Fake It 'Til You Make It: Pressures to Measure Up in Surgical Training

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Abstract

Purpose
Expectations of certainty and confidence in surgical culture are a source of internal conflict for surgeons and learners, with surgeons describing a pressure to project an image that is, at times, inconsistent with how they feel internally. The authors explored surgical residents' perceptions of "impression management" and its effects on surgical judgment and decision making.

Method
The authors used a constructivist grounded theory approach to conduct and analyze 15 semistructured interviews with general surgery trainees at an urban Canadian academic health center between 2012 and 2014. Interviews explored impression management in the context of resident learning and performance. Analysis was inductive, whereby emergent themes contributed to a developing conceptual framework, and deductive, using an existing theory of impression management.

Results
Residents described sensing an "expectation" to portray an image aligned with the ideal surgical stereotype of confidence and certainty, and shared strategies used to mirror this image. Impression management strategies were used to portray an image of competence, with the aim to improve access to teaching and evaluations. Unintended consequences of impression management on decision making, patient safety, and resident wellness were identified.

Conclusions
These findings contribute to a deeper understanding of the potential impact of the sociocultural context on residency training, and provide a language allowing for more explicit discussions about the impact of surgical culture on trainee behaviors. Translation includes formal instruction of these concepts in the curriculum so that trainees better recognize, reflect on, and cope with the pressures to perform in front of others.

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Judgment and decision making in surgery has predominantly been considered a cognitive construct. Surgeons and researchers alike have delved into how our brains function; whether they are describing decision-making processes, clinical reasoning steps, or problem solving methods, the focus has been on cognition, or *what is inside the surgeon's head*.[1–7] Aligned with this approach, we recently described a cognitive process as a hallmark of expert judgment, "slowing down when you should."[8] Uncertain, critical, and unexpected moments in surgery prompt the expert surgeon to slow down, cognitively transitioning from an automatic mode of thinking to a more effortful mode of thinking when appropriate.

In addition to recognizing the "slowing down" cognitive process as it relates to decision making, we also identified the presence of powerful sociocultural factors that originated *outside the surgeon's head*.[9] We noted that trainees and practicing surgeons were performing—and believed strongly that they *should* be performing—an image of confidence and certainty in their day-to-day clinical activities in response to perceived external expectations. These qualities were often opposed to the emotions surgeons felt during critical decision-making moments—anxiety, uncertainty, and fear. The difference between how we think we should feel and how we actually feel creates a tension that prompts us to manage our image, to create the impression we want others to see.

The active management of one's image was described by social psychologist Erving Goffman[10] as "impression management." Goffman suggested that individuals craft and maintain an image in social circumstances to actively manage the impression others have of them. Surgical trainees are in the process of developing their professional identity and are embedded within a powerful surgical culture that teaches them the ideals and values of their profession, as well as what is expected of them.[11–15] During their training, residents develop and embody what they perceive as a surgeon's identity, and reflect this identity back to others. Although impression management can play an important role in helping one build confidence in one's abilities and function in a new culture in an effort to become a part of it, there may be unintended implications for both how residents learn and how they execute their clinical duties. The purpose of this study was to identify how general surgery residents perceived and performed impression management during moments of patient care. Understanding surgical decision making from a sociocultural perspective was identified as a gap in the literature. Our research responds to this gap by exploring how existing surgical culture is implicated in the areas of learning, wellness, and patient care.

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Method

This study used a constructivist grounded theory methodology to develop an explanatory theory of a social process, which emerged from naturalistic data.[16] Aligned with the tenets of this methodology, we considered context to be essential to the development of knowledge. The theory of impression management was used as a sensitizing concept to guide interview questions and inform the developing model.[10,16]

Participants were general surgery trainees at an urban, multicultural, Canadian academic health center. We purposively sampled junior (postgraduate year [PGY] 1–2; n = 8) and senior (PGY 3–6; n = 7) as well as male (n = 8) and female (n = 7) surgical trainees to capture a range of experiences. We did not collect data on participants' ethnicity/race. It was not the intention of our study to explore differences based on ethnicity but, rather, to capture a wide range of perspectives. All participants provided written informed consent.

