“I learn something in most CPD opportunities that I take seriously”: The Unexamined Impact of the Surgical Ego on CPD engagement

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Abstract

Introduction: The need for continuing professional development (CPD) to assure patient safety is well documented. To engage in meaningful professional development requires insight into one's knowledge or skill gap. The surgical ego at its most narcissistic extreme would exclude the ability to realize one's limitations. Thus we sought to better understand the surgical ego and how it might impact one’s engagement in continuing professional development

Method: DESIGN - Surgeons were interviewed utilizing a semi-structured interview guide. Thematic analysis of the data was conducted focusing on the concept of role theory. SETTING: Participants were located at a military academic level one trauma center. PARTICIPANTS: Staff surgeons were purposively sampled to capture a variety of surgical specialties

Results: There are numerous positive characteristics of the surgical ego that are necessary to the role of a successful surgeon. These positive characteristics can have a beneficial effect enabling the surgeon to self-reflect and engage in continuing professional development (CPD). However, if the role of the surgical ego surpasses the capability of humility and self-awareness, it then overpowers the realization of the need for continuing professional development and lifelong learning.

Discussion and Conclusions: The surgical ego does exist and is a key component of the surgical professional identity/role. It has the ability to both positively and negatively impact continuing professional development (CPD). The surgical ego plays a significant role within the surgeon's professional identity.
Keywords: Continuing Professional Development; Lifelong Learning; Surgical Education; Surgical Ego; Role Theory

Introduction

Maintaining clinical competence is essential for practicing surgeons; sustained certification requires surgeons to demonstrate an ongoing commitment to lifelong learning and practice improvements (American Board of Medical Specialties, 2021; American Board of Surgery, 2021). However, research has identified several factors impeding physicians' ability to engage in continuing professional development (CPD) including: time and financial burdens imposed by test preparation; outdated practice improvement requirements that have failed to keep pace with modern specialized practice patterns; and maintenance of certification activities that are irrelevant to surgeons' interests or needs (Teirstein, Topol, 2015; Weinberger, 2019; Sachdeva, 2005). There is another consideration—one specific to surgeons—that has yet to be taken into account as a potentially powerful influence obstructing CPD engagement: the surgical personality, a concept commonly monikered as the surgical ego.

In 2018, Myers and colleagues described the surgical ego as narcissism—a character trait that manifested itself in egotistical, arrogant and dominant attitudes and behaviors (Myers, Lu-Myers and Ghaferi, 2018). There is a lineage of scholarship that has acknowledged the existence of and sought to understand the personality of surgeons (Myers, Lu-Myers, Ghaferi, 2018; Newman, 2019; Lanz, Gregory, Menendez, and Harmon, 2018; Kaafarani and Itani, 2005; Forrest and Smith, 2019; Thomas, 1997; Whitaker, 2018; Grossman, 2018). The literature addressing the surgical ego often highlights the negative consequences of this surgical personality—naming concerns such as failure to acknowledge diagnostic errors, behavioral/relational conflict, and aggression toward others in the operating room, patient complaints, increased medical errors, and decreased team collaboration (Cochran, Elder, and Cochran, 2014; Rosenstein, 2011; Cochran and Elder, 2015; Rosenstein and O'Daniel, 2006; Rosenstein and O'Daniel, 2005). However, there is a contrasting body of work arguing that moderate levels of ego are important for developing the personal confidence necessary to carry out complex operations (Cope, Bezemer, Mavroveli, and Kneebone, 2017). This scholarship emphasizes the unique context in which surgeons operate, noting that modern surgical practice is one where managing an enormous workload is required, where leading interprofessional teams nimbly is demanded, where learning new surgical techniques is continually needed, and where meeting patients and families lofty hopes is expected (Hockerstedt, 2006). And in this context, surgeons are tasked with engaging in invasive procedures that physically break a patient's corporal integrity, to excise disease, and improve the patient's wellbeing through the process. Working in these contexts and under such pressures, developing a surgical ego may be a necessary consequence, even a survival strategy, which enables surgeons to meet practice demands. In other words, as Newman explains: "Surgeons are asked to 'play God.' It is no surprise if they 'act like they are God' at times of stress" (Newman, 2019).

