Changing Teamwork Attitudes With Interprofessional Education (IPE): A Comparative Study
Introduction
Interprofessional education

"Healthcare takes a team"
Interprofessional Education Collaboration Core Competencies

Interprofessional Collaboration Competency Domain

39 Sub-competencies
• Knowledge
• Skills
• Attitudes

The Learning Continuum pre-licensure through practice trajectory

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Review of Literature

IPE Design gaps

• Time distribution of education delivery
• Measurement of team level outcomes

IPE Learning theory

• Adult learning theory
• Social Identity theory
Purpose

The aim of this study was to explore the effect of preparation, anxiety, and time in teamwork education on interprofessional (IP) teamwork attitude.

Research Questions

1. What is the effect of time distribution of team education on IP teamwork attitude?

2. Which are the strongest predictors of IP teamwork attitude among preparation, anxiety, and baseline IP teamwork attitude?
Methods

Research Design
Research Design: Training methods and data collection timeline

Time-distributed design

Week 1
Team Training
Team Training
Team Training

Week 3
Anxiety Prep
Team Attitude

Week 7
IP Simulation
TAQ Team Attitude

Immersive design

Team Training
TAQ Team Attitude
Anxiety Prep
IPE Intervention

Critical Care Simulations
Research variables

Independent variables

- **Time in teamwork education**
  - Time-distributed: Small dose, high frequency. 4 hours over 7 weeks.
  - Immersive: Large dose, low frequency. 4-hours in 1 day

- **Knowledge preparation**: 4 point Likert scale, pre-IPE
  - 1=Very unprepared, 4=Very prepared

- **Anxiety**: 4 point Likert scale item pre-IPE
  - 1=Very stressed/anxious, 4=Not stressed/anxious at all

- **Baseline (Pre-IPE) teamwork attitude**: Teamwork Attitude Questionnaire (TAQ) measured
Research variables

Dependent variable: Team level IP teamwork attitude

- **TeamSTEPPS® Teamwork Attitude Questionnaire (TAQ) post-IPE**
  - 30 items on a 5 point Likert scale of 1-5
  - 5 TeamSTEPPS® subscales and total score
  - Total score range of 30-150
  - TAQ total score alpha was .88 with subscale alphas .70-.83 at point of development
Sample: Interprofessional students

Disciplines:

1. Nursing ($n = 123$)
2. Medicine ($n = 13$)
3. Respiratory Therapy ($n = 18$)

---Total: 156 of 161 for a 96% participation rate

Characteristics:

1. Upper level course enrollment (4th year undergrad.)
2. Experience with simulation
3. Pre-requisite knowledge of cardiac arrest care

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## Sample: Team level data

<table>
<thead>
<tr>
<th>Training event</th>
<th>Teams (f)</th>
<th>Students (f)</th>
<th>Training Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (December)</td>
<td>8</td>
<td>60</td>
<td>Time Distributed</td>
</tr>
<tr>
<td>2 (February)</td>
<td>8</td>
<td>45</td>
<td>Time Distributed</td>
</tr>
<tr>
<td>3 (April)</td>
<td>8</td>
<td>56</td>
<td>Immersive</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>24</strong></td>
<td><strong>161</strong></td>
<td></td>
</tr>
</tbody>
</table>
Results
Analysis and Results for RQ 1

Does teamwork attitude change following IP team training and simulation while controlling for team training method?

**Combined effect** of training method and pre/post: Not significant, $p = .83$

**Within group change:**
- Immersive team training increased (M=4.55, SD .79)
- Distributed team training increased (M= 3.35, SD 1.95)
- All groups increased (M= 3.8, SD 1.2)

**Between groups comparison:**
- Statistical significance, $p=.001$, moderate effect size (partial $\eta^2 .40$)
Analysis and Results of RQ2

Which variables, pre-training teamwork attitude, feelings of preparation, or level of anxiety are most predictive of post-IPE teamwork attitude?

Multiple Regression for prediction of post-simulation teamwork attitude.

- **Predictor variables** measured Pre-IPE (team average total score):
  - Teamwork attitude Pre-TAQ
  - Feelings of preparation
  - Feelings of anxiety

- **Criterion variable:** Teamwork attitude post-simulation (Post-TAQ team average total score)
**Results**

**Multiple standard regression:**

\[ R^2 = 0.701, \quad R^2_{adj} = 0.642, \quad F(3, 15) = 11.741, \quad p < 0.001^{**} \]

The overall model of three predictors statistically significantly predicted the criterion variable of post-IPE teamwork attitude.

**Correlation matrix for standard multiple regression**

<table>
<thead>
<tr>
<th></th>
<th>Post-TAQ attitude</th>
<th>Team Prep</th>
<th>Team Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Prep</td>
<td>0.177</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Anxiety</td>
<td>-0.130</td>
<td></td>
<td>0.638^{**}</td>
</tr>
<tr>
<td>Pre-TAQ attitude</td>
<td>0.808^{**}</td>
<td>0.062</td>
<td>-0.092</td>
</tr>
</tbody>
</table>

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Interpretation of Beta scores

Table: Multiple regression analysis for teamwork attitude summary

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>B</th>
<th>SE&lt;sub&gt;c&lt;/sub&gt;</th>
<th>β</th>
<th>Sig</th>
<th>t</th>
<th>Partial r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team preparation</td>
<td>.187</td>
<td>.123</td>
<td>.282</td>
<td>.149</td>
<td>1.52</td>
<td>.37</td>
</tr>
<tr>
<td>Team anxiety</td>
<td>-.128</td>
<td>.099</td>
<td>-.240</td>
<td>.217</td>
<td>-1.28</td>
<td>-.32</td>
</tr>
<tr>
<td>Team Pre-TAQ</td>
<td>.891</td>
<td>.166</td>
<td>.768</td>
<td>&lt;.001**</td>
<td>5.35</td>
<td>.81</td>
</tr>
</tbody>
</table>

*p < .05 level of significance

Pre-simulation attitude predicted post-simulation teamwork attitude

Squaring of beta scores can be used to interpret the amount each variable effected the criterion variable.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>Beta squared</th>
<th>% variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Prep</td>
<td>.187</td>
<td>.0349</td>
<td>3.49</td>
</tr>
<tr>
<td>Team Anxiety</td>
<td>-.128</td>
<td>.0164</td>
<td>1.64</td>
</tr>
<tr>
<td>Team Pre-TAQ</td>
<td>.891</td>
<td>.7939</td>
<td>79.39**</td>
</tr>
</tbody>
</table>
Implications

Application of results
IP team simulations associated with both time-distributed and immersive team training can increase teamwork attitude

**Key points:**

Teamwork attitude increased
- over a short time
- after interprofessional simulation regardless of team training method
- associated with pre-simulation teamwork attitude, (not by preparation or anxiety.)

Findings are in line with other research studies measuring *individual* pre-/post- attitude with team training.
Practical Application & Future Research

Key points:
Teamwork attitude is part of overall teamwork competency (IPEC Core competencies, 2016).

• Cultivate a positive teamwork attitude as part of team training pre-IPE efforts.
• Address anxiety and knowledge preparation pre-IPE as correlated characteristics that can impact learning.
• Fill the research gap of team competencies by utilizing team level data to capture the true effect of interprofessional teams on competency outcomes.
Questions