All data were collected through 60- to 80-minute semistructured interviews between 2012 and 2013. We terminated data collection after completing 15 interviews, when no new ideas or insights emerged outside the existing theoretical categories.[16]

We used semistructured interviews to explore several key questions, while permitting the interviewer or interviewee to evolve the questions and pursue other ideas in detail.[16] The original interview guide is provided in Supplemental Digital Appendix 1, at http://links.lww.com/ACADMED/A518. We added and refined interview questions during the iterative phases of data collection and analysis to explore emergent ideas and refine emerging concepts. All interviews were digitally recorded and transcribed verbatim. Each interview was labeled with an identifier code to maintain anonymity. All interviews were conducted by the principal investigator (P.P.), a graduate student with no medical training at the time. The decision to select this interviewer was purposeful to avoid issues of power dynamics. Identifying information was removed from the data prior to analysis by the larger team.

The benefits of a constructivist grounded theory approach to data collection include spontaneity and adaptation during the data collection; the use of open-ended questions, which allow participants the ability to respond in their own words, more elaborately, and in greater detail; and the ability to tailor interview questions and "probes" based on participant response to deeply explore and understand the experiences of participants.

Using a constructivist grounded theory methodology[17] to analyze the data, we created a conceptual model of impression management during general surgery residency. Using a constant comparative approach, the investigators (P.P., N.Z., C.M., C.-A.M.) read each transcript and identified core issues and thematic categories.[16–19] Labels for the thematic categories were chosen specifically to represent language used by participants to describe their experiences. This inductive approach was enriched with a deductive interpretation of the emergent theory of impression management using the preidentified sensitizing concepts from Goffman (impression management, acting, front and back stage performance, audience) and incorporating the theoretical perspectives and experiences of the entire research team. This combination of inductive and deductive coding allowed us to co-construct an emergent theory of how impression management affects resident learning and performance of knowledge and skills in our context.[16–19] Negative case sampling, also consistent with a constructivist grounded theory approach, allowed us to refine our emergent theory and to establish its representativeness.[17] In other words, we were not interested in documenting the dominance of any one specific category but, rather, to establish how these dimensions of impression management worked together to facilitate or inhibit residents' learning and decision making.

Member checking was completed during both data collection and analyses. In later interviews, we asked participants to assess whether the emerging conceptual framework resonated with their experiences.[18] This framework was developed through numerous discussions with the entire research team, which included the PI, staff surgeon, surgical resident, and social scientists with expertise in the theoretical framing of the work and identity construction. Disagreements over the interpretation of the results were discussed until consensus was reached or further exploration using our participants was carried out.[17] We applied the final agreed-on conceptual framework to the entire dataset. NVivo software (2007; QSR International) was used to manage and cross-reference the dataset.[17] Institutional review board approval was obtained from the academic institution where the study was conducted.

Results

Despite sampling both male and female participants from a range of experience levels, the types of pressures described in interviews were similar within and across groups; thus, we present the findings in aggregate. Numerical participant identifiers are given after representative quotes. Surgical residents described being immersed in an environment where they felt pressures to perform a set of strongly normative—yet tacit—expectations to be "all-knowing," "quick," "decisive," and "confident":

> [A typical surgeon] should be invincible … not weak, not unsure, not unconfident. The pressure is that you're … the opposite of all those things. That you should always know, that you should always be confident, that you should always have the answer. (P3)

To demonstrate themselves as competent, participants discussed the pressure to be "all-knowing" about their specialty and patient care:

> You really need to be on top of everything that you do and be five steps ahead of what they expect for you. (P9)

All participants viewed "quick" performances as necessary and valued in the surgical community when making patient care decisions, assisting, or operating independently. All residents admitted they came into surgery feeling they have to be decisive, despite recognizing that decisions were not always black and white.

Many participants felt social pressure to display confidence when presenting patient progress on wards, making patient care decisions, or answering questions from their attending. The following sections outline key strategies used by

residents to manage their performance as competent residents, and the intended and unintended consequences that followed.

Strategies for impression management

Participants developed strategies to exhibit competence. They were especially reliant on these strategies when they sensed they were not meeting expectations with respect to clinical knowledge, managing patients, and technical or nontechnical abilities.