While interpretations of the surgical ego as negative or positive—as something to be expunged or to be expected—are debated, there is consensus that it exists. Therefore, we need to understand the consequences that follow this existence—including how the surgical ego impacts on surgeons’ ongoing professional development and skill maintenance. Given that research suggests that there is a kind of confidence—perhaps even a kind of narcissism—required to be a surgeon (Myers, Lu-Myers, and Ghaferi, 2018; Newman, 2019; Lanz, Gregory, Menendez, and Harmon, 2018; Kaafarani and Itani, 2005; Forrest and Smith, 2019), how is it possible to meaningfully engage surgeons in CPD activities? While researchers have investigated how to support the CPD of surgeons (Sachdeva, 2005; Hathaway and Heinsohn, 2019; Ghaderi et al., 2017; Stewart et al., 2008; Pradarelli et al. 2020; Maher et al., 2017), we were unable to find any literature that recognizes how the surgical ego can impact surgeons’ engagement in CPD activities. This is an important gap to address since it leaves unanswered a question of...
foundational importance: Does the surgical ego that underpins individuals' development into effective surgeons simultaneously inhibit those individuals from meeting certification expectations of being lifelong learners?

The purpose of this study was to explore if the surgical ego affects surgeons' engagement in CPD. Specifically, we engaged in an exploratory qualitative study (a) to investigate if surgeons perceived that the surgical ego impacted their engagement in CPD and, if yes, (b) to the nature and consequences of that impact.

**Methods**

This study was reviewed and approved by the local institution's ethics review board. Further, the study did not commence until IRB approval was obtained.

**Participants**

To ensure that the study's data addressed the investigation's research aims, participants needed to have experiences of engaging in CPD (i.e., the context needed to have means of ensuring that surgeons did more than merely inactively "sit in" on CPD activities because such passive participation would not enable the research team to investigate if the surgical ego impacted engagement in CPD). Participants also needed to have experiences engaging in a wide variety of CPD modalities (i.e., grand rounds educational lectures, self-directed readings, technical practice in simulation labs, etc.) so that the data reflected experiences of CPD in general, not reactions to a specific modality’s effectiveness. Therefore, participants were recruited from a large, level one military trauma center in the United States where the institution requires and monitors surgeons’ active engagement in CPD activities. This institution also ensures that CPD is made available to surgeons across multiple different modalities. Nine surgeons from across nine different surgical specialties participated in this study. Participants were purposefully sampled (Patton, 2015) to encompass multiple different surgical specialties and a wide range of participant ages. After nine interviews, the study had reached thematic saturation (Green and Thorogood, 2004).

Participants were recruited through individual emails. Participation was voluntary and no remuneration was offered for participation. Before the interview started, each participant was reminded that participation was voluntary, informed that they could end the interview at any time, and explained that all interviews and transcripts were confidential. All participants gave verbal consent before participating in the study. Participant transcripts were de-identified and numerical participant numbers were assigned to each (e.g. Participant 1, Participant 2, etc...).

**Data Collection**

A standard interview guide was developed that asked participants to reflect on: (a) characteristics that enabled them to be successful surgeons and if any of those characteristics are unique to surgeons, (b) how the unique characteristics impacted surgeons’ ability to engage in CPD, and (c) how CPD could be tailored to surgeons' needs. After these questions, participants were then given a definition of surgical ego and asked (d) if they felt it was a real phenomenon and if any of the characteristics they previously identified were part of that ego, (e) if the surgical ego impacted their engagement in CPD, and if yes, (h) the nature and consequences of that impact. The interview guide was pilot tested with a surgeon from outside the participant population sample to ensure that the questions were easily understood and that they were phrased in such a way so as to prompt reflections on the desired phenomena. All interviews were conducted one-on-one by SD at the convenience of the participants. Interviews lasted 30 minutes on average, were audio recorded, and transcribed. To protect confidentially, all markers that could potentially identify participants were removed.
Data Analysis

