Validation of the Lasater Clinical Judgement Rubric and Predictors of Clinical Nursing Judgement in Simulation

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Introduction

Background

The Lasater Clinical Judgment Rubric (LCJR) is frequently used in clinical judgment assessment in education,[1] but there have been no studies to determine the predictors of higher clinical judgement scores, including any impact of stress[2-5].

Purpose

Therefore the purpose of this study was to determine the impact of age, years as an RN, number of prior simulations, and stress on clinical judgement.

Methods

Design and Sample:

- Comparative study
- 2 groups:
  - Novice Nurses (senior prelicensure students; n = 13)
  - Expert Nurses (ICU nurses of at least 5 years; n = 15)

Simulation: The 12 minute simulation depicts a patient (Sim Man 3G, Laerdal, NY) in the hospital setting with decompensated heart failure who is short of breath. Each subject participated in the simulation as a sole provider.

Expected clinical activities included:

1. Elevate the Patient's Head
2. Apply of the Pulse Oximeter
3. Look at the Monitor
4. Choose and apply Oxygen
5. Auscultate the Lungs
6. Reviewing the Provider Orders and Choose the Correct Medication

Debriefing: there was no formal debriefing done as this was a study simulation.

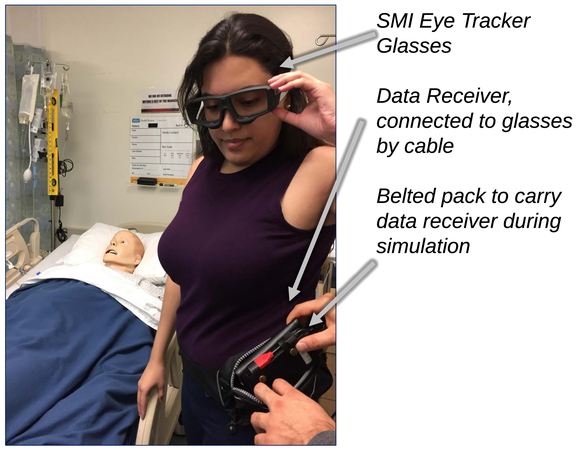
Lasater Clinical Judgment Rubric: An objective tool based on Tanner's Clinical Judgment Model to evaluate the clinical judgment of a student or licensed nurse in a single simulation or clinical episode.

This study was IRB approved.

Stress Detection:

- Pupillometry (SMI Eye tracker, GDR)
- Physiological manifestations of stress can be captured by changes in pupil diameter.
- Captures high resolution video and audio from the users' point of view.

Figure 1. Eye Tracking Gear as Worn During Simulation



Data Collection Protocol

- Demographic Questionnaire
- Eye Tracker calibration
- High-Fidelity Simulation
- Identification of pupillary changes during specific clinical activities

Statistical/Data Analysis

- Descriptive statistics, t-tests and linear regression.
- Mean Pupillary diameter data derived SMI BeGaze© software:
  - Baseline at start time of simulation.
  - At onset of each clinical activity.
  - Measures pupillary sizes for both eyes via sensors inside SMI glasses.
  - Change from baseline for each clinical activity was used for analysis.

Covariates

- Age, years of nursing experience, prior simulation experience, LCJR scores and six measures of pupil dilation as a measure of stress obtained by an eye tracker.

Results

- There was no significant difference between Novices and Experts for number of prior Sims (p=0.51)
- There was a significant difference between groups for:
  - age (p<0.01)
  - years as an RN (p<0.01)
  - three measures of pupil dilation (elevate HOB, look at monitor, choose and apply oxygen).
- Covariates with a p value of > 0.05 in the bivariate analysis (age, years as a nurse, and pupillary changes [Elevating the Patient's Head, Looking at the Monitor and Applying Oxygen] were entered into a Linear Regression with the average LCJR score (assessment of clinical judgment) as the dependent variable.
- A stepwise linear regression established years of RN experience as the only independent predictor of clinical judgment (F (1, 23) = 10.08, p = .004).
- The overall model fit was R^2 = .305, with participants' predicted Lasater score equal to 17.66 + .307 (years of RN experience).

Table 1. Bivariate and Multivariate Analysis

	Novice	Expert	Bivariate P-value	Multivariate P-value
Age	25.38 ± 6.14	38.80 ± 10.07	< 0.01*	
Years as RN	0	11.75 ± 9.02	< 0.01*	< 0.01*
Number of Prior Sims	4.69 ± 1.43	4.20 ± 2.30	0.51	
Average Lasater Score	15.38 ± 4.31	22.60 ± 3.18	< 0.01*	0.12
Pupil Dilation Change from Baseline Elevate Patient's Head	0.75 ± .63	0.25 ± .36	0.02*	0.26
Pupil Dilation Change from Baseline Apply Pulse Oximeter	0.37 ± 0.87	0.07 ± 0.42	*0.25*	
Pupil Dilation Change from Baseline Look at Monitor	0.62 ± 0.54	0.19 ± 0.50	0.04*	0.93
Pupil Dilation Change from Baseline Choose and Apply Oxygen	0.67 ± 0.72	-0.01 ± 0.59	0.14*	0.64
Pupil Dilation Change from Baseline Auscultate the Lungs	0.03 ± 0.62	0.05 ± 0.36	0.17	
Pupil Dilation Change from Baseline Review Orders and Choose Medication	-0.04 ±0.56	-0.07 ± 0.61	0.90	

Discussion

- The only statistically significant predictor of clinical judgment was Years as a Nurse.
- For every unit increase in Years as a Nurse, there is a .307 increase in the LCJR score.
- The more years of experience a nurse has, the greater the clinical judgment ability.
- Even between Expert nurses only, years of experience still significantly affects nursing clinical judgment.
- While stress is commonly reported in simulation experiences, this study did not show stress being a factor in affecting clinical judgment scores.

Conclusion

- Years of as a Nurse is the only independent predictor of clinical judgment as measured by the LCJR.
- Clinical judgment of Novices is commonly thought to improve with repetitive practice in simulation.
  - To assess this in future study, a larger sample of Novices with more simulation experience would be needed to determine simulation's ability to be an independent predictor of higher LCJR scores.

References

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