

Abstract

Significant barriers exist to evaluating nursing students' and entry level nurses' performance during simulated activities. One specific barrier is the lack of valid and reliable evaluation instruments. The purposes of this study are to develop and utilize video recorded teamwork simulations, assess the reliability of the Team Behavior Assessment Tool for Entry Level Nurses (TBAT-ELN)(an instrument designed by the Principal Investigator), and investigate the congruence between quantitative and qualitative assessment scales. Scripted simulation scenarios portraying three levels of performance will be produced and video-recorded for use in the study. Nurse educators will then be recruited to view the video recordings and use the TBAT-ELN with a frequency scale and a qualitative scale to assess the simulation participants' performance in each video. The videos will be coded so the nurse educators are masked to the level of performance portrayed in each video. This study will contribute to nursing education science by providing data about the reliability and validity of performance evaluation data produced using the TBAT-ELN to measure team behavior of entry level nurses.

Significance

Developing rigorous and reliable evaluation instruments can be labor intensive, and it has been noted that there has been limited investment in developing suitable measures for the assessment of learning outcomes for practice disciplines (Tanner, 2011). The pursuit of meaningful ways to evaluate participant performance during simulation activities is evident in nursing (Yuan, Williams, Fang, & Ye, 2012), medicine (Kogan, Holmboe, & Hauer, 2009), and pharmacy (Bray, Schwartz, Odegard, Hammer, & Seybert, 2011). The proposed study will contribute to nursing education science by providing data about the psychometric properties of the TBAT-ELN. It will establish a meaningful way to evaluate the teamwork skills of nursing students and new graduate nurses.

Research questions

What is the reliability and validity of data produced using the TBAT-ELN to assess an entry level registered nurse's teamwork skills in a simulated environment?

Is there a difference in the assessment data when raters use the TBAT-ELN with a frequency scale compared with using the TBAT-ELN with a quality assessment scale?

Methodology

Subjects/Participants

The sample will include 30-40 nurse educators from clinical and academic environments. It is projected that the sample will reflect the nurse educators who would be using the instrument in nursing education and new graduate residency programs.

Inclusion/ exclusion criteria

In order to be eligible to participate in this study, nurse educators must have, by self-report:

1. Be currently teaching in an accredited, pre-licensure nursing program in the United States OR teaching in a nurse residency program
2. Have at least one year of experience using simulation in pre-licensure baccalaureate nursing education OR a nurse residency program

3. Have an e-mail address and access to the internet

Method

Educators will be invited to participate via email through personal, professional and list-serve connections. Individuals who respond with an interest in participating in the study, and meet the inclusion criteria will be sent a participant packet via email. The packet will include: 1) Additional instructions 2) The consent form 3) An invitation to a video or telephone conference explaining the TBAT-ELN and the study protocol.

After attending a video or telephone conference, participants who decide to take part in the study will be asked to sign and return the informed consent via email. On receipt of the signed consent the investigators will assign the participant a unique participant tracking number to be used on all study documentation and the participant will be entered into the study.

Data Collection

Week 1

An email will be sent to the participant with instructions and three attachments:

1. A blank copy of TBAT-ELN (A) with a frequency scale (0=never, 1=inconsistently, 2=consistently)
2. A blank copy of TBAT-ELN (B) with a quality scale (0=Unacceptable/unsafe, 1=Below acceptable performance, 2=Acceptable performance)
3. A link to video scenario 1

The participant will review the video and assess the learner's performance utilizing the TBAT-ELN (A). The participant will then repeat the process using TBAT-ELN (B). The completed TBAT-ELN (A) and (B) will then be returned to the principal investigator via email. The participant has 2 week to complete this assignment.

This process will be repeated at week 3 with the link video for scenario 2 and at week 5 with the link to video for scenario 3

Videos

The videos used will be developed specifically for this study and then become a video-archived educational data base of teamwork simulation scenarios for use in training or further research. A total of 4 scripted teamwork scenarios videos will be developed including a training video and 3 videos to be used for data collection. The training video will portray the expected level of performance, and the data collection videos will portray 3 various levels of performance (Unsafe, below expected level and expected level of performance) congruent with the knowledge and skills of a new graduate nurse.

