

Figure 1. Resident self-reported Grit-S Score.

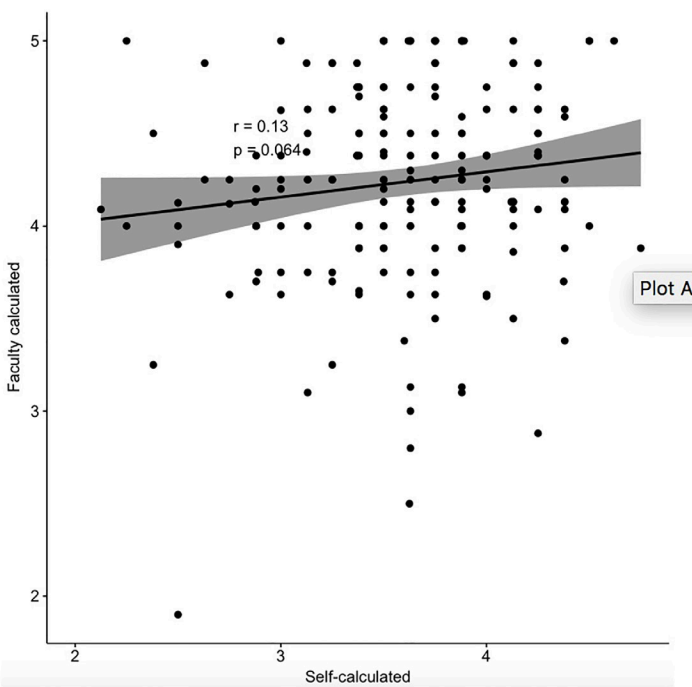


Figure 2. Correlation of residents' self-reported Grit-S Score and the residents' faculty-assessed Grit-S Score.

## 12 Do EM resident self-assessed milestone levels and that of the Clinical Competency Committee Consensus Align Over Time?

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**Background:** Self-assessment is an important skill for physicians to determine ongoing learning needs over the course of a career. Graduate medical education training programs should incorporate self-reflection into the biannual evaluation process in order to assist residents with development of this professional skillset. A mechanism for feedback on this process is needed.

**Objectives:** To assess the agreement between the Clinical Competency Committee (CCC) assignment of milestone levels for an individual resident (gold standard) and the resident's self-assessment of the same milestones over eight evaluation periods during four years of training.

**Methods:** We analyzed milestone assessment for a single class of 12 residents across the four years of their emergency medicine training. Milestone levels as assigned by the CCC and resident were assessed overall and at eight evaluation time points (PGY-1 midyear (MY), PGY-1 end-of year (EOY), PGY-2 MY, PGY-2 EOY, PGY-3 MY, PGY-3 EOY, PGY-4 MY, and PGY-4 EOY) using weighted kappa statistics (with 95% CIs) and agreement.

**Results:** 79% of residents completed self-assessments over 4 years allowing for comparison to CCC milestone evaluations. Overall, agreement ranged from 21% to 46% with 18 of 23 milestones having moderate agreement between the CCC and the resident and 5 milestones having fair agreement [Table 1]. While inter-rater reliability was low at each of the eight time points, agreement between the

Table 1. Overall inter-rater agreement of milestone data by milestone.

Milestone	Kappa	95% CI	Agreement
Emergency Stabilization	0.452	(0.359 – 0.538)	21%
Observation and Reassessment	0.457	(0.368 – 0.543)	25%
Airway Management	0.433	(0.324 – 0.532)	25%
Systems-based Management	0.452	(0.350 – 0.547)	28%
Other Diagnostic Therapeutic Procedures: Vascular Access	0.338	(0.203 – 0.468)	29%
Medical Knowledge	0.425	(0.278 – 0.544)	29%
Patient Safety	0.438	(0.340 – 0.537)	29%
Anesthesia and Acute Pain Management	0.508	(0.419 – 0.602)	30%
Technology	0.383	(0.264 – 0.483)	30%
Accountability	0.384	(0.288 – 0.487)	32%
Multi-tasking (Task-switching)	0.462	(0.377 – 0.556)	33%
Patient Centered Communication	0.392	(0.284 – 0.510)	33%
Pharmacotherapy	0.512	(0.427 – 0.598)	34%
Disposition	0.467	(0.366 – 0.575)	34%
Other Diagnostic and Therapeutic Procedures: Goal-directed Focused Ultrasound (Diagnostic/Procedural)	0.406	(0.263 – 0.554)	34%
Professional values	0.38	(0.274 – 0.509)	36%
General Approach to Procedures	0.472	(0.335 – 0.590)	37%
Other Diagnostic and Therapeutic Procedures: Wound Management	0.558	(0.458 – 0.644)	38%
Performance of Focused History and Physical Exam	0.432	(0.326 – 0.559)	39%
Diagnostic Studies	0.521	(0.426 – 0.626)	41%
Practice-based Performance Improvement	0.549	(0.443 – 0.660)	42%
Team Management	0.525	(0.428 – 0.634)	43%
Diagnosis	0.589	(0.481 – 0.682)	46%

CCC and resident increased from 23% to 52% over four years of training [Table 2].

