., 2003). Using a sample of 1,089 female and 2,279 male raters culled from previous research, then a second and distinct group of 6,525 raters, these authors examined the validity of the measurement model and the stability of the factor structure of MLQ across a range of professional contexts and within homogenous contexts, respectively. Raters coded individual study data for contextual markers, including risk conditions/environmental uncertainty, leader hierarchical level, leader-follower gender, and degree of organizational structure (Antonakis, 2001; Antonakis et al., 2003). Differences between the female and male leader ratings were detected on four of the leadership factors (Antonakis et al., 2003). The researchers concluded that the level of environmental risk, leader-follower gender, and leader hierarchical level were the sole contextual factors that significantly impacted the stability of the MLQ nine-factor model.

MLQ Reliability and Validity in the Surgical Field

Horwitz et al. (2008) responded to the call for leadership training in surgical resident education, establishing the MLQ as a valuable tool for identifying specific areas where leadership training would be most beneficial in curricula. A sample of 65 surgical residents completed the MLQ to identify areas in which they were most in need of training. The surgical residents had higher management-by-exception scores than those of an existing U.S. sample ($N = 3,375$) of respondents, and significantly lower individualized consideration scores. Reliability testing was conducted to examine the

psychometric properties of the variables with resulting Cronbach's alpha scores ranging from .57 to .80.

Hu et al. (2016) video recorded five surgeons performing complex operations. An organizational psychologist, and a surgeon researcher then scored the five surgeons on the MLQ. Independent coders evaluated the surgeons' leadership behaviors and the OR teams' behaviors (information sharing, cooperative, and voice behaviors) using the SLI (Parker et al., 2013). The SLI is a taxonomy of surgeons' intraoperative leadership behaviors founded on the surgical and psychological literature about leadership, as well as on documented observations of surgeons, and qualitative focus group data about intraoperative leadership behaviors. In Hu et al.'s study, MLQ items were correlated with corresponding SLI individual and team behaviors using Poisson regression. Face validity was determined through a review of the SLI by subject matter experts familiar with surgical nontechnical skills. Interrater reliability is estimated at $k = .95$, $p < .0001$.

Safety Attitudes Questionnaire- OR Version (SAQ-OR):

The SAQ was derived from the Intensive Care Unit Management Attitudes Questionnaire (Thomas, Sexton, & Helmreich, 2003). This instrument is a refinement of the Flight Management Attitudes Questionnaire (FMAQ), which is used frequently in the field of commercial aviation. The FMAQ was developed in response to increasing data suggesting that adverse airline events were caused from intrateam, interpersonal breakdowns in communication, teamwork, leadership, communication, and willingness to speak up. The FMAQ is a measurement of airline crew team members' attitudes about

the application of these nontechnical skills (Helmreich, Merritt, Sherman, Gregorich, & Wiener, 1998).

Each version of the SAQ contains 60 items and uses a 5-point Likert scale (where A = *Disagree Strongly*, C = *Neutral*, and E = *Agree Strongly*) with only minor modifications across versions, related to the specific clinical area being assessed. All versions of the questionnaire measure caregiver attitudes related to six climate scales: teamwork climate, safety climate, job satisfaction, perception of management, working conditions, and stress recognition. This study focused on the job satisfaction scale. For each version of the SAQ, including the OR version, these five items comprise the job satisfaction scale: I like my job, working in this hospital is like being part of a large family, this hospital is a good place to work, I am proud to work at this hospital, and morale is high in the ORs here.

Mean scores are computed for each scale after reverse scoring for negatively stated questions is complete. Mean scale scores are then converted to a 100-point scale. High scores indicate higher levels of job satisfaction, and low scores indicate lower levels of job satisfaction.

Sexton et al. (2006) demonstrated the effective use of the SAQ in a variety of healthcare environments, including operating rooms, critical care units, ambulatory clinics, and inpatient settings. Sexton et al (2006) administered the SAQ to health care providers (N = 10,843) in 203 clinical areas (including critical care units, operating rooms, inpatient settings, and ambulatory clinics), in three countries (U.S., U.K., and New Zealand). Scale reliability testing for the SAQ was assessed using

Raykov's ρ coefficient (Raykov, 1997). The ρ value for the SAQ was .90, suggesting strong reliability of the SAQ. Table 3 presents the SAQ descriptive data for the Job Satisfaction factor, including overall means, minimum and maximum clinical area means, and overall standard deviations.

Table 3

Descriptive Statistics for SAQ-OR Job Satisfaction Factor

		SAQ factor: Job satisfaction	
SAQ version-country	*Mean*	Min mean for clinical area – max mean for clinical area	*SD*
ICU-UK	60.7	40.4 - 77.1	21.2
ICU-NZ	59.9	41.0 – 73.1	21.8
ICU-USA	68.6	42.7 – 89.1	22.3
Inpatient- USA	59.6	61.9 – 77.7	20.5
OR-UK	70.1	55.4 – 65.2	22.1
Ambulatory-USA	70.6	57.0 – 87.4	20.2

Note. Descriptive statistics for the SAQ by clinical area and country for the "job satisfaction" factor, where "Intensive Care Unit" is abbreviated as "ICU." From "Teamwork in the Operating Room: Frontline Perspectives Among Operating Room and Hospital Personnel, by Sexton, J.B., Makary, M.A., Tersigni, A.R., Pryor, D., Heindrich, A., Thomas, E.J., and Pronovost, P.J., 2006 *The Journal of the American Society of Anesthesiologists*, *105*(5), pp. 877-884.

Makary et al. (2006) used the SAQ to examine the perception of teamwork in the perioperative OR (resulting in the SAQ-OR). Operating room nursing team members (N = 2,135) across 60 hospitals were administered the SAQ in order to rate their peers and surgeons on the six areas of the SAQ. The resulting data suggested there were significant discrepancies in perceptions of teamwork in the perioperative OR, with teamwork ratings differing considerably by OR caregiver role. The greatest differences in teamwork ratings were noted between surgeons (F[4, 2058] = 41.73, $p < 0.001$), anesthesiologists (F[4, 1990] = 53.15, $p < 0.001$), and surgical technicians (F[4, 2044] = 6.17, $p < 0.001$).

Data Analysis Plan

The independent variables for this study were transformational leadership score, transactional leadership score, and passive/avoidant leadership score. The dependent variable for this study was job satisfaction. Data were collected via a web link that led participants to a custom survey incorporating MLQ items, and SAQ items related to job satisfaction. Demographic items were included as well. Data analysis was conducted using SPSS Statistics Standard Version 21.0 (International Business Machines, 2013).

The majority of existing data regarding surgeon leadership style and job satisfaction do not control for demographic variables that may be salient to both. Horwitz et al. (2008) found a significant relationship between the gender of the surgical resident and the associated self-assessment of transformational/transactional leadership style. Additional works have focused on the demographic variables associated with the leader's gender, and her or his leadership style (Walumbwa, Wu, & Ojode, 2004). This study examined the impact of peripheral variables by examining effects of rater (OR team member) demographics such as gender, race/ethnicity, age, OR team role, years of experience in the OR, and time spent with surgeon. Previous research has indicated that gender, race/ethnicity, age, OR team role, and years of experience in the OR may be factors in job satisfaction, specifically as it relates to healthcare (Doede, 2017; Trinkoff, 2015; Zheng et al., 2017).

Research Questions and Hypotheses

Research Question 1: Is the leadership style of the surgeon leader associated with OR team member job satisfaction?

$H_1$1: The leadership style of the surgeon leader is associated with OR team member job satisfaction.

$H_0$1: The leadership style of the surgeon leader is not associated with OR team member job satisfaction.

Research Question 2: Is transformational surgeon leadership style related to OR team member job satisfaction?

$H_1$2: Transformational leadership style is related to job satisfaction.

$H_0$2: Transformational leadership style is not related to job satisfaction.

Research Question 3: Is transactional surgeon leadership style related to OR team member job satisfaction?

$H_1$3: Transactional leadership style is related to job satisfaction.

$H_0$3: Transactional leadership style is not related to job satisfaction.

Research Question 4: Is passive/avoidant surgeon leadership style related to OR team member job satisfaction?

$H_1$4: Passive/avoidant leadership style is related to job satisfaction.

$H_0$4: Passive/avoidant leadership style is not related to job satisfaction.

Research Question 5: What type of leadership style is most associated with job satisfaction?

$H_1$5: Transformational leadership style is more strongly associated with job satisfaction than the other leadership styles.

$H_0$5: Transformational leadership style is not more strongly associated with job satisfaction than the other leadership styles.

Analyses

Three types of analyses were conducted. First, descriptive statistics (e.g., means, standard deviations) were calculated to examine the distribution of the variables to ensure that there were no outliers or variables with little variance. Second, correlations were conducted to explore the relationships between and among the leadership styles, job satisfaction, and potential covariates (i.e., age, gender, race/ethnicity, years of experience in the OR, role of the OR team member, and time spent with surgeon), with comparative

testing for categorical variables. Finally, regression analyses were conducted to test the four main hypotheses (RQ2-RQ5). The dependent variable was job satisfaction and the independent variables were the transformational, transactional, and passive/avoidant leadership scales. Covariates including age, gender, race/ethnicity, years of experience in the OR, role of the OR team member were included in these regression analyses, to control for known variables related to satisfaction. Time spent with surgeon was also included in the regression analyses. Given the potential for multicollinearity to be a problem when including all leadership styles into a single regression, the variance inflation factor (VIF) was examined to determine if separate regressions needed to be conducted.

Once a participant consented to the study, it was possible to proceed through the survey without responding to each question, and participants could submit incomplete surveys. The final data set used in analysis reflected only those submissions that responded to 75% or more of the items. Responses of "unsure" or skipped items were treated as missing data.

Threats to Validity

External Validity

Threats to external validity can be found by asking what traits are commonly expressed or may be endemic to the research population. It is widely held that nurses are selected for, and known to demonstrate high empathy, caring and nurturing, and strong altruistic ideals (Eley, Eley, Bertello, & Rogers-Clark, 2012). These pervasive traits

among OR team members may have impacted how they viewed this study and how they rated their surgeon leaders.

The use of LinkedIn professional and Facebook user groups may also have drawn potential respondents who were more likely to engage in social platforms. More specifically, Facebook users tend to score significantly higher on traits such as narcissism, self-esteem, and extraversion than do non-Facebook users. They also score significantly differently than non-Facebook users on other personality trait and mental health markers (Brailovskaia & Margraf, 2016). Facebook users, in particular, may have heightened concerns about anonymity and privacy (Debatin, Lovejoy, Horn, & Hughes, 2009). These traits and markers may have impacted the online behaviors of respondents and the generalizability of findings to those replicated on another platform. Additionally, only one instrument was used to measure leadership style, and one to measure job satisfaction. Results from a single measure related to such complex constructs as leadership style and job satisfaction may not be generalizable to circumstances where different measurement constructs are used.

