Team Communication in the Operating Room: A Measure of Latent Factors From a National Sample of Nurse Anesthetists

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Medical errors more often result from miscommunication among providers than lack of medical knowledge. The consequences of miscommunication are well documented, but there is less information about factors contributing to communication errors among providers. In this study, surveys were administered to a national sample of 3,000 nurse anesthetists to measure variables associated with communication attitudes and behaviors. The specific variables measured in the survey were latent cultural factors that contribute to communication behaviors. Previous research found these latent variables contribute to miscommunication among operating room physicians, resulting in patient-related errors that could be avoided. The survey used for this study was based on an intercultural communication theory. Survey items were modified to reflect operating room culture, specifically nurse anesthetist communication. Exploratory factor analyses were used to analyze the survey data.

The analyses found distinct patterns of latent cultural communication variables in the sample of 474 completed responses. The communication profiles that resulted from this study can be compared with previously collected physician data to help explain how miscommunication occurs among interprofessional groups of operating room providers, resulting in medical error. Knowledge of these latent variables can be translated to more effective communication training protocols in the future.

Keywords: Communication, collaboration, latent variables, teamwork.

Attention to patient safety in the operating room (OR) is of utmost concern in current medical practice. In large part, attention is focused on interprofessional medical communication because research has demonstrated that miscommunication among providers is responsible for a greater proportion of adverse events than is provider incompetency. Continued research in this area prompted the Joint Commission to issue a Sentinel Event Alert in 2008 that was later followed by guidelines for effective communication and cultural competence in hospitals. Even with these guidelines in place, the Joint Commission again reported in 2011 that communication errors were causing large numbers of operative and postoperative complications. The 2011 Joint Commission report indicated that faulty communication was contributory in 56% of operative or postoperative complications, 63% of retained foreign bodies, and 68% of wrong-site or wrong-procedure cases. These large percentages of errors in surgical cases are considered preventable and can be eliminated with better interprofessional communication practices.

Miscommunication among medical providers also results in large numbers of medical malpractice cases. One study reviewing malpractice claims found that among several deficient behavioral practices, the failure to communicate was most pervasive, accounting for 22% of the complications in the study. The study was conducted by the American College of Surgeons (ACS) and consisted of a review of 460 malpractice claims against general surgeons. Based on these results, the authors suggested that further research concentrate on how to improve physician communication skills, with an emphasis on how to shift “institutional culture” toward better behavioral practices in the surgical suites.

Since that study conducted by the ACS was published in 2008, another group of researchers investigated in greater detail the miscommunication that occurs during operative procedures. To more specifically understand what types of communication errors occur, the researchers recorded and transcribed video of 6 complex operative cases. The researchers found observable communication failures in every case recorded. Even more striking, they discovered that the errors in communication occurred at a rate of 1 failed interaction every 8 minutes. The results also determined that cross-disciplinary exchanges resulted in miscommunication errors nearly twice as often as did intradisciplinary interactions. The conclusions from videotaped case studies led the researchers to suggest that prevention of communication error could be achieved through improvement of cross-disciplinary
Communication.\textsuperscript{8} That echoes the recommendation made by the ACS researchers to approach this issue at the institutional level.\textsuperscript{7} Both studies highlight the importance of communication improvements that are inclusive of all surgical team members.

An approach to shifts needed at the institutional level indicates that miscommunication results from a larger issue that is rooted in the culture and system of surgical practices and behavior. Some breakdown in communication may be attributed to interdisciplinary variance in communication norms and practices. Research has demonstrated that surgeons, anesthesiologists, and OR nurses perceive communication quite differently.\textsuperscript{9} One group of researchers found that nurses valued OR briefings, whereas surgeons perceived them as a drain on their time, which suggests that professional enculturation, hierarchy, and latent variables may contribute to interpersonal communication barriers.\textsuperscript{10}