Fabricating stories. The act of fabricating stories as an impression management tool was used to corroborate decisions and establish an impression that the resident was meeting perceived expectations. Some residents admitted to telling inaccurate stories and/or witnessing peers produce inaccurate stories when faced with a situation where they lacked knowledge. As one resident shared:

> I've done it and I've seen people do it, where you feel like it's so important that you know the answer to something, that you might guess or make it up.… If someone says, what's the potassium on that patient, and you … make it up. (P7)

Fabrications to bolster a supervising surgeon's confidence in the resident's clinical decision making were also described. One participant recalled a time when they misled their staff surgeon:

> I've looked at [a CT scan] and I've made the call, I'll say the radiology resident also said the same thing, when I hadn't spoken to them … you want to sound right because basically you've made a decision.… So if you say, I spoke to this person and they also say it's this, then you feel like it makes the story kind of fit together better. (P14)

A few residents used fabrication as a strategy for maintaining their image, as they strove to appear all-knowing and confident to their teachers.

Remaining silent. Another strategy commonly used by residents was remaining silent when unclear on the details of a patient or task. Most participants believed that if they refrained from asking questions, it elicited an impression to others that they had the expected level of knowledge.

> If I don't know what's going on [in the OR], I'm scared that they're going to get mad at me for asking a dumb question.… You don't know how much they expect you to know and not know. I think you're just afraid to look dumb. (P13)

When using this strategy, participants recognized a priority shift from "learning" to "making a good impression" and acknowledged that withholding questions could hinder their learning opportunities. Participants felt pressure to remain silent particularly during their transition years—from a medical student to a first-year resident or from a junior to senior resident, where new expectations were encountered. They seemed to share an understanding that in their new role, albeit never verbalized by trainee or staff in practice,

> You have to be careful with what you ask … you should be answering [questions], not asking. (P12)

Avoiding calling for help. Many participants discussed another common strategy where they avoided calling for help. Although explicitly encouraged to call the senior resident (in the case of the junior participants) or staff surgeon for help when necessary, they were concerned it might be perceived as weakness:

> Some staff will be like, "you can call me at any time," but if you call it's a sign of weakness. (P14)

Most residents felt they had to be confident and certain before calling for help. They considered multiple factors while ruminating over their decision to call for help, a strategy that sometimes resulted in delayed patient care:

> Some people are very reluctant to call the staff, and in certain situations I would do this as well … you're worried about calling the staff because you're not 100% sure what's going on yet. So you think maybe I can sort this out on my own … you start ordering CT scans to rule out this problem or that problem and involve other services.… Then you realize it has been six hours of this patient not doing well and I haven't told my staff. (P7)

To appear "confident" and "decisive," trainees explained that they sometimes spend an unnecessary amount of time reviewing patients' charts to validate their decision to call for help or prepare for questions their attending may ask to test their clinical knowledge or management of patients.

Implications for impression management

It became evident that the pressure to manage a culturally acceptable image, and the use of the aforementioned strategies to do so, had both intended and unintended consequences.

Intended consequences.

Building a reputation of the "competent resident." According to participants, one of the well-known adages in the residency program was "fake it 'til you make it." By fabricating stories, remaining silent, and avoiding calling for help, participants "faked it" in an effort to meet or exceed perceived expectations. All participants suggested that the underlying motivation for impression management was to preemptively build a positive reputation to avoid being "branded" with a negative reputation. Some participants felt it was very difficult to salvage a negative reputation.

> I know for a fact, in this program, if they brand you an idiot … you're done. (P5)

The challenge of shifting a reputation to a more desirable one was compounded by the limited time residents have to establish new relationships and recreate "first" impressions.

> Certain residents seem to struggle all the way along I think partially because their reputation precedes them … they have to dispel these beliefs that others have of them and usually in the amount of time we have in each rotation they don't manage to do that. I think it's a little bit that everybody's low expectations of them gets to them or prevents them from becoming better. (P11)

Other residents discussed concerns about "reputations getting established very quickly" and being "hard to improve" (P001). Residents feared that a negative reputation, especially early on in training, might irreversibly taint their potential in the eyes of others.