Internal Validity

At the individual level, study participants may have had positive or negative leadership experiences with their surgeon leader and responded through the lens of recency rather than an overall, general experience with that surgeon. More systemically, the publication of "To Err is Human: Building a Safer Health System," (Kohn et al., 2000), followed by Gawande's (2010) seminal work on surgical safety practices, shed light on the relationship between surgeon leader behavior and its impact on safety and

patient outcomes. This dialogue brought disruptive surgeon behavior to the forefront and began to shift the long- held culture of surgeons as untouchable, as well as the most likely of all physicians to be disruptive. Even in the past five years, the acceptance of surgeons' disruptive behavior has declined dramatically, with compounding evidence of its deleterious effects (Cochran & Elder, 2015). The impact of surgeon leadership being in the forefront of popular media and professional literature may impact study participants' views in ways that, if replicated at another point in the maturation of this topic, would generate disparate views.

Construct Validity

I accounted for many of the typical considerations that support construct validity in constructing this research model. Survey items were clear, used common language, and did not require reference to, or understanding of, the theoretical framework of transformational leadership. While some participants may have experienced reluctance to participate for privacy and/or anonymity concerns, there was no collection of identifying characteristics of participants, or of surgeons being rated at any time through the survey instrument. Participants' group memberships on Facebook and/or LinkedIn were in no way impacted by their participation or nonparticipation.

Ethical Procedures

I thoroughly examined ethical considerations throughout the research process, beginning with the informed consent process. The informed consent document was distributed electronically to all participants, both on the LinkedIn and Facebook group survey notification posts, as well as on the introductory page of the survey instrument.

This document included an overview of the research process, a reminder of the voluntary nature of the study, and a guarantee of anonymity. Participant name, geographic location, or place of employment were not queried. The informed consent document also included my contact information, contact information for the Walden University dissertation committee chair, the Walden University Research Participant Advocate, and the IRB approval number.

Informed consent was provided when the participants clicked the link into the survey after reviewing the informed consent section. Specifically, at the close of the Consent section, under the heading "Obtaining Your Consent," appeared the statement "If you feel you understand the study well enough to make a decision about it, please indicate your consent by clicking the link below." Two radio button choices followed: "I agree to participate in this study" and "I do not agree to participate in this study." When participants selected the former option, they were taken directly into the survey. When they chose the latter, they received this message: "To participate in this study, you must consent to participate. To consent, return to the previous page and select 'I agree to participate in this study.' Otherwise, move to the next page and follow the instructions for exiting the study." Participants were then directed to an exit link, and a thank you message.

Participants were reminded in the informed consent document that they could withdraw their participation in the survey at any time before submitting the questionnaire, and that they could select "unsure" to any question in the survey if they did not have or did not wish to disclose a response. They were also reminded that their participation had

no bearing on their membership in the specific LinkedIn or Facebook group from which they were recruited.

Selecting “yes” to the initial screening questions, indicating consent by clicking the link to the survey, filling out the questionnaire, and submitting the survey were the key indicators that participants understood the nature of the study and agreed to its conditions. There was minimal risk to participants, as the measures were straightforward and nondeceptive. All language used in the questionnaire was common language in the field of perioperative surgery.

Study results will be posted on each of the LinkedIn and Facebook group pages used to recruit participants. The survey host, Mind Garden, will store the data securely until receipt of notification that data are to be destroyed**.** Data will be destroyed after the federal mandatory 3 year waiting period (IRB, 2017).

Summary

In this study, I used an electronic survey questionnaire completed by OR team members to rate their surgeon leaders. Participants were recruited through LinkedIn and Facebook professional groups. Informed consent was secured as participants entered the survey and included a review of the purpose of the study, participation procedures, and ethical concerns.

The MLQ is an extensively researched and validated tool used across a number of industries and has been used in thousands of research protocols and doctoral dissertations, including measuring leadership style in the perioperative OR (Avolio et al., 2004; Horwitz et al., 2008; Hu et al., 2016). Sexton et al. (2006) demonstrated the

effective use of the SAQ in a variety of healthcare environments, including operating rooms, critical care units, ambulatory clinics, and inpatient settings. Makary et al. (2006) used the SAQ-OR in a study of the perception of teamwork in the perioperative OR. In Chapter 4, I review the results of this study.

Chapter 4: Results

Introduction

The purpose of this quantitative study was to examine the relationship between perioperative surgical leadership style and the job satisfaction of OR team members. My aim with the study was to (a) provide insights for training and development efforts that may improve efficiency and safety in the perioperative OR (Undre et al., 2007) and (b) inform surgeon leaders seeking to improve their own leadership style (and the style with which they develop surgical residents) in ways that facilitate OR team member satisfaction (AbuAlRub & AlGhamdi, 2012). These goals are important for OR team members because of the relationship between job satisfaction, health, well-being, and overall life satisfaction (Faragher et al., 2005; Spector, 1997; Tait et al., 1989).

I conducted this study to address the following research questions and associated hypotheses:

Research Question 1: Is the leadership style of the surgeon leader associated with OR team member job satisfaction?

$H_1$1: The leadership style of the surgeon leader is associated with OR team member job satisfaction.

$H_0$1: The leadership style of the surgeon leader is not associated with OR team member job satisfaction.

Research Question 2: Is transformational surgeon leadership style related to OR team member job satisfaction?

$H_1$2: Transformational leadership style is related to job satisfaction.

$H_0$2: Transformational leadership style is not related to job satisfaction.

Research Question 3: Is transactional surgeon leadership style related to OR team member job satisfaction?

$H_1$3: Transactional leadership style is related to job satisfaction.

$H_0$3: Transactional leadership style is not related to job satisfaction.

Research Question 4: Is passive/avoidant surgeon leadership style related to OR team member job satisfaction?

$H_1$4: Passive/avoidant leadership style is related to job satisfaction.

$H_0$4: Passive/avoidant leadership style is not related to job satisfaction.

Research Question 5: What type of leadership style is most associated with job satisfaction?

$H_1$5: Transformational leadership style is more strongly associated with job satisfaction than the other leadership styles.

$H_0$5: Transformational leadership style is not more strongly associated with job satisfaction than the other leadership styles.

In this chapter, I will describe the sample of study participants, the study design, the procedures followed in the study, and a summary analysis of the results.

Data Collection

I collected data during a 23-day timeframe from 11 July to 3 August 2018. Participants were recruited through relevant professional groups on Facebook and LinkedIn, where they accessed a no-login link to the survey instrument. Some participants forwarded the posted link to peers in the identified and other professional

groups; this was evident in comments made on the link thread. I did not collect identifying data from the participants at any time during the process of completing the survey instrument. The recruitment criteria specified that participants had to be at least 18 years of age and be currently employed in a hospital or medical facility in the U.S. Once participants selected "yes" to both of these items, they were directed to the overview of the study and the informed consent questions. Participants provided informed consent by selecting a radio button stating, "I agree to participate in this study."

Data from a total of 227 participants were used in this study. Of the 227 participants, 105 responded to every question, while 122 selected "unsure" on the scale at least once or skipped a question. Steward owners of the MLQ instrument suggest that partial data are to be expected and advise researchers to average the completed questions for each of the scale scores with available responses (Mind Garden. 2004). In order to secure a sample of 227 respondents, I removed 118 responses from the data because they were missing 25% or more of the MLQ items; three respondents were removed because they were missing more than 25% of the five SAQ items (Mazza, Enders, & Ruehlman, 2015). Additionally, two physicians' assistants were eliminated from the data set because they did not represent a large enough sample to make any comparisons between them and other OR team roles. Two people who identified as gender nonconforming were also removed from the data because they did not represent an adequate sample size to make any comparisons between them and other gender identities. Finally, I collapsed subcategories of race/ethnicity/origin into two categories of People of Color and White People because there were too many categories for a regression analysis and the sample

size of most was too small to look at in isolation or to properly statistically represent them. Categorical variables were recoded into binomial variables for regression analyses.

Of the 227 participants, 199 were female (88%) and 28 were male (12%). The majority of people identified as White (187, 82%), and their ages ranged between 35 and 44 (n = 73, 32%) and 45 and 54 (n = 64, 28%) years old. Most participants were surgical technologists (n = 147, 65%) and specialty or other were the next most represented role in the OR (n = 48, 21%). Specialty/other represented respondents who may be members of an OR team focused on specific types of surgical procedures. For example, perfusionists are only present in cardiac procedures. Participants reported between 1 and 5 years of experience (n = 50, 22%); 6–10 years of experience (n =46, 20%); and 11–15 years of experience (n = 45, 20%). Most participants reported spending between 16 and 30 hours per month with the surgeon to whom they were reporting (n = 76, 33%), followed by between 31 and 45 hours per month (n = 64, 28%). Table 4 provides frequencies and percentages of participant demographics.

Table 4

Demographic Characteristics of the Sample

Variable	*n*	%
Gender		
Female	199	87.7
Male	28	12.3
Race		
White	187	82.4
American Indian (person of color)	4	1.8
Asian (person of color)	6	2.6
Black (person of color)	8	3.5
Hispanic (person of color)	10	4.4
Middle Eastern (person of color)	4	1.8
Another (person of color)	8	3.5
Age		
18–24 years	10	4.4
25–34	46	20.3
35–44	73	32.2
45–54	64	28.2

55–64	26	11.5
65+	8	3.5
Role in OR		
Nurse	32	14.1
Surgical technician	147	64.8
Specialty/other	48	21.1
Years of experience in OR		
Less than 1 year	4	1.8
1–5 years	50	22.0
6–10 years	46	20.3
11–15 years	45	19.8
16–20 years	30	13.2
21+ years	52	22.9
Hours/month with surgeon		
1–15 hours/month	26	11.5
16–30	76	33.5
31–45	64	28.2
46–60	32	14.1
61–75	12	5.3
76+	17	7.5

I utilized two instruments, the MLQ and the SAQ job satisfaction scale, in this study because both have been proven valid and reliable (see Bass & Avolio, 2004; Hu et al., 2016; Sacks et al., 2015). The MLQ was licensed through Mind Garden, and the SAQ was used with permission from the University of Texas: Health Science Center at Houston. Documentation of permissions can be found in Appendix D.