Perioperative briefings are part of an emerging and promising body of evidence addressing associations among structured communication strategies (checklists, protocols, communication sheets, and briefings), decreased perioperative communication errors, and increased patient safety. Structured communications such as “time-outs” and patient “handoffs” are clearly beneficial.\textsuperscript{11,12} These 2 communication mandates should be incorporated into anesthesia curriculum, and trainees should be assessed for competency. However, because miscommunication has many causes and because most communication that occurs in the OR is spontaneous and in response to continuously evolving events, checklists and other structured communication may not always be helpful. Attention to the mechanics (structured communication) of miscommunication, although essential in certain scenarios, does not address latent variables or other root causes of miscommunication associated with all other perioperative communication errors.

Another consideration is how medical and nursing education differ greatly. Each is part of unique cultural systems that inculcate values, behaviors, and norms that are then passed from generation to generation of practitioners. Curricular items in medical training stress adherence to hierarchy, independence, and invulnerability. Yet OR safety demands teamwork and communication patterns that may mirror the more interdependent nature of nursing education and practice. The culture and climate that emerge from these differing perspectives may constitute barriers to effective communication and patient safety in the OR setting.

There is little in the literature addressing communication strategies used between Certified Registered Nurse Anesthetists (CRNAs) and anesthesiologists. In one of the few studies examining conflict management between these providers, Jameson\textsuperscript{14} documented that some try to use communication to transcend a dialectical tension between the need for autonomy and connection, and are able to advance their own goals while trying to help the organization function better. She also documented that others engage in communication strategies that exacerbate the tension, do little to protect their own self-interests, and contribute to a negative organizational culture. Jameson concluded that both CRNAs and anesthesiologists appear to be concerned with protecting self and other identity (face) during conflict or tension in the OR.

Because a surgical team includes many individuals from multiple disciplines, communication failures can occur at any point during the complex exchanges. Before an attempt is made to make large institutional changes, a more thorough investigation of existing surgical communication practices is warranted. It is important to better understand what contributes to the culture of operative communication behavior. Then more advanced treatment, in the form of communication training, can work toward improved cross-disciplinary communication among all surgical team members.

- \textit{Theoretical Basis and Survey.} One way to study communication attitudes and behaviors is through survey responses. To better understand what contributes to operative communication failures, we chose to use a survey that was designed to specifically measure components of medical culture that influence communication practices. The Practices in the Operating Room (PRIOR)\textsuperscript{13,15-17} was developed and previously used to measure attitudes and communication behavior in groups of anesthesiologists and surgeons. The PRIOR is based on Face Negotiation Theory, which is an intercultural communication theory\textsuperscript{18-20} that posits there are 3 latent cultural factors that contribute to communication practices. The PRIOR specifically measures those attitudes and beliefs that underlie medical culture and subsequently contribute to communication practices in the OR. The latent characteristics, or factors, that are measured in the PRIOR are the same cultural and systemic attitudes that previous researchers\textsuperscript{3-8} suggest need further attention to improve communication practices among medical professionals.

The 3 latent factors of Face Negotiation Theory measured in the PRIOR are self-construal, face concern, and conflict management style.\textsuperscript{13,15-17} Self-construal measures how an individual orients to others. People have either independent or interdependent self-construal.\textsuperscript{21,22} Those who are \textit{independently} oriented prefer autonomy and tend to be individually motivated. Those who are \textit{interdependently} oriented prefer teamwork and function as part of a group with emphasis on collaboration and group success. This latent characteristic or factor is especially important...
High to disagreement. Disagreements specific to healthcare management style final measured factor in the PRIOR.