Shaping evaluations and learning opportunities. Most residents expressed a concern that "negative branding" had the potential to affect their evaluations and future learning opportunities. Participants felt that, through managing their impression, individual interactions with their superiors might translate into more positive evaluations, greater patient care responsibilities, and more freedom to learn and practice technical skills.

> Image is everything again, portraying confidence, we'll let you do more, even if you don't have the skills to do it.… If [residents] don't look confident or they say I haven't done a lot of cases, if you vocalize that you haven't, or you look very tentative, they won't give you stuff to do. (P12)

One senior trainee recalled selecting a resident for a case based on a preexisting reputation:

> I had a good case. I had two juniors to pick from. I called the one I liked more. One was on call and I didn't even call the one on call, I called someone else. One I feel is a much more surgical person, loves to operate, is hardcore, works hard … not calling you for everything. (P5)

Participants shared stories of peers who had done the same, making it appear a common phenomenon. Trainees understood they needed learning opportunities to develop surgical competencies and confidence to eventually operate independently and, therefore, aspired to develop an impression of competence to improve evaluations and afford learning opportunities.

Unintended consequences. Participants recognized that the pressure they experienced to manage their impression also had unintended implications for themselves and their patients.

Hindering education. Paradoxically, many residents noted that their preoccupation with how they were perceived by others had the potential to negatively affect their education. They recognized that although they intended to independently seek answers to questions they withheld from their staff over concerns of appearing unknowledgeable, this could impair learning in the moment. For example, some participants expressed that their reluctance to ask a question, which addressed a salient part of an operation, hindered them from fully understanding the procedure.

> You won't ask the questions that you feel might make you look stupid. Often, if I don't quite understand something, I'll make a mental note to come back to it and learn about it later, instead of clarifying right on the spot, because you don't want to admit that you don't know. And, then it's just where your focus is, too, right? If your focus is predominated at making a good impression, then you're not focusing on, what do I need to learn in this situation? (P8)

The negative consequences of being unable to freely ask questions was also discussed in the context of Morbidity and Mortality rounds, where errors and complications in patient care were discussed to prevent future occurrences and improve practice. Although residents acknowledged that these rounds could be very educational, they were also referred to as "shame rounds."

> I hate those [M&M] rounds. I don't learn well where people drill you [like a firing squad] in front of everybody … before rounds, I found myself looking at the strangest things because I feel like they're going to ask me random questions that I would feel so stupid if I didn't know. I'm just trying not to look stupid.… I sit there in fear of being asked a question that I don't know, and then I don't hear what anyone else is talking about. (P7)

Several residents shared related experiences of being preoccupied by the possibility of having to answer a series of "fired questions" rather than effectively participating in educational discussions.

Affecting resident wellness. Most participants suggested that pressures to manage their impression had implications for personal wellness. Although it was unclear whether their staff were judging them, the possibility that they were being closely analyzed and/or criticized was a source of concern and anxiety. One self-identified struggling resident stated:

> I always worry about [what others think of me] … that they see me as behind in terms of my skills, I think that's everybody's concern.… It's a vicious cycle, the more I would feel self-conscious about it, I may have lacked confidence.… Then by lacking confidence, I would do less and be more tentative, and then the cycle kind of repeats itself.… It was horrible. (P12)

Participants shared that preserving or negotiating an impression of an "all-knowing," "quick," "decisive," and "confident" trainee was taxing and required a lot of "mental energy." One individual revealed his concerns that the efforts to manipulate his image might have implications for his own personal identity.

> I've only been in residency three months now, but how much time over the last three months I've spent thinking about these social pressures, and worrying about these social pressures, and trying to adapt to, but also preserve, the elements of myself that I want to keep … that extra strain wears on you at the end of the day. (P8)

Other residents echoed similar concerns about maintaining elements of themselves in the process of managing their impression.