To determine whether the proposed covariates needed to be included in the model, I examined each covariate (i.e., gender, race/ethnicity/origin, age, OR role, years of experience, and hours spent with surgeon being rated) in relation to the dependent variable (i.e., job satisfaction). Any found to be significant were included in the regression models. To determine if gender was related to job satisfaction, I conducted an independent samples *t* test. There was not a significant difference in job satisfaction between women and men, t (32.95) = 1.16, $p = .25$. Similarly, to determine whether race was related to job satisfaction, I conducted an independent samples *t* test. There was not a significant difference in job satisfaction between White participants and those who identified as People of Color, t (49.42) = 1.96, $p = .06$. However, to determine if age was related to job satisfaction, I conducted a Pearson correlation. There was not a significant relationship between age and job satisfaction, $r = -.05$, $p = .47$. To determine if OR role was related to job satisfaction, I conducted a one-way ANOVA. There was not a significant relationship between OR role and job satisfaction, F (2,224) = .04, $p = .96$. To determine if years of experience in the OR was related to job satisfaction, I conducted another Pearson correlation. There was not a significant relationship between years in the OR and job satisfaction, $r = -.11$, $p = .12$. Finally, to determine if hours spent with

surgeon being rated was related to job satisfaction, I again conducted a Pearson correlation. There was a significant relation between hours spent with surgeon and job satisfaction, $r = .19$, $p = .01$.

Results

Descriptive statistics, including range, mean, standard deviation, and reliability of independent and dependent variables are provided in Table 5.

Table 5

Descriptive Statistics for Independent and Dependent Variables

Variable	Range	*M*	*SD*	Cronbach's alpha
Transformational leadership	.10-3.90	2.37	.96	.96
Transactional leadership	.14-3.57	2.03	.71	.66
Passive/avoidant leadership	.00-3.57	.96	.75	.79
Job satisfaction	16-100	78.50	19.13	.84

I tested and confirmed all four standard assumptions of multiple regression (Weisberg, 2005). The first assumption, that the relationship between the independent and dependent variables must be linear, was tested and confirmed with scatterplots (Figures 2, 3, and 4).

Figure 2. A scatterplot of mean job satisfaction score against mean transformational leadership score.

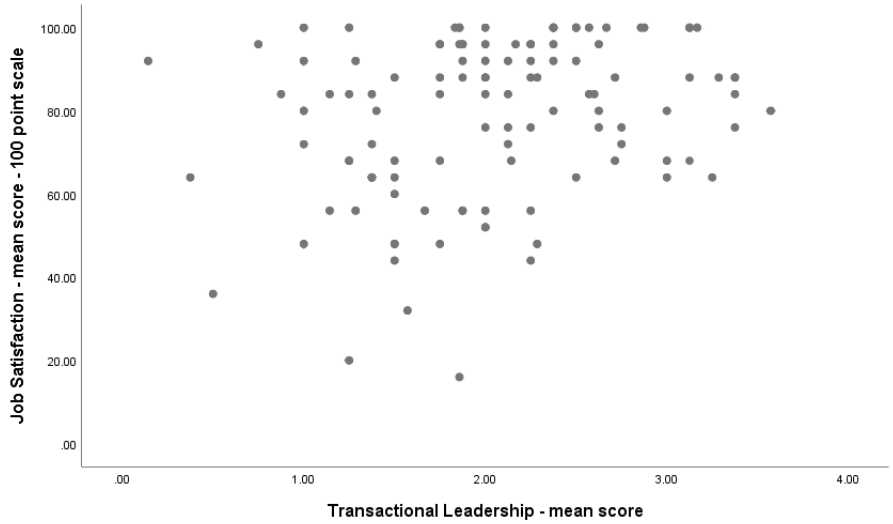

Figure 3. A scatterplot of mean job satisfaction score against mean transactional leadership score.

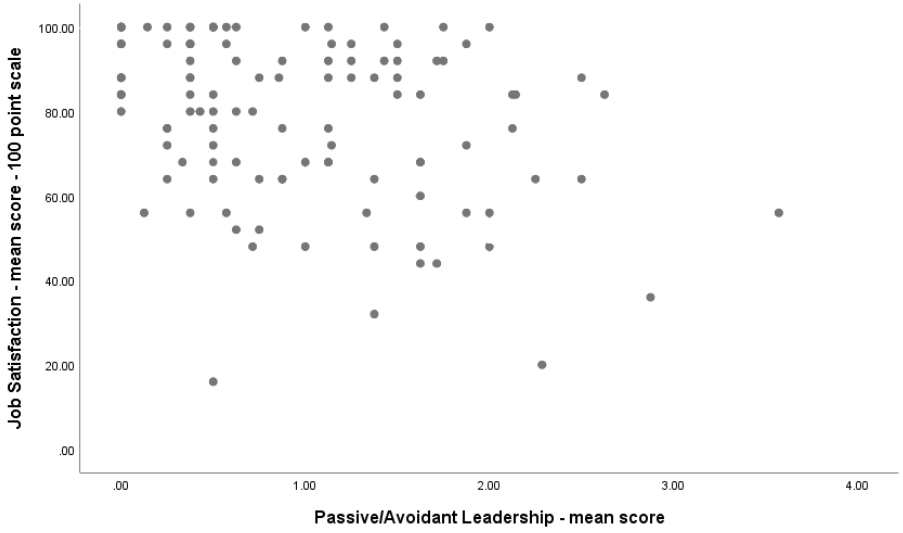

Figure 4. A scatterplot of mean job satisfaction score against mean passive/avoidant score.

The second assumption I tested was that errors between the observed and predicted values should be normal, with no pattern apparent in the differences between the predicted and actual values. This was tested and confirmed to have a normal P with a P-plot of the regression standardized residual (Figure 5).

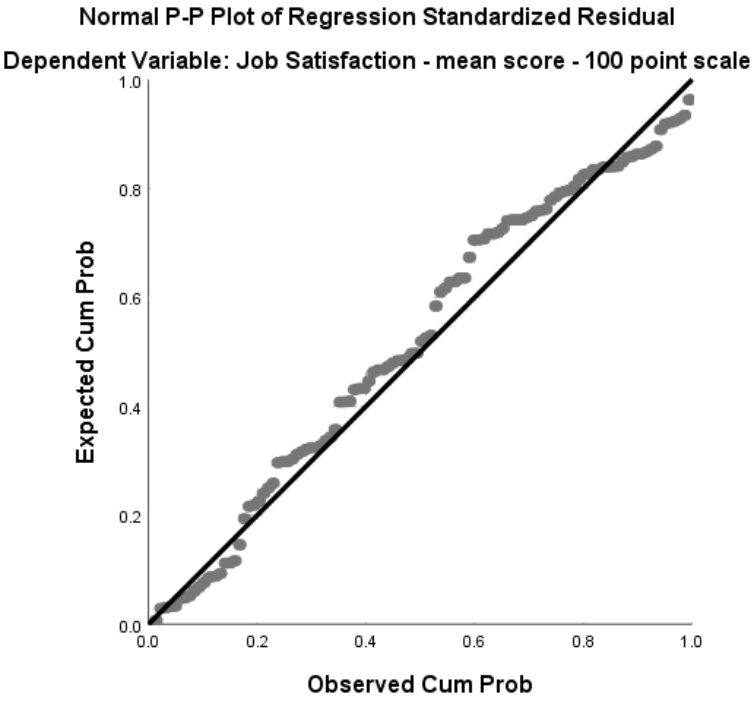

Figure 5. P-plot of expected values against observed values.

To ensure that the predictors were not significantly related to one another, I tested and confirmed multicollinearity with the VIF because all values were under 10 (Table 6). Finally, homoscedasticity was tested and confirmed with a scatterplot of the residuals versus predicted values. There was no visible pattern to the errors (Figure 6).

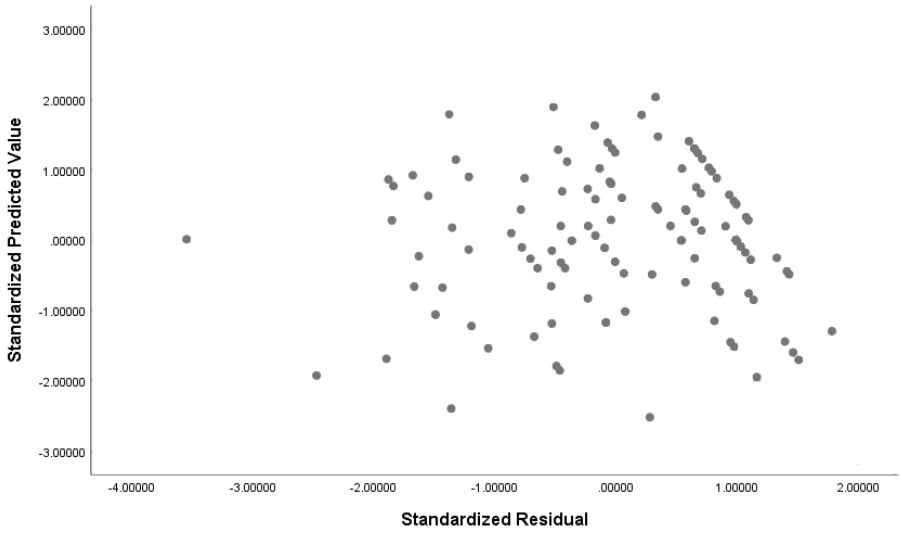

Figure 6. A scatterplot of standardized predicted value against standard residual.

Analysis

To test the research questions, I conducted a multiple linear regression.

Research Question 1: Is the leadership style of the surgeon leader associated with OR team member job satisfaction?

The overall model for the regression was significant, $F(4,222) = 10.81$, $p < .001$, $R^2 = .16$. This indicates that leadership style is associated with job satisfaction.

Research Question 2: Is transformational surgeon leadership style related to OR team member job satisfaction?

There was not a significant relationship between transformational leadership and job satisfaction, $B = .16$, $p = .17$ (see Table 6).

Research Question 3: Is transactional surgeon leadership style related to OR team member job satisfaction?

There was not a significant relationship between transactional leadership and job

satisfaction, $B = .04$, $p = .68$ (Table 6).

Research Question 4: Is passive/avoidant surgeon leadership style related to OR team member job satisfaction?

There was a significant relationship between passive/avoidant leadership and job satisfaction, $B = -.22$, $p = .004$, such that as passive/avoidant leadership scores increase, job satisfaction decreases (Table 6).

Research Question 5: What type of leadership style is most associated with job satisfaction?