**Conclusions:** Overall, inter-rater reliability between CCC and resident self-assessment of milestone proficiency was low. There was a positive trend toward improved agreement between the CCC and the resident self-assessment over the four years. Additional work is needed to understand whether the low to moderate agreement is consistent with other institutions, and if it is due to the evaluation process or a lack of feedback to or coaching of the residents.

**Table 2.** Inter-rater agreement of milestones by year of training.

Residency Level	Kappa (95% CI)	Agreement
PGY-1		
Midyear (fall)	0.127 (0.044 – 0.207)	23%
End-of Year (spring)	0.115 (0.049 – 0.183)	26%
PGY-2		
Midyear (fall)	0.051 (-0.011 – 0.118)	28%
End-of Year (spring)	-0.014 (-0.077 – 0.053)	25%
PGY-3		
Midyear (fall)	-0.001 (-0.088 – 0.086)	30%
End-of Year (spring)	0.105 (0.035 – 0.183)	36%
PGY-4		
Midyear (fall)	0.018 (-0.044 – 0.096)	44%
End-of Year (spring)	0.057 (-0.017 – 0.145)	52%

# 13 Does Learning-Trivia Format Affect Learner Perceptions and Preferences?

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**Background:** Trivia is a common tool used by educators to engage learners during didactic sessions. Compared to standard lecture formats, application of “Serious Games” has been shown to increase learner participation, pre-session study, and performance. There are a variety of trivia formats which may lead to different learner perceptions.

**Objectives:** Our objective was to compare learner perceptions between three formats: Jeopardy!, Pub Trivia, and an App-based format (see fig. 1 for descriptions). We hypothesize that these formats will not carry equal learner perceptions.

**Methods:** Formats were compared over three separate sessions, each session covering separate Emergency Medicine (EM) topics. Convenience samples of residents in our PGY 1-3 EM program attending weekly conference were used. Learners were surveyed about each trivia, and asked to directly compare the formats. Indirect comparisons between responses were analyzed via one-tailed pooled variance t-testing, while direct comparisons were split into proportions which were compared to a null preference hypothesis.

**Results:** In indirect comparisons, the Pub Trivia format encouraged whole group participation more than Jeopardy! (but not App-based). Pub Trivia also maintained group focus significantly more than Jeopardy! or App-based trivia, and was a more efficient use of time than Jeopardy!. The questions and answers in Pub Trivia were significantly clearer than those in the App-based trivia. Overall, Pub Trivia was significantly preferred to App-based trivia. In direct comparisons, the questions and answers in Jeopardy! were perceived to be clearer than in Pub Trivia. See fig. 2 for graphical presentation of results.

**Conclusions:** The perception of Pub Trivia encouraging group participation and helping maintain focus during the session may be a result of decreased time pressure, allowing more time to be spent in-group discussing answers. However, learners preferred the clarity of Jeopardy!, which may suggest that the open-ended nature of Pub Trivia may open these sessions to distracting disputes. This study was limited by small sample size, single-person content creation, and single center study. Going forward, given a preference for Pub Trivia over the other formats, we will implement more of this format, with attention to question and answer clarity to reduce disputes.

Jeopardy!™	Pub Trivia	App-Based (Kahoot!™)
<ul style="list-style-type: none"> <li>Multiple questions of various point values with one correct answer</li> <li>Frequently 2 rounds of increasing point values</li> <li>Teams compete to buzz in first to answer questions</li> <li>Correct answers earn positive points, incorrect answers deduct points</li> <li>Final Jeopardy™ question allows for wager of accrued points</li> </ul>	<ul style="list-style-type: none"> <li>Multiple rounds with questions that may one or more correct answers</li> <li>Teams record answers on paper answer sheet, which is collected AFTER each round and graded</li> <li>No deduction for wrong answers</li> </ul>	<ul style="list-style-type: none"> <li>Series of multiple choice questions</li> <li>Teams respond via smartphone</li> <li>For each question, start with fixed maximum</li> <li>Teams record answers on paper answer sheet, which is collected AFTER each round and graded</li> <li>No deduction for wrong answers</li> </ul>

Figure 1. Trivia formats.



Figure 2. Graphical representation of results.