

Development and Evaluation of the Simulation Learning Effectiveness Inventory

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INTRODUCTION

High fidelity simulators help nursing students learn complex patient care. Yet, reliable instruments measuring learning outcomes are scant.

OBJECTIVES

To develop and evaluate psychometric properties of the Simulation Learning Effectiveness Inventory (SLEI).

METHODS

A cross-sectional-descriptive survey

A purposive sample of 505 nursing students recruited from a university in central Taiwan

Phase I: developing question items & evaluating the preliminary psychometric properties using exploratory factor analysis.

Phase II: evaluating reliability/validity of the finalized inventory using confirmatory factor analysis.

Data analyzed using the software of LISREL 8.80

RESULTS

1. The results of both exploratory factor analysis and confirmatory factor analysis showed that the instrument contained seven factors: course content, resource, clinical ability, debriefing, deep approach, confidence, and collaboration. The seven-factor solution with 32 items explained 71.25% of the total variance.
2. The findings of second-order analysis showed comparable fits (preparation, process, and outcome) between a three second-order factor and the seven first-order factors.
3. Internal consistency was adequate with a Cronbach alpha ranging 0.82-0.91 and composite reliability ranging 0.80-0.91. Convergent and discriminant validities were also supported by confirmatory factor analysis & pair construct tests of the factors.

Figure 1 Factor structure of the SLEI

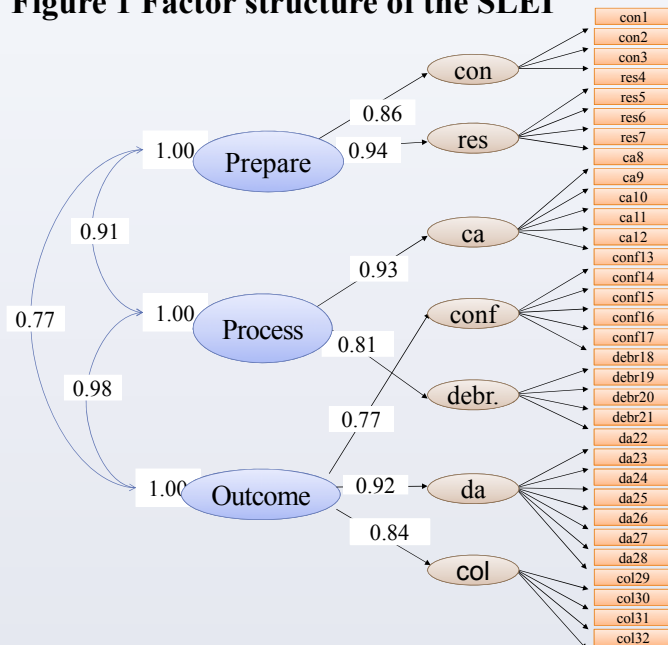


Table 1 Factor correlations of the SLEI subscales

Factors	CR	1	2	3	4	5	6	7
Content	0.87	0.83						
Resource	0.80	0.81	0.71					
Clinical ability	0.86	0.74	0.76	0.74				
Debrief	0.92	0.46	0.48	0.78	0.85			
Deep approach	0.91	0.63	0.75	0.75	0.60	0.77		
Confidence	0.91	0.63	0.65	0.84	0.70	0.71	0.83	
Collaboration	0.89	0.55	0.70	0.74	0.62	0.67	0.80	0.82

*The square roots of averaged variance extracted estimates are on the diagonal.

CONCLUSION

Simulation teaching is more helpful than traditional teaching methods in developing higher level practicing skills. The Simulation Learning Effectiveness Inventory is a reliable and valid instrument. The instrument is helpful in building the evidence-based knowledge of the effect of simulation teaching on students' learning outcomes.

Reference: Jeffries, P.R., 2005. A framework for designing, implementing, and evaluating simulations used as teaching strategies in nursing. *Nursing Education Perspectives*, 26(2), 96-104.