Passive/avoidant leadership was the only leadership style significantly associated with job satisfaction when all styles were entered together in the model (Table 7).

Table 6

Multiple Regression Results Predicting Job Satisfaction

Predictor	***B***	***SE*(*B*)**	***Beta***	***t***	***p* value**
Hours spent with surgeon	1.97	.89	.14	2.21	.03
Transformational leadership	3.20	2.33	.16	1.37	.17
Transactional leadership	1.15	2.80	.04	.41	.68
Passive/avoidant leadership	-5.52	1.88	-.22	-2.94	.004

Summary

Based on the findings of the omnibus regression analysis, the alternative hypothesis regarding the association between leadership style of the surgeon leader and OR team member job satisfaction was accepted. This model accounts for 16% of the effect on job satisfaction, a relatively small explanatory result. Subsequent regression analyses of transformational and transactional leadership style and job satisfaction resulted in failure to reject the null hypothesis, suggesting that neither are related to the job satisfaction of OR team members. The only surgeon leadership style that was associated with OR team member job satisfaction was the passive/avoidant style; when this leadership style increases, job satisfaction decreases significantly.

This research contributes to the current knowledge base regarding surgeon leadership style and its impact on OR team members. The study further contributes to research related to general job satisfaction predictors. In Chapter 5, I provide a more interpretive view of the findings with recommendations for further research and application to positive social change.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

In this chapter, I will review the research problem and purpose of the study and provide a brief summary of key findings. An interpretation of the findings will be offered within the context of the relevant peer-reviewed literature related to the research model, focus, and theoretical framework. Limitations to generalizability, validity and/or reliability will be reported. I will also address contributions to social change of this study as well as recommendations for further research.

Study Overview

The purpose of this study was to examine the relationship between perioperative surgical leadership style and the job satisfaction of OR team members. My aim with this study was to provide insights for training and development efforts that may improve the efficiency and most importantly, the safety in the perioperative OR, and facilitate OR team member satisfaction (AbuAlRub & AlGhamdi, 2012; Undre et al., 2007). Job satisfaction is especially important for OR team members because of the relationship between job satisfaction, health, well-being, and overall life satisfaction (Faragher et al., 2005; Spector, 1997; Tait et al., 1989).

I developed five research questions to guide the investigation and address specific gaps in the literature. One gap was the focus of the literature on nurse ratings of surgeons and nurse leaders; I found no data representing the ratings of surgeon leaders by the full complement of the OR team. Similarly, there were a paucity of findings regarding the job satisfaction of the full complement of OR team members. To my knowledge, there are no

findings addressing the convergence of ratings by the full complement of the OR of surgeon perioperative leadership style and its association with OR team member job satisfaction. Once associations were explored between perioperative surgeon leadership style and the job satisfaction of OR team members, I made an effort to discover which surgeon leadership style was the most associated with job satisfaction.

Overview of Findings

The results showed that there is an association between perioperative surgeon leadership style and job satisfaction. The model I used in this study accounted for 16% of the association with job satisfaction, a relatively minor explanatory result. Transformational leadership styles were not related after accounting for the covariates and the remaining leadership styles. My subsequent regression analyses of transformational and transactional leadership style and job satisfaction showed that neither are related to the job satisfaction of OR team members. The only surgeon leadership style that is associated with OR team member job satisfaction is the passive/avoidant style, such that as it increases, job satisfaction significantly decreases.

The findings of this study contribute to the current knowledge base regarding surgeon leadership style and its relationship on OR team members. They also add to the research related to job satisfaction predictors more generally.

Interpretation of the Findings

While the overall association between job satisfaction and leadership style was confirmed in this study, the association between transformational and transactional leadership style and job satisfaction predominant in the literature (Bono & Judge, 2003;

Cummings et al., 2005; Nielsen et al., 2008) was not. This may be due to any number of the elements employed in the study model, such as the rating of surgeons by the full OR team or the focus on the surgeon's style in the perioperative OR (the literature is primarily reflective of nurses and their ratings of nurse leaders, physicians, and surgeons in and out of the OR). It may also be that the association between passive/avoidant leadership style and job satisfaction overshadowed transformational and transactional leadership in the model. This finding would suggest that having a passive/avoidant surgeon leader is more negatively associated with job satisfaction than having a transformational or transactional leader is positively related to job satisfaction. Or, simply stated, poor surgeon leadership is more negative than good surgeon leadership is positive.

The relatively small 16% effect size of this model may reflect the substantive impact of variables that impact job satisfaction not examined in this study, such as type of institution, culture, focus on leadership and climate, working conditions, working schedule, and pay (see Saleem, 2015). Other variables found to be central to the connection between leadership style and job satisfaction, specifically for nurses, include support in resolving conflicts, support for innovative ideas, autonomy in practice, participation in policy decisions, adequate staffing levels, staff development programs, and nature of the work (McCarthy, 2014). Expanding to the full complement of OR team members may have led to the disconfirmation of earlier findings in the nursing literature related to transformational leadership style and nurse satisfaction. Specifically, previous findings reflected an increase in job satisfaction with increased experience of transformational and transactional leadership styles (Acree, 2006; Bormann &

Abrahamson, 2014; Nielsen et al., 2009). Passive/avoidant styles of leadership, however, were negatively associated with the job satisfaction of nurses in the literature, which was confirmed by the findings in this study. These are critical findings because lower scores of nurse job satisfaction are associated with poor patient outcomes and higher patient mortality (Bormann & Abrahamson, 2014; Cummings, et al., 2008).

The results of this study confirm and extend previous findings related to surgeon leadership in the perioperative OR, specifically those of Hu et al. (2016), who was the first to examine perioperative surgeon leadership using the MLQ. Hu et al. found that surgeons with higher passive/avoidant leadership style scores more frequently displayed negative perioperative behaviors. In this study, I found a negative association with passive/avoidant leadership style and job satisfaction, which is not surprising given that such disruptive behaviors are known to create a culture of intimidation and fear, where errors arise from team members' fears of speaking up, of raising potential errors, or asking for clarification when needed (Cochran & Elder, 2015; Sherazi et al., 2014).

During a surgical case, life and death pressures, challenges with faulty or complex equipment, and unfamiliar or less experienced team members may all lead to a more stressful surgical environment. This can especially be the case for the surgeon leader, who may believe he or she feels this pressure most acutely and thus have tacit permission to behave in a disruptive manner, such as yelling or throwing tantrums. Still, the negative impact of disruptive behaviors in the perioperative OR is well documented (Winlaw et al., 2011). Productivity, safety, teamwork, and job satisfaction are all compromised in such a stressful surgical environment (Rosenstein & O'Daniel, 2005). Even in the face of

substantive data connecting stressful surgical environments with increased patient mortality and morbidity, these behaviors are still considered acceptable, expected even, by the surgeons themselves (Bognár et al., 2008; Porto & Lauve, 2006; Rosenstein & O'Daniel, 2005).

To my knowledge, the variable of time spent with surgeon has not been examined in relation to surgeon leadership style in the perioperative OR. This was the only variable that was significant in relation to job satisfaction of OR team members and leadership style, such that as hours spent with the surgeon increased, so did the OR team member's job satisfaction. It may be surmised that time spent with the surgical (or any leader) increases the predictability of the surgeon's behavior, for better or worse, and relieves the strain of wondering how the surgeon leader may or may not react to errors or adverse events. It may also be that OR team members become desensitized to even the most negative behaviors from familiar surgeon leaders over time. Both predictability and possible desensitization may increase, or cease to decrease, job satisfaction in the OR team members.

Limitations

The limitations of this study included that participants must have already joined a Facebook or LinkedIn professional group related to surgical process or have been the recipient of a link from members of the same group. The length of the instrument may have also been a limitation, if participants were aiming to complete the survey during work hours or on breaks. Because there was no log-in, respondents were not able to complete the survey in more than one sitting.

The fact that this study used a convenience sample prevents generalization of findings to the population at large. Moreover, there were substantially more women than men in the sample. Although this is typical of perioperative OR team demographic representation, it may limit the ability to test for gender differences in job satisfaction.

In addition to the 227 participant surveys that were used in this study, 118 surveys were submitted, but excluded because they contained more than 25% skipped, missing or "unsure" responses. This is a large portion of the data set to exclude, and warrants correction in future research models. Given the patterns in the data, I suspect that including unsure responses as missing data inflated the number of excluded participants substantially. I reviewed these patterns to ensure that the missing data points were not aggregated at the end of the survey where the SAQ-OR job satisfaction items were concentrated. They were not. Only three respondents did not complete some portion of the final five questions related to job satisfaction, and those data points were excluded for an excess of 25% missing data.

Individuals may have responded to the study because they had a particular interest, a strong opinion, or a substantively positive or negative experience related to surgeon leadership and/or job satisfaction in the perioperative OR. Also, the instrument relied on the recall of the participant, which may have led to bias in responses. It was noted that, on a number of the sites where the research link was posted, participants responded with comments that suggested they did not trust the invitation to participate and were suspicious of any good faith in improving surgeon leader behavior because they

felt it could not be a genuine interest of the surgeon leaders to change how they conduct themselves in the OR.

Finally, the model used for this research does not allow for directionality of the association between the independent and dependent variables. That is, it was unclear whether passive/avoidant surgeon leadership style impacts job satisfaction or that job satisfaction impacts leadership style. An experimental model would need to be undertaken to determine causality.

Recommendations

Given the differences in these data that may reflect participation of the full complement of the OR team versus previous research focused on nursing roles, I recommend that recruitment methods in subsequent research should be expanded to include a wider view from the expanse of perioperative OR team roles. Technicians, in specific, appear to be less represented in the literature but may have been more robustly measured here given that many of the LinkedIn and Facebook groups are frequented by, or cater to, surgical technicians. Even where included, there was a paucity of commentary or discussion related to their specific trends or outcomes. Exploring what job satisfaction mean to a surgical technician, what specific needs they have for development may be quite useful in addressing their job satisfaction. Overall job satisfaction ratings for this sample were higher than those found by Sexton et al (2006). This may reflect differences in a sample primarily comprised of surgical technicians, or it may be a sampling issue resulting from the use of LinkedIn professional group and Facebook group members. A more robust sampling model may provide insight into this disparity.

Improving the survey model to disperse job satisfaction items throughout the survey will protect against undue missing data being grouped toward the end of the survey. Recasting the categorization of unsure responses to not represent missing data may improve the response rate and provide a more robust data model.

Further research into the finding that the more hours spent with a surgeon, the higher the rating of job satisfaction may shed light on whether it is a matter of familiarity, predictability, and/or desensitization. Similarly, additional exploration into the other factors that are associated with job satisfaction for the full OR team may provide valuable insight for assessment and training purposes.