Nursing student actors will be briefed on each scenario and level of performance, and they will perform the simulation accordingly. The videos will be filmed and produced by trained university students. A small stipend will be offered to the students.

Analysis

In order to answer the first research question, the inter-rater and intra-rater (test re-test) reliability of scores from the TBAT-ELN will be calculated using intra-class correlations. Validity will be assessed by examining the correlations between the intended levels and scores assigned to each

scenario. In order to answer the second research question, assessment data from the frequency and quality scale on the TBAT-ELN will be compared and correlations will be calculated.

In addition to these analyses, basic means and standard deviations will be calculated for each item on the instrument, and both between and within group variability will be analyzed using standard statistical techniques (t-test, ANOVA, and Cohen's D effect size calculations, as appropriate). Additional reliability analyses will be conducted using both Cronbach alpha and confirmatory faculty factor analysis techniques.

Limitations

The convenience sampling may produce biased results. Specifically, the sample of nurse educators who participate in the study may have a more keen interest in simulation evaluation than the more general population of nurse educators. This may limit the generalizability of findings.

Co-researchers

Katie Anne Haerling (Adamson), PhD, RN
Assistant Professor, Nursing and Healthcare Leadership Programs
Robert Wood Johnson Foundation Nurse Faculty Scholar
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Susan Prion EdD, MEd, MSN, BS, BSN, CNE, RN
Associate Professor, School of Nursing and Health Professions
University of San Francisco

Outcome

A valid and reliable instrument to evaluate an entry level nurses teamwork skills in a simulated environment.

Evaluation

The psychometric testing used in this study will evaluate the validity and reliability of the instrument

Project Description and Timeline

Schedule	Task
November 2015 –February 2016	Finalize video storyboards and record videos
March 2016 –April 2016	Complete postproduction work on video scenarios
April 2016 – August 2016	Recruit participants via email invitations Conduct faculty reviewer training Faculty reviewers review video scenarios and use TBAT-ELN to score performance
August 2016 –October 2016	Complete data entry and initial data analysis
October 2016 – December 2016	Prepare manuscripts Complete any supplemental data analysis
June 2017	Disseminate results at INACSL conference

Budget

	Allowable Expenses	Rationale or Cost Justification	Funds Requested	Subtotals & Totals
Non personnel				
4 Videos (estimated cost \$250 per video, utilizing student & college equipment)	\$1000	Videos are instrumental to this study. The researchers have investigated whether videos already exist that could be used, but it was found that suitable teamwork simulation videos involving senior nursing students/new graduate nurses do not currently exist.	\$1000	\$1000
Project	\$1000		\$1000	\$1000

References

- Bray, B. S., Schwartz, C. R., Odegard, P. S., Hammer, D. P., & Seybert, A. L. (2011). Assessment of human patient simulation-based learning. *American Journal of Pharmaceutical Education*, 75(10), 208-217.
- Kogan, J. R., Holmboe, E. S., & Hauer, K. E. (2009). Tools for direct observation and assessment of clinical skills of medical trainees. *the American Medical Association*, 302(12), 1316-1326.
- Tanner, C. (2011). The critical state of measurement in nursing education research . *Journal of Nursing Education*, 50(9), 491-493.
- Yuan, H. B., Williams, B. A., Fang, J. B., & Ye, Q. H. (2012). A systematic review of selected evidence on improving knowledge and skills through high-fidelity simulation . *Nurse Education Today*, 3(3), 294-298.

FRESNO STATE

College of Health and Human Services

August 8th, 2015

The "Debra Spunt" Research Grant
International Nursing Association for Clinical Simulation & Learning
2501 Aerial Center Parkway, Suite 103
Morrisville, NC 27560

Dear Committee Members:

I am pleased to offer this letter in support of Marie Gilbert's, Katie Adamson's and Susan Prion's jointly proposed research project "*Assessing the reliability of the Team Behavior Assessment Tool for Entry Level Nurses (TBAT-ELN) and the congruence between a quantitative and qualitative assessment scales.*" The project aims to establish a meaningful way to evaluate the team work skills of nursing students and new graduate nurses.

The research will support the rigorous assessment of team work skills of nurses as they enter the professional environment. In addition, the research will also support future pedagogical research to determine effective learning strategies to promote team work skills.