Affecting patient care. Participants suggested that anxieties associated with the perception of being judged sometimes interfered with their ability to make decisions in the moment, and ultimately affected the quality of patient care. Although unclear on whether their staff were actually judging them in any particular situation, the possibility was a source of concern and influenced their performance. Residents felt that their obligation to patients could be compromised because of this anxiety. As one noted:

> There's the dual identity of being a physician looking after a patient, and a resident responsible to his staff.… The resident responsible to the staff job tends to far overshadow the doctor being [responsible] to the patient. At the end of the day I'll go home, and I'm almost embarrassed to admit this, but a good day is when I feel like I've made a good impression on the staff. As opposed to, I did something positive for a patient. (P8)

Several participants described witnessing or being involved in a situation where a trainee's engagement with impression management had the potential to affect patient safety. One participant describes their experience as follows:

> You're always being evaluated.… I was doing a kidney transplant with a fellow, he was guiding me … then the staff showed up outside the operating room, and I can see the fellow getting completely nervous and telling me "go faster," when beforehand we were going at a normal, sort of, slow pace … to the point that we ended up putting the kidney upside down.… We had to take all the stitches out, and put it back in again. (P4)

These examples illustrate the extent to which a trainee's preoccupation with image management can influence patient care.

Discussion

The findings of this study suggest that surgical residents actively project an image based on perceived expectations. During residency training, learners absorb and begin to embody elements of surgical culture. Part of this process involves reacting to perceived pressures

to be "all-knowing," "quick," "decisive," and "confident." Participants used specific strategies to create an impression of competence. These strategies were intended to positively influence evaluations and learning opportunities; somewhat ironically perhaps, these same strategies had unintended negative consequences on learning, wellness, and patient care. Although our findings focus primarily on the unintended consequences of impression management, participants did address the positive influences of impression management including building confidence in oneself and building patients' trust in their physician.

Aligned with the tenets of grounded theory methodology, our study aimed to gain a rich understanding of the experiences of participants in the context of a large multicultural academic center. Although the conceptual model proposed is not intended to be directly transferable to other contexts or widely generalizable, it provides a starting point from which to begin a conversation around the experiences and challenges of surgical training. For example, although we used open-ended questions in our methodology to allow participants the freedom to express factors that influence impression management, participants' race/ethnicity was never raised as a factor that influenced impression management. It is possible that the multicultural nature of the study site itself may have influenced this finding. It is important to consider the potential role that race/ethnicity may play in impression management in surgical training, and future studies at other institutions may help to shed light onto this.

The process of developing a surgical resident's professional identity is complex, as they are tasked to negotiate a dual identity as "learner" and "surgeon." These identities are not fixed or static but, rather, constantly constructed, reconstructed, and negotiated as residents participate in day-to-day professional activities. Previous literature supports our findings, suggesting that as residents are training to become independent surgeons, they adopt characteristics and behaviors belonging to the "surgeon" identity, such as the need to be quick, decisive, assertive, and certain.[12–15,20–23] In juxtaposition to this, residents also hold the "student" identity, where they are actively learning, through posing questions and seeking feedback. These inarguably competing identities may present an internal conflict for trainees where pressures to conform to surgical ideals and practices may cause individuals to experience situational identity dissonance[9,24–26] with implications for resident learning, wellness, and patient care. For example, residents in our study experienced a conflict in attention, where when trying to display confidence in their ability to perform a procedure as a surgeon, they were reluctant to ask questions as trainees.

Our findings show that through the workings of the hidden curriculum, trainees learned implicit expectations that were not part of the explicit curriculum, which shaped their behavior. For example, as residents mentioned, while the explicit curriculum teaches residents to call for help when they think they need it, aspects of the informal curriculum suggest that they may be seen as "weak" or "indecisive." It is possible that explicit and implicit/hidden curricula are misaligned; in these situations, the hidden curriculum is quite likely to be a more powerful influence in the development of professional values and behaviors related to patient care during training.[27–29] Some might suggest that certain behaviors uncovered in this research demonstrate a lack of integrity among residents—this places the blame on individuals. An alternative explanation is that individuals enter the surgical profession and learn to behave in ways that are against their own moral code, in order to carefully manage the impression that they believe is expected of them. Our findings suggest the latter may be the case.

