Applying, Validating, and Refining a Measure of Team Development for Pre-clinical Interprofessional Education in Multiple Samples and Settings

Wendy S. Madigosky[1], MD, MSPH ● Kelly S. Lockeman[2], PhD ● Janice L. Hanson[3], PhD, EdS, MH

[1]University of Colorado Center for Interprofessional Practice and Education, Anschutz Medical Campus, [2]Virginia Commonwealth University Center for Interprofessional Education and Collaborative Care; [3]Washington University in St. Louis; Center for Interprofessional Practice and Education at Washington University Medical Campus

The Problem

- Educators need to assess how IPE influences collaboration among pre-clinical students.
- Not just individual students, but also teams, especially how they develop over time.
- Instruments are scarce and lack the theoretical foundation and utility for use in IPE settings.

Can a clinical tool serve as an effective IPE measure?

The Team Development Measure (TDM):

- A 31-item performance measure to promote quality improvement
- Developed by Peace Health, grounded in teamwork literature, tested extensively in clinical workplace settings:
  - ✓ Used with > 150 teams and > 1000 team members
  - ✓ Executive teams, outpatient clinics, inpatient hospital care units
  - ✓ Teams as small as 3-4 people and as large as 43 people
- Measures the degree to which a team has and uses **four components of effective teamwork**:

| Cohesiveness | Communication | Roles Clarity | Goals and Means Clarity |

- Describes stages based on the level at which each component has been achieved

Background

- In 2015-16, VCU and CU independently began using the TDM to assess teams of learners in classroom-based IPE.
- CU found evidence that the TDM is valid and helpful for assessing student teams and evaluating IPE experiences, but further testing is needed.

TDM Refinement Project Overview

Phase 1
- Exploratory factor analysis and internal consistency reliability
- 3 samples from CU and 1 sample from VCU

Phase 2
- Cognitive interviewing at CU
- Item applicability survey at VCU
- Item revisions

Phase 3
- Test using repeated measures design at VCU
- Confirmatory factor analysis

Goal: TDM for IPE
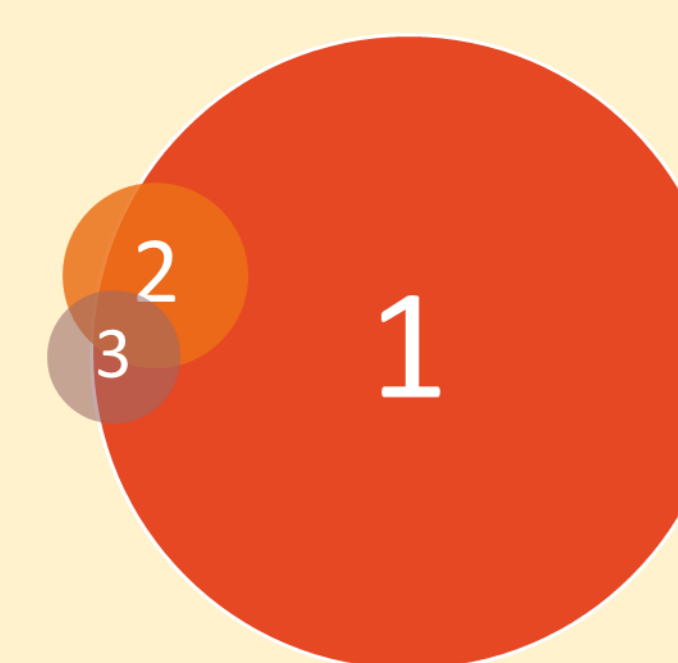Publish to National Center for IPE Measurement Instrument Collection

Phase 1-3 Results

Phase 1
- 3-factor solution using 22 of 31 items
- Solution explains 67% of the variance: Factor 1 (61%), Factor 2 (4%), Factor 3 (+ < 2%)
- High scale reliability for each factor
- Factors highly correlated

Correlation Between Factors

Factor	1	2	3
1	—		
2	.807	—	
3	.540	.597	—

Phase 2
- 1 item dropped, 6 items revised
- Items grouped by original domains to improve flow and ordered by difficulty
- Added response option of 0 (N/A or No Opportunity) for when item development was not available

Phase 3
- Normed Chi-square values for the CFA at each time point (3.50, 4.07, 4.42) were acceptable
- SRMR values (0.05, 0.04, 0.03) indicated good fit for the original four- factor model
- Scale reliability was high for all four factors at time points 1 and 2 (Cronbach's alpha values > 0.91 for each domain).
- Other fit indices were poor, and scale reliability was lower for responses during time point 3 (Cronbach's alpha ranging from 0.72 to 0.84).

Discussion & Next Steps
- Many team development concepts from the clinical workplace are similar in pre-clinical IPE
- Some team development concepts do not translate seamlessly from clinical to pre-clinical IPE
- Rasch modeling to analyze Phase 3 data to see if item difficulty scores are consistent with prior research on original TDM
- Testing of revised tool with longitudinal IPE teams
- Determine whether further revisions are needed to improve the utility of the TDM for IPE

VCU Center for Interprofessional Education and Collaborative Care

CU Center for Interprofessional Practice & Education UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS

Washington University in St. Louis