The face-concern group members to negotiate different perspectives and group dynamics, and often attempt to support multiple mutual-face concern are concerned with agreement in before protection of self-image or ego. Individuals with more protection occurs at the expense of others. Individuals seek to protect self-image, and often the

The second factor, face concern, measures the relative importance one places on his or her image and maintenance of that image or ego in groups. Maintaining face is especially acute during conflict, even if the conflict is as subtle as order of priorities during a patient case. Three dimensions of face concern are commonly measured: self-face, other-face, and mutual-face. Individuals with more self-face concern seek to protect self-image, and often the protection occurs at the expense of others. Individuals with more other-face concern attempt to support others before protection of self-image or ego. Individuals with mutual-face concern are concerned with agreement in group dynamics, and often attempt to support multiple group members to negotiate different perspectives and maintain coordination in the group. The face-concern latent characteristic (Figure 2) is important regarding the final measured factor in the PRIOR.

The third variable and measured factor is conflict management style, which examines general responses to disagreement. Disagreements specific to healthcare

During communication that occurs in operating rooms. Because it is critical that various healthcare providers work as a team in providing care in perioperative settings, the factor of self-construal can determine how well individual members are oriented toward teamwork (Figure 1). The second factor, face concern, measures the relative importance one places on his or her image and maintenance of that image or ego in groups. Maintaining face is especially acute during conflict, even if the conflict is as subtle as order of priorities during a patient case. Three dimensions of face concern are commonly measured: self-face, other-face, and mutual-face. Individuals with more self-face concern seek to protect self-image, and often the protection occurs at the expense of others. Individuals with more other-face concern attempt to support others before protection of self-image or ego. Individuals with mutual-face concern are concerned with agreement in group dynamics, and often attempt to support multiple group members to negotiate different perspectives and maintain coordination in the group. The face-concern latent characteristic (Figure 2) is important regarding the final measured factor in the PRIOR.

The third variable and measured factor is conflict management style, which examines general responses to disagreement. Disagreements specific to healthcare professionals discovered in previous studies tend to be differences in opinion or contrasting views on which steps and procedures are needed or what takes precedence during a surgical case. From the original Face Negotiation Theory framework, 3 conflict management styles are commonly measured: dominating, avoiding, and integrating. Individuals who are more identified with dominating style tend to see one perspective as correct and subsequently ask others to adhere to the determined course of action. Individuals who are more identified with avoiding style tend to ignore disagreement. These individuals do not verbally respond and usually maintain silence rather than verbalize dissent and/or differing perspectives. Individuals who are more identified with integrating style tend to be comfortable with their ability to verbalize perspectives. They also seek to collaborate with others, voicing suggestions and alternatives to meet multiple objectives (Figure 3). Face concern and conflict are important latent characteristics to understand because conflict inevitably occurs during surgical cases. However, the way the conflict is managed can make all the difference in patient outcomes.

Do individuals dominate the decision making and thereby add to communication practices that protect self-images? Do others remain silent even when speaking up may help the case proceed beneficially for the patient? These are only a couple of examples of how latent cultural communication factors are part of the complex dynamic that occurs in the OR. Greater awareness and knowledge of the factors can lead to more systemic changes needed at the institutional level.

Validation of PRIOR as a Survey Instrument. The 3 latent cultural communication factors were initially measured in physician groups during a large, multiyear study with groups of anesthesiologists and surgeons. Before use in those research studies, multiple anesthesiologists and surgeons collaborated on the wording of items and areas of concern regarding miscommunication. The result was the survey titled Practices in the Operating Room (PRIOR). The survey was first subject
to pilot testing and later validated with groups of anesthesiologists and surgeons at a teaching hospital in the Southwest. After validation of the instrument, the PRIOR was repeatedly used to measure latent communication attitudes and behaviors in groups of anesthesiologists and groups of surgeons. In multiple studies, the PRIOR served as pretest and posttest to measure existing latent communication characteristics. The posttest measured changes that occurred because of the communication instruction and associated simulated surgical cases. These multiple components (pretest, posttest, simulation sessions, and communication instructions) were part of a multistep research protocol designed to improve and improve interdisciplinary communication during surgical procedures.