Data collection and data analysis occurred in iterative cycles. In each cycle, 3 participants were interviewed, the audio recording was transcribed, and then the transcripts were coded by SD, EH, and LV. Using thematic analysis methodology (Braun and Clarke, 2006; Kiger and Varpio, 2020), SD, EH, and LV analyzed the three transcripts using the first 5 of the methodology’s six steps. The researchers read the transcripts (Step 1: familiarize yourself with the data), independently and inductively created codes describing relevant data items (Step 2: generate initial codes), met as a team to discuss the code and identify ways that codes could link together into overarching themes (Step 3: searching for themes), construct themes and verify their presence across the three manuscripts (Step 4: review themes), and create a theme-based coding structure that defined and illustrated each theme (Step 5: define and name themes). After the first cycle was completed, SD conducted three more interviews and the five steps of analysis were repeated by SD and EH to further refine the theme-based coding structure. Only minor revisions were made to the structure after cycle 2. After this second cycle was completed, SD conducted three more interviews and the analysis was repeated by SD and EH. At this point no new themes were identified and no changes were needed to the coding structure. At this point, SD and EH independently applied the finalized coding structure to all nine transcripts in the data set. JM then merged the coded transcriptions from SD and EH, and JM resolved the few coding discrepancies that occurred to produce the final coded transcripts. EH then entered the final coded transcripts into NVivo (version 12, QSR International) to create a visual collection of key interview take-aways (Braun and Clarke, 2006; Basit, 2003).

Reflexivity

To ensure the validity of the coding, each member of the research team engaged in data analysis. The team is comprised of individuals with dissimilar training and CPD experiences. SD is a military surgical sub-specialist and is part of the same academic surgical community as all of the study participants. SD brings her own lived experience of the surgical ego and her role as a surgeon to this study. JM is a PhD-trained educational psychologist who is not part of the community where the study was carried out. JM is a civilian with no military or surgical training and with no experience delivering CPD to surgeons. EH is a masters-trained civilian research assistant who is not part of the community where the study was carried out. EH is a civilian who does not engage in delivery of CPD and has no military nor surgical training. LV is a PhD-trained medical education researcher. She is not part of the community where the study was carried out and has no military or surgical training. She does have 14 years of experience developing and delivering CPD to physicians and surgeons.

Results/Analysis

Nine practicing surgeons participated in this study; participants had an average of 17 years in practice. See Table 1 for participant demographic information. Through our analysis of the data, we identified 4 overarching themes:

1. There are specific characteristics that successful surgeons embodied;
2. The surgical ego exists on a continuum;
3. The surgical ego does impact CPD—both positively and negatively; and
4. CPD can be delivered in such a way as to circumvent some aspects of the surgical ego while simultaneously harnessing other aspects.
Table 1: Participant demographics

| Demographic                        | No. (% of total) |
|------------------------------------|------------------|
| **Type of surgical training completed** |                  |
| General Surgery                    | 1 (11)           |
| Trauma Surgery                     | 1 (11)           |
| Vascular Surgery                   | 1 (11)           |
| Plastic Surgery                    | 1 (11)           |
| Surgical Oncology                  | 1 (11)           |
| Otolaryngology                     | 2 (22)           |
| Ophthalmology                      | 2 (22)           |
| **Completed Sub-specialty Training** |                  |
| Yes                                | 6 (67)           |
| No                                 | 3 (33)           |
| **Years in Practice**              |                  |
| 10 - 20 years                      | 6 (67)           |
| 20 - 30 years                      | 3 (33)           |
| Average years                      | 17.67            |
| **Gender**                         |                  |
| Female                             | 3 (33)           |
| Male                               | 6 (67)           |

Characteristics of successful surgeons

Participants noted 6 distinct characteristics that successful surgeons exemplified, but not all of these were cited with the same frequency across participants. Those most frequently mentioned were: confidence/self-esteem; able to act calmly, flexibly, and quickly under pressure; technical expertise; and humility. See Table 2 for a listing of characteristics of successful surgeons, ordered by frequency of mention by participants. Participants were not able to consistently determine which characteristics were unique to surgeons. Five participants expressed that some characteristics might be unique to surgeons, but when pressed to select which specific characteristics belonged to surgeons, participants did not consistently make similar selections.