Although surgical trainees can be formally informed about these pressures, it is unlikely that teaching alone is sufficient to enable a healthy integration of both learner and worker identities. Rather, it is time we realign our core surgical values around notions of patient safety. Arguably, this movement is already occurring, but based on the results of this study and others, we have a way to go with our educational endeavors.[15,30,31] It may also be useful to engage the faculty perspective, particularly around the relationships between impression management and learner remediation and support. Creating and fostering a culture that truly encourages residents to admit knowledge gaps and ask for help when needed, rather than resorting to the strategies discussed above, is a vital first step to avoiding the inadvertent but critical mistreatment of patients and introduction of medical errors. The phenomenon of "organizational silence" has been described in the literature in which certain variables create conditions that deter individuals from speaking up.[32,33] Overcoming this culture of silence might promote changes in surgical organizations that will potentially benefit both patient care and resident wellness.

Although surgical programs and regulatory bodies strive to produce residents engaged in a lifelong pursuit of excellence, it appears that their efforts are mitigated by a number of factors. With this study we explored specific cultural relationships that inhibit students from pursuing their learning to its fullest extent. Of course, these cultural relationships are not generated by surgeons alone. A number of extrasituational structural constraints including organizational and financial arrangements affect how surgeons negotiate their professional identity. Also unexplored in this study were the broader sociocultural conditions that influence both the expectations patients have of their health care providers and how they experience their health care.

Along those lines, health professionals, both at an individual and systems level, require a culture of openness and opportunity for vulnerability and recognition in one's limitations that—when balanced with the accepted cultural values of confidence and certainty—can work together to accept and learn from error. Vulnerability has often been viewed in the surgical community, and in society more broadly, as a weakness. This is reflected in other hierarchical organizations such as the airline industry where decisions are similarly made amidst ambiguity; complexity; and the need to satisfy one's colleagues, self, and the public. Previous research in aviation has shown that pilots' concerns about "losing face" in front of peers and passengers, admitting defeat, ego, and reputation promoted riskier flying behaviors.[7,34–36] This is similar to behaviors described by trainees in surgical practice in the present study. Arguably, however, when

reframed in a new light, vulnerability can be considered a strength and a necessity, essential to create a culture of patient safety, lifelong learning, and surgeon wellness. The culture within which our current education system sits appears to be achieving the opposite, despite our best efforts in drawing attention to potential structural impediments. Further studies exploring the implications of impression management in training programs across institutions and specialties seem well founded.