The specific steps in the protocol included communication instruction that was preceded and followed by 2 surgical cases conducted in a high-fidelity simulation center. Groups of 2 anesthesiologists and 2 surgeons were purposely provided with incomplete patient data during an introduction to a patient case conducted in the simulation center. To best navigate the case, the teams needed to communicate across disciplines and share their knowledge of the patient. After the first case was concluded, the 2 physician teams participated in a communication instructional session in which the physicians were provided with insight on concrete language choices that contribute to improved communication with other surgical team members. The results of this multiyear research project were extremely promising. However, the researchers noted that physicians are only one part of the surgical team needed to save patient lives.

- **Modification of Survey Instrument.** To examine the communication patterns further, we slightly modified the PRIOR to collect communication data from groups of nurse anesthetists (CRNAs). Because CRNAs are integral operative team members, knowledge of the latent cultural variables that influence CRNA communication practices is equally necessary to better understand what leads to communication issues among perioperative healthcare providers. Major changes at the systemic and institutional levels are warranted; therefore, greater knowledge and understanding of the latent communication variables that contribute to patterns of behavior used by CRNAs will help guide those changes in positive directions.

**Methods**

- **Survey.** Through a grant from the American Association of Nurse Anesthetists (AANA) Foundation, we electronically distributed the PRIOR to 3,000 registered nurse anesthetists through the AANA Foundation. After 1 month a reminder notice was electronically distributed, and the survey was closed after 3 months. The data collected from respondents were transmitted to the researchers from the Foundation in an electronic file.

- **Exploratory Factor Analysis.** We used SPSS 22.0 software to conduct an exploratory factor analysis (EFA). Although the PRIOR had been previously used and validated for research conducted with groups of physicians, the current version with additional and slightly modified items that specifically measured communication practices among nurse anesthetists had not been used to collect data for any previous research. Given the lack of previous data using the CRNA version of the PRIOR, we conducted exploratory factor analyses to determine the

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**Survey.** Through a grant from the American Association of Nurse Anesthetists (AANA) Foundation, we electronically distributed the PRIOR to 3,000 nurse anesthetists throughout the United States. The survey included 56 Likert-scale items. We used a 6-point Likert scale with responses that ranged from “strongly disagree” at 1 to “strongly agree” at 5. The sixth option was “not applicable” (N/A). The 6-point Likert scale was used to gather data on 15 items that measured self-construal and agreement with items that measured relative preference for independence or interdependence. Twelve items measured face-concern with an even number of items that correspond to self-face, other-face, and mutual-face concerns. Twenty-three items measured conflict management style. Seven of those items measured degree of relative dominating style, another 7 measured degree of relative integrating style, and 9 items measured degree of relative avoiding style. An additional 6 items that had not been previously validated were added to this survey to collect data specifically focused on communication patterns that nurse anesthetists experience with surgeons and anesthesiologists. These added 6 items focused on relative degree of respect and teamwork among CRNAs, anesthesiologists, and surgeons. Some items on the survey gathered demographic data that captured gender, age, and ethnic background; percentage of time working with anesthesiologists; and whether the nurse anesthetist was medically directed by an anesthesiologist. Another demographic item asked what type of practice setting provided the majority of income: medical center with greater than 500 beds, regional hospital with 200 to 499 beds, small hospital with fewer than 200 beds, outpatient ambulatory surgical center, or office-based setting. Other demographic items asked for any specialty areas, the length of time in practice, and the length of time at the current facility. We also asked whether the employer was an anesthesiology group, a hospital, a CRNA group, or self-employed. The final demographic question asked whether the employment was in a rural or urban location.

The institutional review board at East Carolina University, Greenville, North Carolina, reviewed our research application, including the modified PRIOR, and granted exempt approval for distribution of the survey and use of collected data. The PRIOR was distributed to 3,000 registered nurse anesthetists through the AANA Foundation. After 1 month a reminder notice was electronically distributed, and the survey was closed after 3 months. The data collected from respondents were transmitted to the researchers from the Foundation in an electronic file.
existing factor structure of the data. Comparison of the data generated from CRNA responses with previous analysis from physician data could be conducted to determine if the factor structure remained the same in this group of professionals, as was evident in the physician groups. We were interested to discover how the CRNA data were both similar to and different from those from anesthesiologists and surgeons. Any differences in factor structure of the data could lend greater insight into causes of miscommunication among the expanded group of OR providers. Because previous data collected with the PRIOR were analyzed for principal components with Varimax rotation, we used the same procedure with these data collected from nurse anesthetists.