Table 2: Characteristics of successful surgeons, listed in order of frequency of mentions by participants

| Characteristic | Number of participants citing the characteristic |
|----------------|--------------------------------------------------|
|                |                                                  |

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**The surgical ego exists on a continuum**

All participants (n= 9) acknowledged that the surgical ego exists. But the participants were clear to explain that the surgical ego is not a single, unchanging state, nor is it experienced the same way by all surgeons at all times. As Table 3 illustrates, participants explained that the surgical ego embodied by a surgeon could evolve over time. Furthermore, participants explained that the power or impact of the surgical ego exists as a continuum—sometimes the surgical ego is in full force, while at other times it is almost not present. Some surgeons stood frequently at one particular location on that continuum, but others would move up and down the continuum at different times.

**Table 3: Data excerpts of participant comments describing the surgical ego changes over time and exists as a continuum**

| Data excerpts of Participant Comments Describing the Surgical Ego |
|---------------------------------------------------------------|
| **Surgical ego changes over time:**                             |
| *I do feel that the surgical ego is a real phenomenon…*[T]*o me, the surgical ego is defined by where you are at that moment on the continuum between supreme confidence—which would, of course, be translated into arrogance and oafishness and throwing things in the operating room, the only reason that the patient is going to have a complication is because somebody else screwed up, or it’s the patient’s fault—and on the other hand, complete humility, in which case you have no ability to actually do anything for anybody because you’re too busy understanding and appreciating your own limitations. (Participant 7)* |
| **Surgical ego exists as a continuum:**                        |
| *You need a certain amount of self-confidence to be a surgeon and be effective. I think this can sometimes be perceived as arrogant when it is not. It’s just a coping mechanism to do your job effectively. There are surgeons who are too meek to be truly effective…On the other hand, there are surgeons on the spectrum of self-confidence who are too far and really are arrogant to the point where it does not allow them to be introspective enough or it interferes with personal interactions with others. (Participant 2)* |
| *I’d say the theme that I’ve probably hit most that I think is most pertinent is this continuum of humility to arrogance and how that relates to our ability to learn, not only acknowledge—the most important is acknowledging and recognizing that we have deficits because there’s a tremendous innate self-bias… we always think we’re better than we are… so the more confident and arrogant we are, that’s gonna be exasperate, you know, even more so. So, I think, acknowledging that we have shortcomings, weaknesses, deficiencies, knowledge gaps, and then the ability to admit that and then also to work on it… to me all of that feeds back to that humility confident paradigm. (Participant 9)* |

| Confidence, Self-esteem | 7 participants |
|------------------------|---------------|
| Able to act calmly, flexibly, and quickly under pressure | 7 participants |
| Technical expertise | 5 participants |
| Empathy, Compassion patients | 4 participants |
| Humility | 3 participants |
| Competitiveness, Wanting to be the best | 1 participant |
The surgical ego impacts CPD

Participants universally confirmed that the surgical ego did impact surgeons’ engagement with CPD; however, participants did not commonly agree as to the quality of that impact. Some described how the surgical ego enabled their career success, while others noted it as a potential obstruction they needed to avoid. Still, others described how it could both enable and obstruct engagement in CPD. See Table 4 for data excerpts illustrating these varying descriptions.