A deeper look into the scales associated with transformational, transactional, and passive/avoidant leadership styles (i.e., idealized attributes, idealized behaviors, inspirational motivation, intellectual stimulation, individual consideration, contingent reward, active management-by-exception, passive management-by-exception, and laissez-faire) may offer more explanatory data regarding the link between perioperative surgeon leadership style and job satisfaction of OR team members. It may also offer a more robust accounting of the relationships between these variables and insights that influence the strength of this research model. Moreover, the scales may provide a framework for development and training efforts, such that behaviors from the most positive attributes from each scale are demonstrated, practiced, and assessed as surgical residents proceed in their education.

Finally, the model used for this research did not allow for directionality of the association between the independent and dependent variables. An experimental model

would need to be undertaken to determine whether job satisfaction impacted surgeon leadership style or surgeon leadership style impacted job satisfaction.

Implications for Social Change

Fundamental to the transformational leadership theory is the inherent ability for leaders to choose to adopt a style based on developing beliefs, enhanced or reconfirmed values, their behavioral choices and preference, and the cultural context (or climate) of their organization (Bolman & Deal, 2017; Rosenbach, 2018). Transformational leadership theory offers surgeon leaders the possibility of leading team members as they wish to be led, based on every day choices they make about their interactions with team members (Bass & Avolio, 1997). In reality, behavior change may prove more complex for surgeon leaders. Noteworthy efforts to address the improvement of physician and surgeon leadership and team behaviors have gained strength and momentum in the past decade, with organizations like ACGME and the American College of Surgeons (ACS) leading the way toward establishing behavior standards for physicians and creating intensive training and development models and platforms. Both ACGME and ACS offer accreditation for physicians, surgeons and institutions committed to adhering to a set of educational standards critical to the delivery of safe, high-quality medical treatment to patients.

A consideration for the development of OR team member resilience in the face of challenging surgeon leadership may provide a stopgap, or secondary measure as standards for surgeon leadership rise. McAllister and McKinnon (2009) and Howe, Smajdor, and Stöckl (2012) established the importance of development of resilience in

medical personnel. They underscore the strain of working in intense and stressful circumstances, with time pressures, often making life or death decisions with limited information, and the presence predictable conflict with colleagues working in the same difficult circumstances. Certainly, this need for resilience applies to the stresses inherent in the perioperative OR, and the inclusion of resilience development in training for OR teams may alleviate some of the impact of passive/avoidant surgeon leadership on OR team members. Still, placing the onus for improvement with the surgeon leaders, keeps the focus for improvement where it truly, and primarily belongs.

Finally, soliciting all voices on the OR team is the role of the transformational surgeon leader. This work has raised to the surface the voice of surgical technicians, who have been excluded from much of the literature, but who play a key role in the surgical process.

Conclusion

Surgeon leaders can change and change in ways that may improve the job satisfaction of their surgical teams. Surgeon leaders can choose to adopt behaviors and a leadership style that encourages individuals to speak up, to adhere to the highest level of safety practice, and to be leaders who encourage the growth of skills and aspirations in their followers and who team members want to follow. Most critically, surgeon leaders can choose to change in ways that promote the safety, efficiency, and well-being of their patients. They can adopt behaviors that signify the most positive attributes of a full range leadership style and of the scales that comprise it: idealized attributes, idealized

behaviors, inspirational motivation, intellectual stimulation, individual consideration, contingent reward, active management-by-exception, passive management-by-exception, and laissez-faire. The results of this study and other related research may encourage surgeon leaders to explore the possibilities inherent in choosing a leadership style that can mean the difference between a speedy or lengthy recovery or between life or death for their patients. May they choose well.

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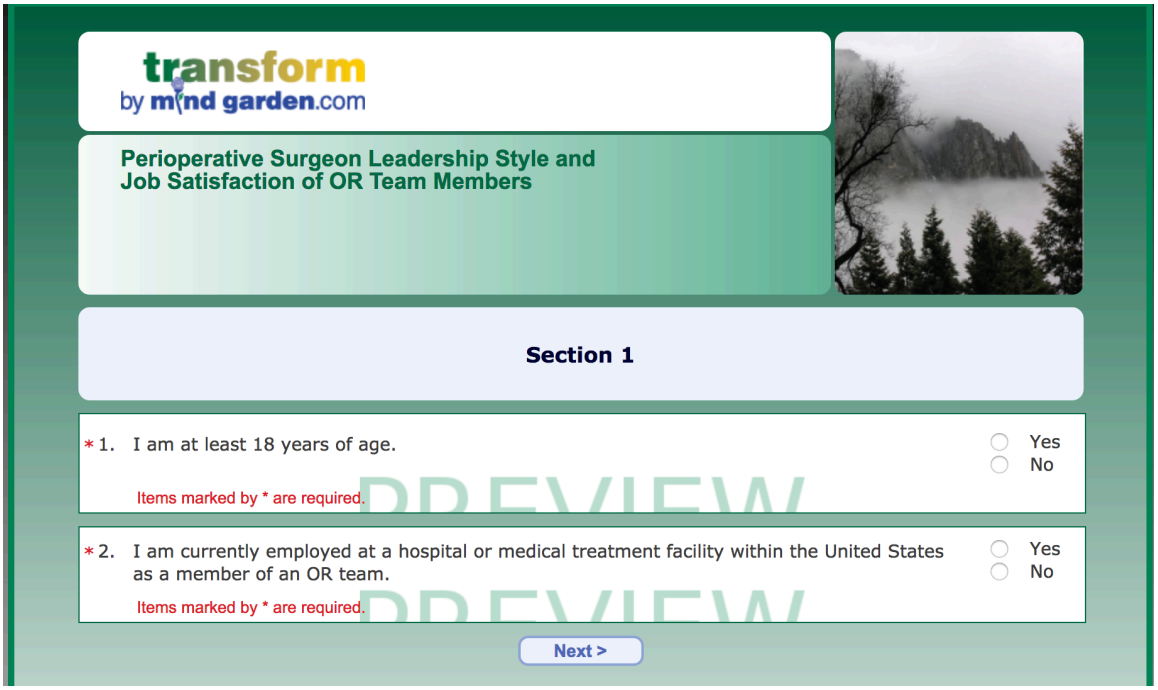
Appendix A: Custom Survey Instrument Screen Shots



Background Information:
The purpose of this study is to explore issues surrounding the relationship between perioperative surgeon leadership style and the health, well-being and job satisfaction of OR team members.

Procedures:
If you agree to be in this study, you will be asked to:

- Provide informed consent by clicking on the associated link.
- Complete an anonymous survey about a surgeon leader with whom you frequently work.

The survey will take approximately 10-15 minutes.

At no time will you be asked for identifying information such as your name or email address. No log in will be required.

Here are some sample questions from the survey:

1. <Surgeon> seeks differing perspectives when solving problems
2. <Surgeon> instills pride in others for being associated with her/him
3. <My hospital/medical facility> is a good place to work
4. <Surgeon> talks enthusiastically about what needs to be accomplished
5. The levels of staffing in our ORs are sufficient to handle the number of patients

Voluntary Nature of the Study:
This study is voluntary. You are free to accept or turn down the invitation. If you decide to be in the study now, you can still change your mind later. You may stop at any time. If you would like to see

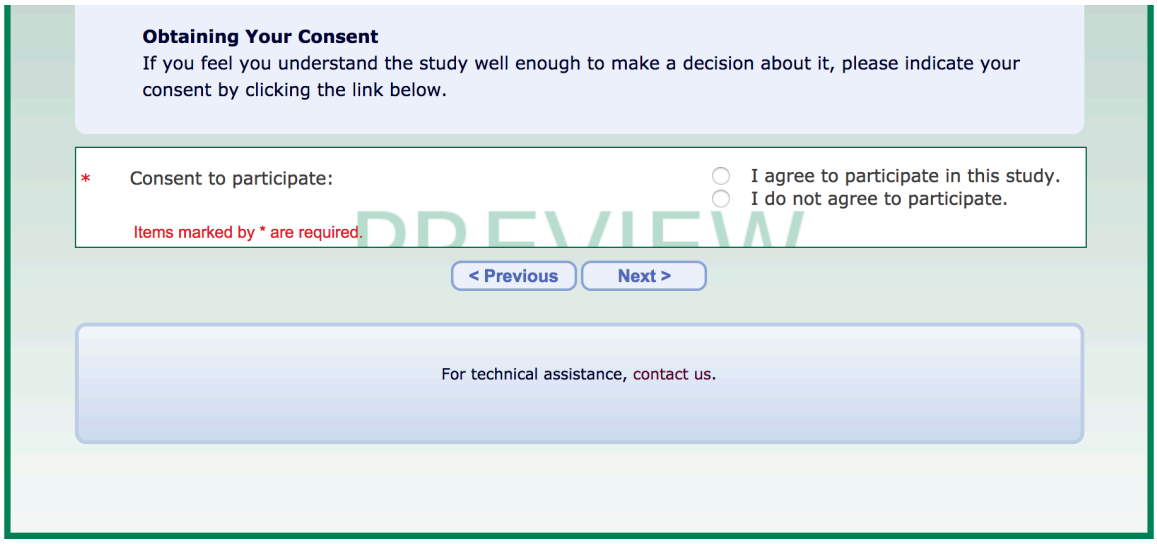
Risks and Benefits of Participating in this Study:
Participating in this type of study involves some risk of experiencing the minor discomforts that can be encountered in daily life, such as upset over a difficult working environment. Participating in this study does not pose risk to your safety or well-being.

This study has the potential to improve surgeon leadership which can mitigate adverse events in the perioperative OR. As surgeons work to improve their leadership style in ways that increase OR team member job satisfaction, they also improve OR team members' health, well-being and overall life satisfaction.

No payment will be provided for survey participation.

Privacy:
Participation in this survey is completely anonymous. Even this researcher will not know who you are. NO identifying information (your name, email address, etc.) will be collected, thus reports coming out of this study will not share the identities of individual participants. Data will be securely transmitted using SSL, then encrypted. It will be accessible to this student researcher through a password protected platform. Data will be kept for a period of at least five years, as required by Walden University.

Contacts and Questions:
If you have questions, you may contact the researcher via email at corey.jamison@waldenu.edu or the researcher's Walden University dissertation committee chair at denise.horton@waldenu.edu. If you want to talk privately about your rights as a participant, you can call the Research Participant Advocate at my university at 612-312-1210. Walden University's approval number for this study is **IRB will enter approval number here** and it expires on **IRB will enter expiration date.**



Obtaining Your Consent
If you feel you understand the study well enough to make a decision about it, please indicate your consent by clicking the link below.