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References

1 Endsley MR. Toward a theory of situation awareness in dynamic systems. Hum Factors. 1995;37:32–64.
2 Kahneman D, Slovic P, Tversky A. Judgment Under Uncertainty: Heuristics and Biases. Cambridge, UK: Cambridge University Press; 1982.
3 Hogan MP, Pace DE, Hapgood J, Boone DC. Use of human patient simulation and the situation awareness global assessment technique in practical trauma skills assessment. J Trauma. 2006;61:1047–1052.
4 Way LW, Stewart L, Gantert W, et al. Causes and prevention of laparoscopic bile duct injuries: Analysis of 252 cases from a human factors and cognitive psychology perspective. Ann Surg. 2003;237:460–469.
5 Flin R, Youngson G, Yule S. How do surgeons make intraoperative decisions? Qual Saf Health Care. 2007;16:235–239.
6 Pauley K, Flin R, Yule S, Youngson G. Surgeons' intraoperative decision making and risk management. Am J Surg. 2011;202:375–381.
7 Orasanu J, Fischer U. Finding decisions in natural environments: The view from the cockpit. In: Zsambok CE, Klein G, eds. Naturalistic Decision-Making. New York, NY: Lawrence Erlbaum Associates; 1997:343–357.
8 Moulton CA, Regehr G, Mylopoulos M, MacRae HM. Slowing down when you should: A new model of expert judgment. Acad Med. 2007;82(10 suppl):S109–S116.
9 Jin CJ, Martimianakis MA, Kitto S, Moulton CA. Pressures to "measure up" in surgery: Managing your image and managing your patient. Ann Surg. 2012;256:989–993.
10 Goffman E. The Presentation of Self in Everyday Life. New York, NY: Anchor; 1959.
11 Bruhn JG, Parsons OA. Medical student attitudes toward four medical specialties. Acad Med. 1964;39:40–49.
12 Coombs RH, Fawzy FI, Daniels ML. Surgeons' personalities: The influence of medical school. Med Educ. 1993;27:337–343.
13 Merton RK, Reader G, Kendall PL. The Student Physician: Introductory Studies in the Sociology of Medical Education. Oxford, UK: Harvard University Press; 1957.
14 Cassell J. On control, certitude, and the "paranoia" of surgeons. Cult Med Psychiatry. 1987;11:229–249.
15 Cope A, Bezemer J, Mavroveli S, Kneebone R. What attitudes and values are incorporated into self as part of professional identity construction when becoming a surgeon? Acad Med. 2017;92:544–549.
16 Charmaz K. Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis. London, UK: Sage; 2006.
17 Charmaz K. Grounded theory: Objectivist and constructivist methods. In: Denzin NK, Lincoln YS, eds. The SAGE Handbook of Qualitative Research. Thousand Oaks, CA: Sage; 2000:509–535.
18 Creswell JW. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. Thousand Oaks, CA: Sage; 2009.
19 Kelle U, Bird K. Computer-Aided Qualitative Data Analysis: Theory, Methods and Practice. Thousand Oaks, CA: Sage; 1995.
20 Cassell J. Expected Miracles: Surgeons at Work. Philadelphia, PA: Temple University Press; 1991.
21 Tajfel H. Social Identity and Intergroup Relations. London, UK: Cambridge University Press; 2010.
22 Good M-JD. American Medicine: The Quest for Competence. Berkeley, CA: University of California Press; 1995.
23 Sommerlad H. Researching and theorizing the processes of professional identity formation. J Law Soc. 2007;34:190–217.
24 Schwartz RW, Barclay JR, Harrell PL, Murphy AE, Jarecky RK, Donnelly MB. Defining the surgical personality: A preliminary study. Surgery. 1994;115:62–68.
25 Costello CY. Professional Identity Crisis: Race, Class, Gender, and Success at Professional Schools. Nashville, TN: Vanderbilt University Press; 2005.
26 Monrouxe LV. Identity, identification and medical education: Why should we care? Med Educ. 2010;44:40–49.
27 Martimianakis MA, Michalec B, Lam J, Cartmill C, Taylor JS, Hafferty FW. Humanism, the hidden curriculum, and educational reform: A scoping review and thematic analysis. Acad Med. 2015;90(11 suppl):S5–S13.
28 Hafferty FW. Beyond curriculum reform: Confronting medicine's hidden curriculum. Acad Med. 1998;73:403–407.
29 Lempp H, Seale C. The hidden curriculum in undergraduate medical education: Qualitative study of medical students' perceptions of teaching. BMJ. 2004;329:770–773.
30 Shojania KG, Duncan BW, McDonald K, et al. Making health care safer: A critical analysis of patient safety practices. Evid Rep Technol Assess. 2001;43:668.
31 The Joint Commission announces 2014 national patient safety goal. Jt Comm Perspect. 2013;33(7). http://www.jointcommission.org/assets/1/18/JCP0713_Announce_New_NSPG.pdf. Accessed November 12, 2017.
32 Morrison EW, Milliken FJ. Organizational silence: A barrier to change and development in a pluralistic world. Acad Manage Rev. 2000;25:706–725.
33 Bagheri G, Zarei R, Aeen MN. Organizational silence (basic concepts and its development factors). Ideal Type Manage. 2012;1:47–58.
34 Paletz SB, Bearman C, Orasanu J, Holbrook J. Socializing the human factors analysis and classification system: Incorporating social psychological phenomena into a human factors error classification system. Hum Factors. 2009;51:435–445.
35 Orasanu J, Martin L. Errors in aviation decision making: A factor in accidents and incidents. In: Proceedings of the Workshop on Human Error, Safety, and System Development. http://www.dcs.gla.ac.uk/~johnson/papers/seattle_hessd/judithlynne-p.pdf. Published 1998. Accessed December 10, 2017.
36 Wiener EL, Kanki BG, Helmreich RL, eds. Cockpit Resource Management. San Diego, CA: Academic Press; 1993.