Table 4: Illustrative data excerpts of how participants described the surgical ego enabling CPD engagement, obstructing it, or being capable of both enabling and obstructing

| Impact of the surgical ego on CPD | Illustrative data excerpts |
|-----------------------------------|-----------------------------|
| Enabling                          | *I think it [surgical ego] positively impacts a surgeon's engagement with professional development—at least one’s that are in academic centers… especially early on in a surgeon’s career.* (Participant 3) |
|                                   | *Yes, as I just stated, being somewhat demanding and aggressive may actually aid in engaging in CPD if the surgeon desires CPD in a setting where CPD is unavailable.* (Participant 5) |
| Obstructing                       | *A surgeon could feel they are so great they don’t need to grow anymore.* (Participant 4) |
|                                   | *Arrogance, over-confidence and narcissistic traits can lead a surgeon to believe CPD is unnecessary.* (Participant 5) |
|                                   | *If your ego is so great that you don’t think you have any areas to improve upon, I don’t think you would be very receptive to additional learning opportunities.* (Participant 2) |
| Both enabling and obstructing      | *The surgical ego can potentially have both a positive and/or negative impact on a surgeon’s desire to engage in CPD. It’s like the surgical ego is on a continuum. Not enough and you are ineffective in the OR unable to make critical decisions. Too much and you become reckless or careless with a God-like attitude.* (Participant 5) |
|                                   | *If someone were to think that they’re the best or they know how to do it then maybe they feel like they wouldn’t need to continue to evolve and learn. But it also could go the other way where if they’re really trying to maintain being the best it might encourage them to continue to develop.* (Participant 8) |

Best Practices for Harnessing the Surgical Ego in Support of CPD

All of the research participants noted that CPD could be tailored to the surgical ego such that the ego is harnessed to support meaningful engagement in CPD activities. The participants offered suggestions that were aimed at the individual—i.e., ways in which the individual surgeon needed to work or adjust their mindset to more effectively engage in CPD—and at the delivery of the CPD itself—i.e., ways in which the education could be designed to suit
the surgical ego. Table 5 offers illustrative quotes from participants’ descriptions of each of these orientations.

Table 5: Best practices for surgical CPD by individual- and CPD designing-orientations

| Best practices for supporting surgical CPD | Illustrative data excerpts |
|------------------------------------------|----------------------------|
| **Individual oriented**                  |                            |
| Foster personal introspection to identify weaknesses | *I think the introspection to figure out your own areas of personal weakness and address them is key. Likewise, an analytical mindset to evaluate your outcomes and new techniques in the literature are important. (Participant 2)* |
|                                          | *For me, it's seeing the surgery because I copy what I see. I need to see someone and just emulate what they do and as I'm watching that surgery I'm doing what they're doing. (Participant 1)* |
|                                          | *And then number two, when I do have issues, which we all do, instantly share it with my colleagues… because, number one, I learn from them, and number two, it breaks down that surgical ego that doesn't want to admit that you can do something wrong. (Participant 1)* |
| **CPD design oriented**                  |                            |
| Base CPD activities in science/literature | *I'm very sensitive to the literature and the trends and the science behind what we do. (Participant 7)* |
|                                          | *You have to have reading because you need to know all the science behind it and you don't get the science by just watching. You have to read… and then you understand why you're doing something. You're not just a surgical monkey or technician—you're a surgeon understanding why and then, when something happens in the OR, that didn't happen on the video, you'll understand and adapt and do something unpredicted (Participant 2)* |
| Emphasize how the CPD will enable surgeons to maintain patient-care excellence in their daily clinical work | *Keeps me in the game and keeps me current on things and stimulates the academic mind and helps me analyze my own practice to make sure that I'm at least close to the latest and greatest on how we offer care to patients. (Participant 9)* |
|                                          | *One of the big initiatives in the last 10-15 years has been to reduce errors in the operating room with "pause for the cause" and improve safety for the patients. This has been a win-win for surgeons, the patients/public and hospitals. (Participant 6)* |
|                                          | *It has to be pertinent to what they do. (Participant 9)* |
|                                          | *Hands-on training, wet labs, having the world expert, the mentors there, to kind of observe and walk you through it, so having that personal guidance. (Participant 5)* |