The College of Health and Human Services is committed to this line of research as it supports the School of Nursing's mission to offer quality nursing education to undergraduate, graduate, and doctoral nursing students. As such, I hope their proposal receives a favorable review.

I look forward to working with them on this foundational project. Should you have any questions please feel free to contact me

Sincerely,



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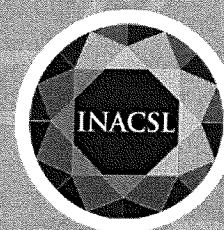
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**Qualifications of INACSL Member
Who is Submitting Spunt grant proposal**

Name Marie Gilbert

Please provide the following information regarding your previous research experience and/or experience in the area of your research interest.

Research Topic	Type: Quantitative /Qualitative	Findings
A comparison of pedagogical approaches to error communication training - A pilot study	Mixed	The findings suggested that an interprofessional education approach to error communication was potentially more effective in terms of observed behavior, self-reported confidence level, and participants' overall satisfaction.
An Investigation into Perceptions of Interprofessional Education (IPE) within the College of Health and Human Services	Mixed	All respondents demonstrated a positive attitude and readiness for IPE. Although the majority of participants appeared to have an accurate understanding of IPE some comment suggested that not all respondents fully understood the concept.
Real Time Quantification of Stress in High-fidelity Human Simulation for a Standardized Learning Experience	Mixed	Salivary cortisol and Heart Rate Variability showed a moderate correlation and significant increase, pre to post simulation. The Neuroticism personality trait and theorist style of learning had significant positive regression weights, indicating students with higher scores on these scales had higher post-simulation stress levels. Moreover, openness personality trait had a significant negative weight, indicating that students with higher scores on openness to experience had lower post-simulation stress level.
The development of the Team Behavior Assessment Tool for Entry Level Nurses (TBAT-ELN)	Mixed	An 18 item tool was developed, the Team Based Assessment Tool for Entry Level Nurses (TBAT-ELN), that identifies essential teamwork skills expected in an entry level nurse.
Breaking down Education Silos with Interprofessional Simulation: A Pilot study (2012)	Mixed	This pilot demonstrated a novel approach to insitu interprofessional simulation. It was feasible and was provided at relatively low cost. The learning experience for all proved extremely valuable.

2. Describe your experience in simulation and/or work in the simulation lab.

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Years of Experience	Simulation type (SP vs. HPS)	Job Title	Briefly list duties
5 years	HPS	Lecturer/Simulation Coordinator	Coordination of simulation experienced for nursing students. Integrating simulation experiences into programs within the College of Health and Human Services Simulation resource and mentor on campus (including mentoring graduate nursing students and physical therapy) and off campus (mentoring educators (interprofessional) within our local healthcare organizations as well as graduate and doctoral students from other programs)
3 years	All	CSA Faculty	Facilitate California Simulation Alliance (CSA) workshops

3. If you are participating with a team of researchers or with a research partner, please describe how your research will be supported by the other researchers or team.

Co-investigator: Katie Anne Adamson, PhD, RN

Assistant Professor, University of Washington Tacoma,

Co-investigator: Susan Prion, EdD, RN, CNE

Position: Associate Professor, School of Nursing and Health Professions
University of San Francisco

Dr. Adamson's Doctoral work focused on assessing the reliability of simulation evaluation instruments used in nursing education. Both co-investigators have significant recognition on a variety of topics including a "Making sense of methods and measurement" series in *Clinical Simulation in Nursing*. Their academic preparation and research experience will prove valuable in this study

4. Please provide any additional information about your skills, knowledge base or overall experiences that you believe will be helpful to the mini-grant review team.

My interest and subsequent development of knowledge, skills and experiences in evaluation methods in nursing began over 10 years ago as a Clinical Educator. My academic preparation (Masters of Arts in Education and a Doctor of Nursing Practice) has provided foundational knowledge and skills in this area. Developing the TBAT-ELN, the instrument that will be used in this study provided the opportunity to apply and further develop my skills. I presented this research at IMSH 2014 and received a lot of interest in the instrument. However, I realized that even though the initial use of the instrument appeared promising, it required additional validity and reliability testing. Working with Dr. Adamson and Dr. Prion has provided the guidance and support for the next phase of this work and I feel we are a team that works well together.