Results

• Demographics. The total number of respondents from the electronic distribution of the PRIOR was 664 of a total 3,000. Of these, 190 responses were not complete. The demographic data are depicted in Table 1. Most respondents indicated they were employed at medical centers (31%) or regional hospitals (32%). Survey results also showed that hospitals were the most frequently cited primary employer (49%), with primary employment for another 36% provided by physician anesthesiology groups. Roughly 85% of respondents were employed at their current institution for more than 2 years (see Table 1).

• Factor Structures. Because of incomplete data, 190 cases were eliminated from the EFA. The remaining 474 cases were subject to EFA using SPSS 22.0.24 The cutoff for inclusion in the EFA was 0.40. The initial EFA resulted in an 11-factor structure. Three of the factors with the lowest regression coefficients were dropped from the analysis. The data were then subject to a second EFA. Using principal components analysis and varimax rotation, the data resulted in an 8-factor solution with 54% of the variance explained. Survey items on 5 of the 8 factors confirmed the factor structure found in data collected from physicians from previous administration of the PRIOR.13,15-17 The 5 factors that emerged in the EFA with the CRNA data, which correlate with previous results, include the 2 dimensions of the self-construal factor (independence and interdependence), and the 3 dimensions of the conflict management style factor (avoid, dominate, integrate). None of the 3 dimensions of face concern emerged in the EFA.

However, 3 other factors emerged from the data collected from CRNAs that were not found in previous physician data. One factor included items that combined all 3 dimensions of face-concern (self, other, mutual). Another factor that emerged from the EFA with the CRNA data combined 2 dimensions that measure conflict management (avoid and integrate) with the third new factor, which also combined 2 dimensions of conflict management (dominate and avoid). The mean score and corresponding alpha values for each of the 8 factors are depicted in Table 2.

Discussion

Our study confirmed that the PRIOR13,15-17 is an appropriate tool with which to measure latent cultural values that lead to communication errors among medical providers. We further confirmed that the theoretical frame is also a valid structure to continue to explore how to improve systemic and institutional-level communication practices to increase patient safety during operative procedures. These are 2 great foundations for continued research.

An interesting, although not unexpected, finding is that CRNA data resulted in the highest mean score on the self-construal variable that measured independence. This finding indicates that nurse anesthetists may prefer autonomy and are more comfortable with self-determined decision making as opposed to decision making that occurs in small groups and through conferral with others. This reflects the essence of daily decision making.