**Discussion**

In this exploratory study, we found that surgeons acknowledge the existence of the surgical ego, and they perceive that the surgical ego impacts their engagement in CPD. Participants noted that the quality of the impact could be
both beneficial and detrimental. While the surgical ego could pre-dispose surgeons to feel that they did not need CPD (e.g., that the arrogance of the surgical ego could find the surgeon feeling that additional training was unnecessary), it could equally predispose surgeons to want to engage in CPD (e.g., that maintaining their excellence in the operating room demands constant refinement/training). Participants also noted that the surgical ego could be harnessed in support of CPD. Specifically, they described individual- and CPD design-oriented ways of using the surgical ego to the benefit of surgeons’ CPD engagement. From the personal orientation, the surgical ego’s narcissistic orientation and desire to excel as surgeons could be tapped into to have surgeons see the need to engage in self-analysis to identify strengths and weaknesses, and then to target those weaknesses with CPD engagement. The CPD interventions could be designed to explicitly address advances in research that are also explained in terms of the relevance to daily clinical work. Thus, this study suggests that the surgical ego can be used as means of improving surgeons’ engagement in CPD activities.

This study adds to the growing body of literature regarding how to tailor CPD to address specific needs of clinicians (Sachdeva, 2016; Jeong et al., 2018). More pertinent to the present study, Stewart and colleagues also observed that surgeons desired CPD to be customized to their interests and expectations, and that surgeons desire clinically oriented CPD. Our study adds credibility to these observations and adds to it. Our research is the first to consider the role of surgical ego and its potential impact on engagement in CPD. For instance, participants in this study commented on wanting to excel and be the best they can possibly be at their craft—to be at the top of their game. They described their surgical ego as a driving force behind that sentiment; the surgical ego drove them to seek out CPD opportunities for growth. This finding suggests that the surgical ego can motivate productive engagement in CPD. This is consistent with the literature showing that CPD provides an important opportunity for surgeons to refine their skills and stay abreast of evolving medical knowledge (Zahid, Hong, and Young, 2018). As commented on by Gough, “learning, teaching, professionalism and commitment to the highest standards of surgical care of patients are the important reasons we are surgeons” (Gough, 2009).

Furthermore, participants in the present study commented on the value of expert mentorship and sharing with colleagues. This is consistent with the growing body of literature surrounding surgical coaching as a venue for continuing professional development (Hathaway and Heinsohn, 2019). It further supports the need for CPD for surgeons to offer more than merely improving technical skills. Instead, as noted by Hathaway and Heinsohn (2019), coaching has the potential to address a surgeon’s soft skills (e.g., effective interpersonal team communication) with the ability to further impact patient safety (Hathaway and Heinsohn, 2019).

The Dual Role Conflict of Surgical Ego

The surgical ego is a phenomena with both positive and negative attributes as described by our participants. It bolsters self-confidence and their ability to successfully carry out their work. This is consistent with the literature by Knoll and colleagues demonstrating that surgeons with a positive self-perception, conscientiousness, and calmness were correlated with positive operative conduct while self-rated neuroticism had an inverse relationship with operative conduct (Knoll et al., 2010). Conversely, some participants noted that arrogance, over-confidence and narcissistic tendencies could thwart their learning.

One means of interpreting these findings would be to consider how a theory about identity might inform explanations. One such theory—role theory—is well positioned to inform analysis of the findings because it is a theory aimed at understanding how the multiple roles that a person holds (e.g., surgeon and lifelong learner) can sometimes be incongruent (Basit, 2003). Our participants clearly articulated that some of the key traits necessary to be a successful surgeon were confidence, technical skill, and the prowess to make critical decisions and that these traits molded their surgical ego. At the same time, our participants endorsed that to meaningfully engage in CPD they needed to have humility coupled with an analytical mindset. The ability to self-reflect on one’s weakness was
felt to be a required component to be a lifelong learner.

