

## Background

The decision to trust a resident is the joint responsibility of the resident and his/her attending, and is influenced by their behaviors in the OR<sup>4</sup>. Due to increasing sub-specialization, surgeries are more complex than ever; yet, surgical trainees have less operative experience during their residency<sup>4</sup>. These two circumstances call for renewed attention to the training process surgical residents undergo. Improvements in surgical education will have a substantial impact on our trainees' readiness for surgical practice. Effective communication in the operating room between attending and resident surgeons is central and includes a substantial amount of nonverbal interaction<sup>3</sup>. Our goal is to discover the correlation between attending and resident non-verbal communication, and resident autonomy in the OR.

## Methodology

This is a cross-sectional study of attending/resident dyads in the OR employing mixed methods, including surveys of residents and attendings and intraoperative filming of the interactions between the attendings and residents during critical moments of the surgery. Experts will analyze nonverbal cues from the attendings/residents using an instrument derived from Laban Movement Analysis<sup>1,2</sup>. Attendings and residents will participate in semi-structured interviews.

## Expected Results

“What are the nonverbal cues expressed by the resident associated with resident’s self-perception of autonomy during critical moments of the surgery?” Nonverbal cues are comprised of 1) kinesic and 2) vocal expressions. Kinesics are qualitative bodily movements which include stance, postural alignment, gesture and proxemics. The vocal aspect is non-lexical and it includes paralinguistic features such as volume, pitch, rate, emphasis and inflection.

Surgilab Kinesic Assessment Tool

Time	Variables	1	2	3	4	5
	Space	Indirect	Somewhat Indirect	Mid-range	Somewhat Direct	Direct
	Weight	Light	Somewhat light	Mid-range	Somewhat Strong	Strong
	Time	Slow	Somewhat Slow	Mid-range	Somewhat Quick	Quick
	Shape1	Falling	Somewhat Falling	Mid-range	Somewhat Rising	Rising
	Shape 2	Retreating	Somewhat Retreating	Mid-range	Somewhat Advancing	Advancing
	Shape 3	Widening	Somewhat Widening	Mid-range	Somewhat Narrowing	Narrowing



Surgilab Vocal Assessment Tool

Time	Variables	1	2	3	4	5
	Pitch	High	Somewhat High	Mid-range	Somewhat Low	Low
	Volume	Strong	Somewhat Strong	Mid-range	Somewhat Light	Light
	Rate	Slow	Somewhat Slow	Mid-range	Somewhat Quick	Quick
	Inflection	Rising	Somewhat rising	Mid-range	Somewhat Falling	Falling

(Fig.1 (SKA (top left), Dr. Jennifer Martin - Communication Expert (top right), Casey Rose- Medical Student (bottom right), and SVA (bottom right)).

We hypothesize that a resident who is perceived as autonomous is more likely to exhibit kinesic and vocal qualities associated with confidence and engagement (highlighted in red).

## Application

- Residents can increase confidence in their surgical skills, may improve their skills and gain a measure of autonomy necessary toward becoming a seasoned surgeon. Residents can achieve these outcomes by:
  - identifying the non-verbal cues attending surgeons use
  - learning whether these cues signal the attendings' confidence in the resident
  - learning which non-verbal cues they should use to communicate their own confidence in their skills and when they should use them.
- Second, this process may improve the residents' educational experience and the attendings' teaching prowess.
- Third, the quality of communication in the OR may ultimately improve.

## References

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