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Table 1. Demographic Data (N = 664)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Percent of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y</td>
<td></td>
</tr>
<tr>
<td>26-32</td>
<td>4</td>
</tr>
<tr>
<td>33-39</td>
<td>14</td>
</tr>
<tr>
<td>40-46</td>
<td>17</td>
</tr>
<tr>
<td>47-53</td>
<td>17</td>
</tr>
<tr>
<td>&gt; 54</td>
<td>48</td>
</tr>
<tr>
<td>Gender, female</td>
<td>53</td>
</tr>
<tr>
<td>Race, white</td>
<td>84</td>
</tr>
<tr>
<td>Years’ experience as CRNA</td>
<td></td>
</tr>
<tr>
<td>1-5</td>
<td>13</td>
</tr>
<tr>
<td>2-10</td>
<td>18</td>
</tr>
<tr>
<td>&gt; 10</td>
<td>68</td>
</tr>
<tr>
<td>Time at current institution</td>
<td></td>
</tr>
<tr>
<td>&lt; 6 mo</td>
<td>2</td>
</tr>
<tr>
<td>7 mo-2 y</td>
<td>8</td>
</tr>
<tr>
<td>2-5 y</td>
<td>20</td>
</tr>
<tr>
<td>5-10 y</td>
<td>25</td>
</tr>
<tr>
<td>&gt; 10 y</td>
<td>44</td>
</tr>
<tr>
<td>Employment site</td>
<td></td>
</tr>
<tr>
<td>Medical center (&gt; 500 beds)</td>
<td>31</td>
</tr>
<tr>
<td>Regional hospital (200-499 beds)</td>
<td>32</td>
</tr>
<tr>
<td>Small hospital (&lt; 200 beds)</td>
<td>21</td>
</tr>
<tr>
<td>Outpatient or surgical center</td>
<td>13</td>
</tr>
<tr>
<td>Office</td>
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</tr>
<tr>
<td>Primary employer</td>
<td></td>
</tr>
<tr>
<td>Physician anesthesiology group</td>
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</tr>
<tr>
<td>Hospital</td>
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</tr>
<tr>
<td>CRNA group</td>
<td>3</td>
</tr>
<tr>
<td>Self</td>
<td>10</td>
</tr>
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</table>

Abbreviation: CRNA, Certified Registered Nurse Anesthetist.

aSome totals do not add to 100% because of rounding.
that is critical to the nurse anesthetist’s minute-by-minute practice. Interestingly, anesthesiologists also score very high on this variable, reflecting their need for independent decision making. Surgeons, on the other hand, score higher on interdependent self-construal, which may reflect their need to interact with the larger perioperative team as they perform surgical procedures.13,15-17

The second highest mean score for the CRNAs was on the conflict management style integration. This reflects a preference for collaboration, or working together toward finding a solution, with an additional goal of maintaining relationships in the group. Again, this is not a surprising finding and may reflect the nurse anesthetists’ professional education and orientation. In addition, nurses frequently have a role that requires working in a perioperative team whose members vary from case to case.

Discovery of variables that correlate with physician data confirmed that the factors are evident among both OR physicians and nurse anesthetists. Five of the 8 factors that emerged from the EFA were consistent with previous medical studies that used the PRIOR.13,15-17 Furthermore, our results provide a unique and interesting insight into how communication is negotiated among physicians and CRNAs.

Prior face negotiation studies had difficulty measuring mutual-face concern.13,15-20 More often than not, that variable was dropped from the analysis. However, those studies used confirmatory factor analysis. Because our study used a version of the survey not previously administered and we used it with a population not previously examined with the specific theoretical frame, we used EFA. From that exploratory vantage point, our analysis discovered that nurse anesthetists use mutual-face concern in combination with self- and other-face concerns. The combination of all 3 of these dimensions into 1 factor reflects that CRNAs are concerned for the image of all surgical team members. This approach to ego maintenance might be construed as the role of peacemaker among such disparate groups of coworkers. The new factor also indicates an overall interest in fostering teamwork and seeking ways to support and benefit all surgical team members. This is a valuable role that merits further examination and study.

Another factor that emerged from our EFA of CRNA data combined integration and avoidance. This is an interesting combination of conflict management styles. Because avoidance is used to not respond to conflict and integration is used to continuously open avenues to problem-solve situations, the combination of these 2 dimensions at first seems contradictory. In fact, the integrative dimension of conflict management proposes that integration and avoidance are the opposite ends of the spectrum within conflict style.25 However, the combined factor discovered in our data clearly indicates there is a unique combination and approach used by CRNAs during conflict situations.

Although this emergent factor warrants further study, it is quite possible the new factor points to a perceived status disparity. Hierarchy is an ingrained component of medical culture.26 The OR is not an exception to that rule. It is possible that this new dimension of conflict management evident in our CRNA data indicates that CRNAs feel compelled to improvise and creatively solve conflicts through integration, but only to a point. Once it becomes evident that negotiations have not navigated to conflict resolution, they may choose to avoid the conflict to minimize further escalation. This result indicates new avenues of research to further improve communication among surgical team members.