In essence, this need for both confidence and humility is role conflict. As one of our participants described it: "one of my mentors told me that the most dangerous surgeon is the overconfident surgeon. You need to be confident, but every surgeon needs to have an element of humility to know when to stop, to know when you're making choices of who to operate on, and having enough humility to self-reflect and recognizing weaknesses and taking strides to rehabilitate weakness in becoming a better surgeon." (Participant 9). Role theory addresses this conflict in terms of the multitude of roles that an individual adopts; for surgeons, these conflicting roles are confident clinician and humble lifelong learner. Role theory suggests that, in the face of such conflicts, a hierarchy develops with one role coming to the forefront and having a detrimental impact on the other remaining roles (Marks and MacDermid, 1996). When this hierarchy of roles is enacted, the individual experiences role conflict—i.e., when the expectations and demands of roles are misaligned (Marks and MacDermid, 1996; Varpio et al., 2018). Marks and MacDermid suggest that achieving a healthy balance and being engaged across roles is essential for diminishing tension/strain (Marks and MacDermid, 1996).

Recognizing that CPD engagement is impacted by the surgical ego makes sense when we conceive of it as role conflict within the individual's roles as surgeon and lifelong learner. If CPD initiatives could bring those conflicting roles into alignment—perhaps using the framing suggested by our participants—that misalignment can be resolved. We suggest that future research could help CPD educators find this alignment between the role expectations of high-quality performance and their role as lifelong learners who need to continuously engage in professional development.

Limitations

Our study has limitations but also unique characteristics. First and foremost, the study has a lack of diversity with only a small sample of surgical specialties. The interviews were of surgeons practicing at the same institution which limits the generalizability of our results; broader encompassing perceptions are likely to be derived from obtaining a more representative sample. However, the study participants had varying training backgrounds, some with prior civilian practices, some with simultaneous civilian practices, some with prior and ongoing surgical practice at other institutions that are not academic in nature nor associated with a level one trauma center. The variability across training and surgical practice patterns advocates for the general applicability of our findings. We do acknowledge, however, that additional research is needed to establish the generalizability of our findings. Lastly, conducting this study in a military hospital setting removed inter-surgeon competition; this is a factor that we hypothesize will magnify impact the experience of surgical ego. Yet, even with this factor removed, the surgical ego was explicitly found to exist.

Conclusion

This study brings to light the influences of the surgical ego on surgeons' engagement in CPD. As we further our understanding of the complexities of the surgical ego through the concept of role conflict, this knowledge can be harnessed to develop surgically relevant CPD. There is something unique about being a surgeon. Perhaps, a fruitful endeavor to help surgeons reconcile the implications of their roles and develop more insights into the role of ego is through (as described by one participant) "teaching and nurturing the new generation of surgeons to view surgery as a privilege and an art that is an ongoing journey of development"…(Participant 4) (Luna, 2007; Billingsley, Nunez-Mulder, and Gardner-Bougaard, 2017).
Take Home Messages

Best Practices for Supporting Surgical CPD:

- CPD ought to be customized to foster personal introspection, identify weaknesses, and examine the implications of surgical ego
- CPD activities need to be based in science / literature and account for role conflict and role strain that might transpire for surgeons
- CPD should emphasize how it will enable surgeons to maintain patient-care excellence in their daily clinical work

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### Appendices

None.

### Declarations

The author has declared that there are no conflicts of interest.

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### Ethics Statement

This research was considered by the Human Research Protections Office at Brooke Arms Medical Center on 8 May 2020 and deemed exempt because the protocol was found to constitute human subjects research which meets the requirements of 32 CFR§219.104(d)(2)(i) as exempt from the regulatory requirements of 32CFR§219. The research was conducted in accordance with the Declaration of Helsinki. Verbal informed consent was obtained from all subjects before the study. This entailed before the interview started, each participant was reminded that participation was voluntary, informed that they could end the interview at any time, and explained that all interviews and
transcripts were confidential. All participants gave verbal consent before participating in the study. Participant transcripts were de-identified and numerical participant numbers were assigned to each (e.g. Participant 1, Participant 2, etc...).

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