* Consent to participate:
- I agree to participate in this study.
- I do not agree to participate.

Items marked by * are required.

PREVIEW

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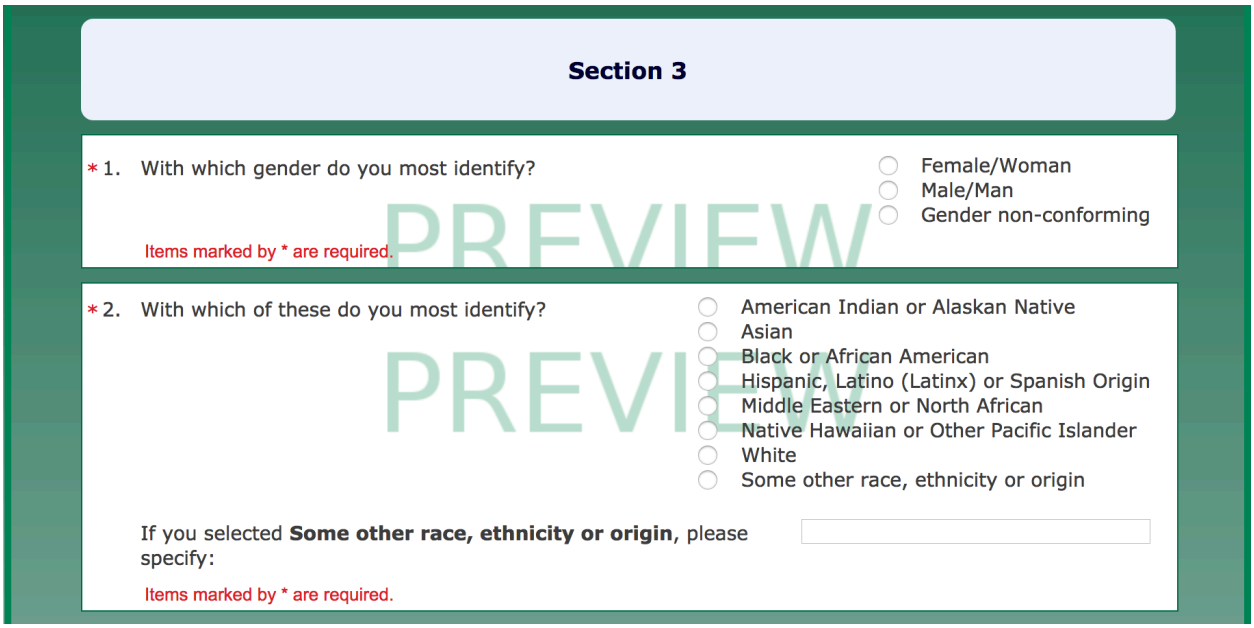
For technical assistance, contact us.



Section 3

* 1. With which gender do you most identify?
- Female/Woman
- Male/Man
- Gender non-conforming

Items marked by * are required.

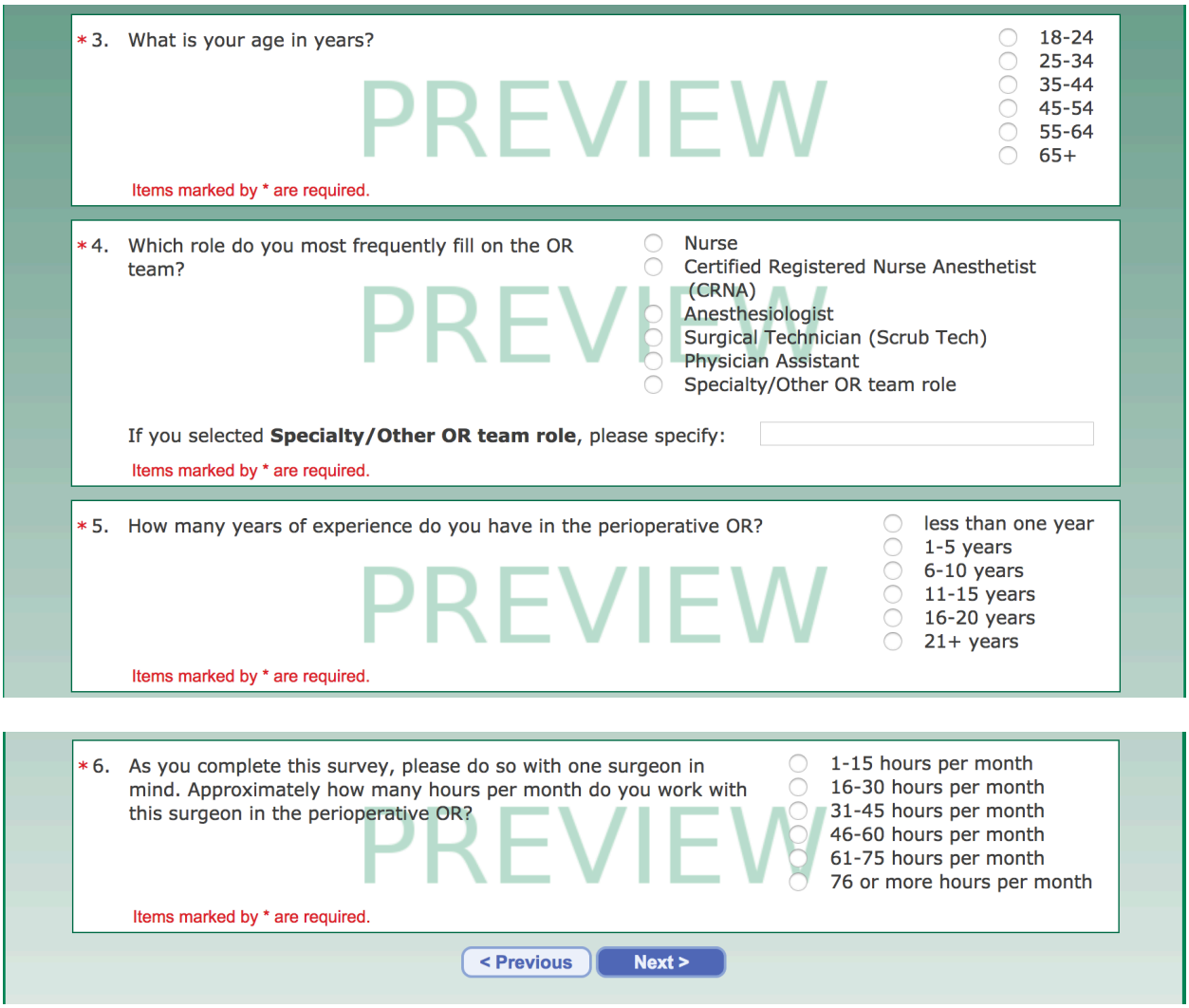
PREVIEW

* 2. With which of these do you most identify?
- American Indian or Alaskan Native
- Asian
- Black or African American
- Hispanic, Latino (Latinx) or Spanish Origin
- Middle Eastern or North African
- Native Hawaiian or Other Pacific Islander
- White
- Some other race, ethnicity or origin

PREVIEW

If you selected **Some other race, ethnicity or origin**, please specify:

Items marked by * are required.



* 3. What is your age in years?

- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65+

Items marked by * are required.

* 4. Which role do you most frequently fill on the OR team?

- Nurse
- Certified Registered Nurse Anesthetist (CRNA)
- Anesthesiologist
- Surgical Technician (Scrub Tech)
- Physician Assistant
- Specialty/Other OR team role

If you selected **Specialty/Other OR team role**, please specify:

Items marked by * are required.

* 5. How many years of experience do you have in the perioperative OR?

- less than one year
- 1-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- 21+ years

Items marked by * are required.

* 6. As you complete this survey, please do so with one surgeon in mind. Approximately how many hours per month do you work with this surgeon in the perioperative OR?

- 1-15 hours per month
- 16-30 hours per month
- 31-45 hours per month
- 46-60 hours per month
- 61-75 hours per month
- 76 or more hours per month

Items marked by * are required.

< Previous Next >

Section 4

This survey will help you describe the perioperative leadership style of a surgeon with whom you most frequently work, and your level of job satisfaction in your current place of employment. Starting with the first question, judge how frequently each statement fits that surgeon, or your experience of them *in the perioperative OR only*. Please do not take into account their interactions outside of the OR. If an item is irrelevant, or if you are unsure, do not know the answer, or do not wish to respond to the question, use the **Unsure** button. Use the rating scale below:

Unsure - Not at all - Once in awhile - Sometimes - Fairly often - Frequently, if not always

The Surgeon ...

	Unsure	Not at all	Once in awhile	Sometimes	Fairly often	Frequently, if not always
* 1. Provides me with assistance in exchange for my efforts	○	○	○	○	○	○
* 2. Re-examines critical assumptions to question whether they are appropriate	○	○	○	○	○	○
* 3. Fails to interfere until problems become serious	○	○	○	○	○	○
* 4. Focuses attention on irregularities, mistakes, exceptions, and deviations from standards	○	○	○	○	○	○
* 5. Avoids getting involved when important issues arise	○	○	○	○	○	○
* 6. Talks about their most important values and beliefs	○	○	○	○	○	○
* 7. Is absent when needed	○	○	○	○	○	○
* 8. Seeks differing perspectives when solving problems	○	○	○	○	○	○
* 9. Talks optimistically about the future	○	○	○	○	○	○
* 10. Instills pride in me for being associated with him/her	○	○	○	○	○	○

Items marked by * are required.

< Previous Next >

Section 4 (cont.)

Unsure - Not at all - Once in awhile - Sometimes - Fairly often - Frequently, if not always

The Surgeon ...

	Unsure	Not at all	Once in awhile	Sometimes	Fairly often	Frequently, if not always
* 11. Discusses in specific terms who is responsible for achieving performance targets	○	○	○	○	○	○
* 12. Waits for things to go wrong before taking action	○	○	○	○	○	○
* 13. Talks enthusiastically about what needs to be accomplished	○	○	○	○	○	○
* 14. Specifies the importance of having a strong sense of purpose	○	○	○	○	○	○
* 15. Spends time teaching and coaching	○	○	○	○	○	○
* 16. Makes clear what one can expect to receive when performance goals are achieved	○	○	○	○	○	○
* 17. Shows that he/she is a firm believer in "If it ain't broke, don't fix it"	○	○	○	○	○	○

* 17. Shows that he/she is a firm believer in "If it ain't broke, don't fix it"	○	○	○	○	○	○

* 18. Goes beyond self-interest for the good of the group	○	○	○	○	○	○
* 19. Treats me as an individual rather than just as a member of a group	○	○	○	○	○	○
* 20. Demonstrates that problems must become chronic before taking action	○	○	○	○	○	○

Items marked by * are required.