The other unique factor that emerged combined dominance and avoidance. These 2 measures of conflict management style are also usually depicted as diametrically opposed.25 However, the combination that emerged in the EFA conducted with CRNA data is as insightful as the combined face factor. The combination of dominance and avoidance suggests that nurse anesthetists might take a more diplomatic approach to voice dissenting opinion. Current research favors the combined conflict

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean score</th>
<th>α</th>
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<tr>
<td>Independence</td>
<td>3.98</td>
<td>.79</td>
</tr>
<tr>
<td>Integrate</td>
<td>3.71</td>
<td>.79</td>
</tr>
<tr>
<td>Interdependent</td>
<td>3.35</td>
<td>.79</td>
</tr>
<tr>
<td>Self, Other, and Mutual</td>
<td>3.18</td>
<td>.79</td>
</tr>
<tr>
<td>Dominate</td>
<td>2.90</td>
<td>.72</td>
</tr>
<tr>
<td>Avoid and Integrate</td>
<td>2.77</td>
<td>.72</td>
</tr>
<tr>
<td>Avoid</td>
<td>2.10</td>
<td>.70</td>
</tr>
<tr>
<td>Dominate and Avoid</td>
<td>2.10</td>
<td>.83</td>
</tr>
</tbody>
</table>

Table 2. Mean Scores and Alpha Values of Eight-Factor Exploratory Factor Analysis Resulting From Principal Components Analysis and Varimax Rotation

aMean values were based on a 6-point Likert scale with responses that ranged from “strongly disagree” at 1 to “strongly agree” at 5. The sixth option was “not applicable” (N/A).
management style, which is most often labeled assertive.26 Individuals who prefer use of assertive conflict management have been found to enhance role clarity in the workplace and to enjoy greater job satisfaction.27 The presence of this new variable that combines dominance and avoidance in our sample of nurse anesthetists suggests that CRNAs continue to clarify positions in the OR and strive for mutually beneficial communication among the myriad diverse surgical team members.

These 3 emergent factors provide important insight for future research. The role of peacemaker, the question of perceived status inequity, and the use of assertive conflict styles are interesting components of latent cultural values that become enacted in communication behaviors. Further investigation could uncover existing systemic beliefs that can be addressed at institutional levels. There also may be emergent behaviors that are beneficial for patient safety. Future communication training programs can be designed to encourage behaviors that support interdisciplinary team members and to help all medical professionals learn to collectively problem-solve through eliminating the avoidance that often results in silenced team members. Attention to manifestations of hierarchy and associated communication practices can lead to greater recognition of all medical professionals as valued individuals. That culture of respect may well be the key to improved communication among complex operative providers. The increased respect among team members can help save patient lives.

These examinations of latent factors and resultant communication behaviors among operative professionals increase our knowledge base, improve our chances to increase patient safety, and may lead to improved surgical patient outcomes. This study was limited by potential biases associated with data collection. Electronic distribution of the survey helped to reach many individuals; however, the overall response rate was reduced by the number of surveys that were incomplete. It is possible that in-person distribution would permit responders to ask questions that would increase the number of completed submissions. The electronic submission was also a limitation in that only those who had Internet access were asked to participate. Again, future studies might investigate use of in-person submissions. Finally, the next step in this line of research is further investigation into the emergent variables, with an eye toward design of multidisciplinary communication training protocols.

REFERENCES

27. Rabin C, Zelner D. The role of assertiveness in clarifying roles and

AUTHORS
Kristin Kirschbaum, PhD, has researched interprofessional medical communication for more than 10 years. Both her master’s and doctoral research was conducted with physicians to examine and measure latent communication variables that contribute to miscommunication behavior and compromised patient care. Dr Kirschbaum has multiple publications and made numerous conference presentations that center on cultural variables and interprofessional medical communication.

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