< Previous | Next >

For technical assistance, contact us.

Section 4 (cont.)

Unsure - Not at all - Once in awhile - Sometimes - Fairly often - Frequently, if not always

The Surgeon ...

	Unsure	Not at all	Once in awhile	Sometimes	Fairly often	Frequently, if not always
* 21. Acts in ways that builds my respect	○	○	○	○	○	○
* 22. Concentrates his/her full attention on dealing with mistakes, complaints, and failures	○	○	○	○	○	○
* 23. Considers the moral and ethical consequences of decisions	○	○	○	○	○	○
* 24. Keeps track of all mistakes	○	○	○	○	○	○
* 25. Displays a sense of power and confidence	○	○	○	○	○	○
* 26. Articulates a compelling vision of the future	○	○	○	○	○	○
* 27. Directs my attention toward failures to meet standards	○	○	○	○	○	○
* 28. Avoids making decisions	○	○	○	○	○	○
* 29. Considers me as having different needs, abilities, and aspirations from others	○	○	○	○	○	○
* 30. Gets me to look at problems from many different angles	○	○	○	○	○	○

Items marked by * are required.

< Previous | Next >

The Surgeon ...

	Unsure	Not at all	Once in awhile	Sometimes	Fairly often	Frequently, if not always
* 31. Helps me to develop my strengths	○	○	○	○	○	○
* 32. Suggests new ways of looking at how to complete assignments	○	○	○	○	○	○
* 33. Delays responding to urgent questions	○	○	○	○	○	○
* 34. Emphasizes the importance of having a collective sense of mission	○	○	○	○	○	○
* 35. Expresses satisfaction when I meet expectations	○	○	○	○	○	○
* 36. Expresses confidence that goals will be achieved	○	○	○	○	○	○
* 37. Is effective in meeting my job-related needs	○	○	○	○	○	○
* 38. Uses methods of leadership that are satisfying	○	○	○	○	○	○
* 39. Gets me to do more than I expected to do	○	○	○	○	○	○
* 40. Is effective in representing me to higher authority	○	○	○	○	○	○

Items marked by * are required.

Section 4 (cont.)

Unsure - Not at all - Once in awhile - Sometimes - Fairly often - Frequently, if not always

The Surgeon ...

	Unsure	Not at all	Once in awhile	Sometimes	Fairly often	Frequently, if not always
* 41. Works with me in a satisfactory way	○	○	○	○	○	○
* 42. Heightens my desire to succeed	○	○	○	○	○	○
* 43. Is effective in meeting organizational requirements	○	○	○	○	○	○
* 44. Increases my willingness to try harder	○	○	○	○	○	○
* 45. Leads a group that is effective	○	○	○	○	○	○

Items marked by * are required.

Section 5

Your job satisfaction

	Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable
* 1. I like my job.	○	○	○	○	○	○
* 2. Working in this hospital is like being part of a large family.	○	○	○	○	○	○
* 3. This hospital is a good place to work.	○	○	○	○	○	○
* 4. I am proud to work at this hospital.	○	○	○	○	○	○
* 5. Morale is high in the ORs here.	○	○	○	○	○	○

Items marked by * are required.

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Perioperative Surgeon Leadership Style and Job Satisfaction of OR Team Members

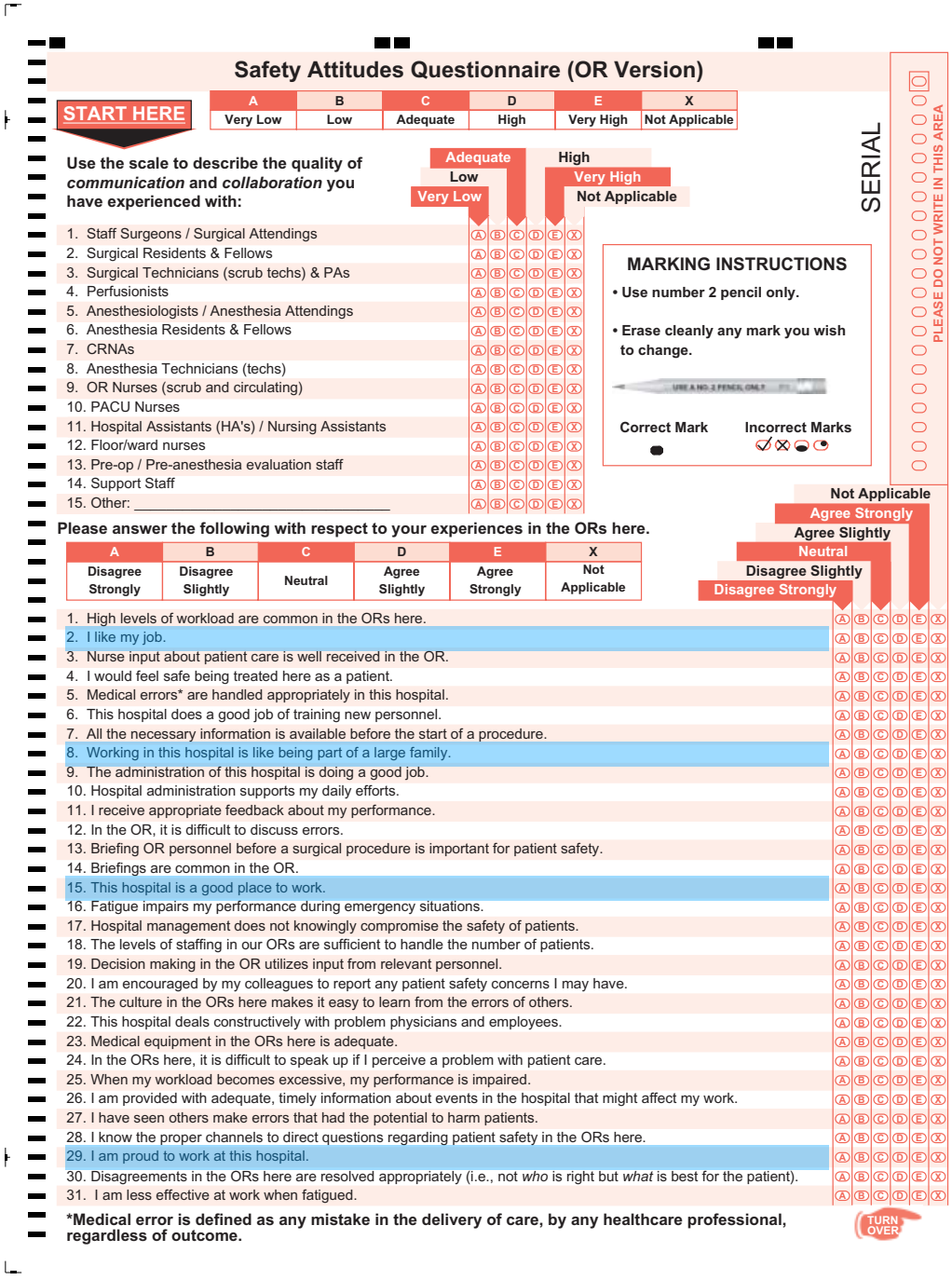
To submit your responses and exit the study,

please click the **Submit** button located below.

< Previous | Submit

For technical assistance, contact us.

Appendix B: Safety Attitudes Questionnaire- OR Version



Safety Attitudes Questionnaire (OR Version)

START HERE

A	B	C	D	E	X
Very Low	Low	Adequate	High	Very High	Not Applicable

SERIAL

PLEASE DO NOT WRITE IN THIS AREA

Use the scale to describe the quality of *communication* and *collaboration* you have experienced with:

Very Low / Low / Adequate / High / Very High / Not Applicable

1. Staff Surgeons / Surgical Attendings
2. Surgical Residents & Fellows
3. Surgical Technicians (scrub techs) & PAs
4. Perfusionists
5. Anesthesiologists / Anesthesia Attendings
6. Anesthesia Residents & Fellows
7. CRNAs
8. Anesthesia Technicians (techs)
9. OR Nurses (scrub and circulating)
10. PACU Nurses
11. Hospital Assistants (HA's) / Nursing Assistants
12. Floor/ward nurses
13. Pre-op / Pre-anesthesia evaluation staff
14. Support Staff
15. Other: _____

MARKING INSTRUCTIONS

- Use number 2 pencil only.
- Erase cleanly any mark you wish to change.

Correct Mark | Incorrect Marks

Please answer the following with respect to your experiences in the ORs here.

A	B	C	D	E	X
Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable

Not Applicable / Agree Strongly / Agree Slightly / Neutral / Disagree Slightly / Disagree Strongly

1. High levels of workload are common in the ORs here.
2. I like my job.
3. Nurse input about patient care is well received in the OR.
4. I would feel safe being treated here as a patient.
5. Medical errors* are handled appropriately in this hospital.
6. This hospital does a good job of training new personnel.
7. All the necessary information is available before the start of a procedure.
8. Working in this hospital is like being part of a large family.
9. The administration of this hospital is doing a good job.
10. Hospital administration supports my daily efforts.
11. I receive appropriate feedback about my performance.
12. In the OR, it is difficult to discuss errors.
13. Briefing OR personnel before a surgical procedure is important for patient safety.
14. Briefings are common in the OR.
15. This hospital is a good place to work.
16. Fatigue impairs my performance during emergency situations.
17. Hospital management does not knowingly compromise the safety of patients.
18. The levels of staffing in our ORs are sufficient to handle the number of patients.
19. Decision making in the OR utilizes input from relevant personnel.
20. I am encouraged by my colleagues to report any patient safety concerns I may have.
21. The culture in the ORs here makes it easy to learn from the errors of others.
22. This hospital deals constructively with problem physicians and employees.
23. Medical equipment in the ORs here is adequate.
24. In the ORs here, it is difficult to speak up if I perceive a problem with patient care.
25. When my workload becomes excessive, my performance is impaired.
26. I am provided with adequate, timely information about events in the hospital that might affect my work.
27. I have seen others make errors that had the potential to harm patients.
28. I know the proper channels to direct questions regarding patient safety in the ORs here.
29. I am proud to work at this hospital.
30. Disagreements in the ORs here are resolved appropriately (i.e., not *who* is right but *what* is best for the patient).
31. I am less effective at work when fatigued.

***Medical error is defined as any mistake in the delivery of care, by any healthcare professional, regardless of outcome.**

TURN OVER

Please answer by marking the response of your choice to the right of each item, using the letter from the scale below.

A	B	C	D	E	X
Disagree Strongly	Disagree Slightly	Neutral	Agree Slightly	Agree Strongly	Not Applicable

Not Applicable
Agree Strongly
Agree Slightly
Neutral
Disagree Slightly
Disagree Strongly

32. I am more likely to make errors in tense or hostile situations.
33. Stress from personal problems adversely affects my performance.
34. I have the support I need from other personnel to care for patients.
35. It is easy for personnel in the ORs here to ask questions when there is something that they do not understand.
36. Disruptions in the continuity of care (e.g., shift changes, patient transfers) can be detrimental to patient safety.
37. During emergencies, I can predict what other personnel are going to do next.
38. The physicians and nurses here work together as a well-coordinated team.
39. I am frequently unable to express disagreement with staff / attending physicians.
40. Truly professional personnel can leave personal problems behind when working.
41. Morale is high in the ORs here.
42. Trainees in my discipline are adequately supervised.
43. I know the first and last names of all the personnel I worked with during my last shift.
44. I have made errors that had the potential to harm patients.
45. Staff / Attending physicians in the ORs here are doing a good job.
46. All the personnel in the ORs here take responsibility for patient safety.
47. I feel fatigued when I get up in the morning and have to face another day on the job.
48. Patient safety is constantly reinforced as the priority in the ORs here.
49. I feel burned out from my work.
50. Important issues are well communicated at shift changes.
51. There is widespread adherence to clinical guidelines and evidence-based criteria regarding patient safety here.
52. I feel frustrated by my job.
53. I feel I am working too hard on my job.
54. Information obtained through incident reports is used to make patient care safer in the ORs here.
55. During emergency situations (e.g., emergency resuscitations), my performance is not affected by working with inexperienced or less capable personnel.
56. Personnel frequently disregard rules or guidelines (e.g., handwashing, treatment protocols/clinical pathways, sterile field, etc.) that are established for the OR.
57. The staff surgeon / attending surgeon should be formally in charge of the OR staff during the surgical procedure.
58. Communication breakdowns which lead to delays in starting surgical procedures are common.
59. Have you ever completed this survey before? ◯ Yes ◯ No ◯ Don't Know

BACKGROUND INFORMATION

Position: (mark your position)

- ◯ Staff Surgeon / Surgical Attending
- ◯ Surgical Resident or Fellow
- ◯ Surgical Technician (scrub tech) or PA
- ◯ Perfusionist
- ◯ Anesthesiologist / Anesthesia Attending
- ◯ Anesthesia Resident or Fellow
- ◯ CRNA
- ◯ Anesthesia Technicians (techs)
- ◯ OR Nurses (scrub and circulating)
- ◯ PACU Nurses
- ◯ Hospital Assistant/Nursing Assistant
- ◯ Floor/ward nurses
- ◯ Pre-op/Pre-anesthesia evaluation staff
- ◯ Support Staff
- ◯ Other:_____

How many years of experience do you have in this specialty? YEARS

How many years have you worked at this hospital? YEARS

CURRENT AGE YEARS

Usual Shift

- ◯ Days
- ◯ Evenings
- ◯ Nights
- ◯ Variable Shifts

Job Status

- ◯ Full-time
- ◯ Part-time
- ◯ Agency
- ◯ Contract

Ethnic Group:

- ◯ Hispanic
- ◯ Black (not Hispanic)
- ◯ White (not Hispanic)
- ◯ Asian/Pacific Islander
- ◯ Multi-ethnic
- ◯ Other:_____

Gender:

- ◯ Male
- ◯ Female

Optional collected as part of a cross-cultural study

Citizenship (e.g., Canadian, Filipino, USA, etc.): _____

Country of birth (if different): _____

COMMENTS: What are your top three recommendations for improving patient safety in the OR?

1 _____

2 _____

3 _____

If more room for comments is needed, please provide your response on a separate sheet of paper.

Thank you for completing the questionnaire - Your time and participation are greatly appreciated

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Appendix C: Select Items from the MLQ Sample Rater Form

Multifactor Leadership Questionnaire
Rater Form

Name of Leader: _____ Date: _____

Organization ID #: _____Leader ID #: _____

This questionnaire is used to describe the leadership style of the above-mentioned individual as you perceive it. Answer all items on this answer sheet. **If an item is irrelevant, or if you are unsure or do not know the answer, leave the answer blank.** Please answer this questionnaire anonymously.

Important (necessary for processing): Which best describes you?

___ I am at a higher organizational level than the person I am rating.
___ The person I am rating is at my organizational level.
___ I am at a lower organizational level than the person I am rating.
___ Other than the above.

Forty-five descriptive statements are listed on the following pages. Judge how frequently each statement fits the person you are describing. Use the following rating scale:

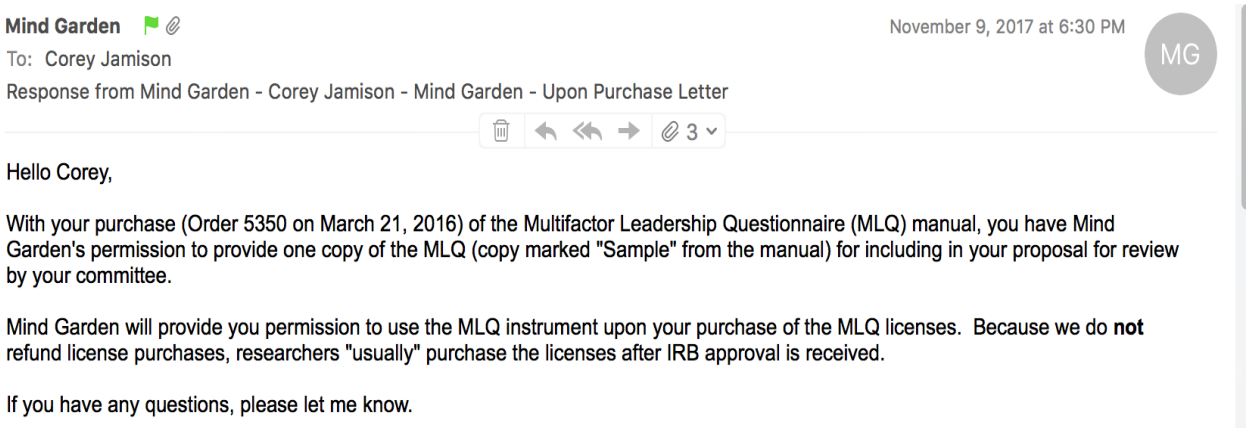
Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always
0	1	2	3	4

The Person I Am Rating. . .

1.	Provides me with assistance in exchange for my efforts	0	1	2	3	4
2.	*Re-examines critical assumptions to question whether they are appropriate	0	1	2	3	4
3.	Fails to interfere until problems become serious	0	1	2	3	4
4.	Focuses attention on irregularities, mistakes, exceptions, and deviations from standards	0	1	2	3	4
5.	Avoids getting involved when important issues arise	0	1	2	3	4
6.	*Talks about his/her most important values and beliefs	0	1	2	3	4
7.	Is absent when needed	0	1	2	3	4
8.	*Seeks differing perspectives when solving problems	0	1	2	3	4
9.	*Talks optimistically about the future	0	1	2	3	4
10.	*Instills pride in me for being associated with him/her	0	1	2	3	4
11.	Discusses in specific terms who is responsible for achieving performance targets	0	1	2	3	4
12.	Waits for things to go wrong before taking action	0	1	2	3	4
13.	*Talks enthusiastically about what needs to be accomplished	0	1	2	3	4
14.	*Specifies the importance of having a strong sense of purpose	0	1	2	3	4
15.	*Spends time teaching and coaching	0	1	2	3	4

Continued ➔

Appendix D: Documentation of Permissions



Mind Garden

November 9, 2017 at 6:30 PM

To: Corey Jamison

Response from Mind Garden - Corey Jamison - Mind Garden - Upon Purchase Letter

Hello Corey,

With your purchase (Order 5350 on March 21, 2016) of the Multifactor Leadership Questionnaire (MLQ) manual, you have Mind Garden's permission to provide one copy of the MLQ (copy marked "Sample" from the manual) for including in your proposal for review by your committee.

Mind Garden will provide you permission to use the MLQ instrument upon your purchase of the MLQ licenses. Because we do **not** refund license purchases, researchers "usually" purchase the licenses after IRB approval is received.

If you have any questions, please let me know.

mind garden

www.mindgarden.com

To whom it may concern,

This letter is to grant permission for the above named person to use the following copyright material for his/her research:

Instrument: ***Multifactor Leadership Questionnaire***

Authors: ***Bruce Avolio and Bernard Bass***

Copyright: ***1995 by Bruce Avolio and Bernard Bass***

Five sample items from this instrument may be reproduced for inclusion in a proposal, thesis, or dissertation.

The entire instrument may not be included or reproduced at any time in any published material.

Sincerely,

Robert Most
Mind Garden, Inc.
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UTHealth™
The University of Texas
Health Science Center at Houston

Medical School
University of Texas at Houston-Memorial Hermann
Center for Healthcare Quality and Safety

May 30, 2017

Dear Corey Jamison,

You have our permission to use any of the following Safety Attitudes Questionnaires and the corresponding scoring keys:

Safety Attitudes Questionnaire – Short Form
Safety Attitudes Questionnaire – Teamwork and Safety Climate
Safety Attitudes Questionnaire – Ambulatory Version
Safety Attitudes Questionnaire – ICU Version
Safety Attitudes Questionnaire – Labor and Delivery Version
Safety Attitudes Questionnaire – Operating Room Version
Safety Attitudes Questionnaire – Pharmacy Version
Safety Climate Survey

Please note, we do not have editable versions for any of the SAQ surveys but feel free to modify the surveys to meet your research endeavors.

Respectfully,

University of Texas at Houston-Memorial Hermann
Center for Healthcare Quality and Safety Team

6410 Fannin Street
UTPB Suite 1100
Houston, TX 77030
https://med.uth.edu/chqs/

BMC Health Services Research

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Research article

Open Access

The Safety Attitudes Questionnaire: psychometric properties, benchmarking data, and emerging research

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Jackie Massaro
To: Corey Jamison Cc: Jackie Massaro
Re: Permission support please

January 26, 2018 at 12:53 PM

JM

New contact info found in this email: Jackie Massaro jackie.massaro@ajj.com

add...

Hi Corey,

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Kind Regards,

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