

Psychometric Validation of the Modified Comprehensive Assessment of Team Member Effectiveness Tool for Health Science Graduate Students

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Background

- Teamwork is an intrinsic component of interprofessional collaboration
 - Domain of both IPEC and CIHC interprofessional collaborative competency frameworks
- Providing students interprofessional teamwork learning opportunities imperative

Background

- Need for rigorous assessment of interprofessional collaborative competencies
- Measuring teamwork
 - Perceptions of members; observations by others
 - Team as a whole; as individuals
 - Associated outcomes
- Students' teamwork
 - Faculty; self; peers

Background

- Peer Assessment
 - Used for students particularly in areas of professionalism
 - 360 degree for physicians and other professionals regarding interprofessional teamwork
- Few reports of peer assessment of learners as an interprofessional team

Study Purpose

- Determine the effectiveness of a peer-assessment instrument for health professions students' interprofessional teamwork
 - Examine the usefulness of the CATME instrument for health science students

Study Context

- Year-long interprofessional service-learning experience, “Putting Families First”
 - Interprofessional teams of 4 students with volunteer family
 - 4 home visits and health improvement project
 - 6 in-class sessions with faculty facilitators



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Study Context

- Content includes social determinants of health, cultural competency, access to care
- Interprofessional competencies addressed:
 - Values and ethics for interprofessional practice
 - Roles and responsibilities
 - Interprofessional communication
 - Interprofessional teamwork
- **Patient-centered engagement through interprofessional collaboration**

Study Context

- Student professions (approximately 700 total each year):
 - Clinical Health Psychology
 - Dental
 - Health Administration
 - Medicine
 - Nursing
 - Nutrition
 - Pharmacy
 - Physical Therapy
 - Veterinary Medicine

Study Context

- Challenge of behavioral assessment with large number of students (i.e., 700) and teams (i.e., 175)
- Faculty do not really observe teamwork
- Peers probably have best sense
 - How to manage process in a meaningful manner?

Use of CATME

- Comprehensive Assessment of Team Member Effectiveness (CATME)
- Online peer assessment system
- Based on teamwork science, used in undergraduate education and team-based learning



Study Methods

- Students from 2014-2015 and 2015-2016
- 3 CATME items
 - Contributing to Team's Work ("C")
 - Interacting with Teammates ("I")
 - Keeping the Team on Track ("K")

Scored on 5 point behaviorally anchored rating scales: poor, average and exceptional behaviors

Study Methods

Behavioral anchor rating scale example

Contributing to the Team's Work					<ul style="list-style-type: none"> • Does more or higher-quality work than expected. • Makes important contributions that improve the team's work. • Helps to complete the work of teammates who are having difficulty.
					Demonstrates behaviors described in the row just above and just below.
					<ul style="list-style-type: none"> • Completes a fair share of the team's work with acceptable quality. • Keeps commitments and completes assignments on time. • Fills in for teammates when it is easy or important
					Demonstrates behaviors described in the row just above and just below.
					<ul style="list-style-type: none"> • Does not do a fair share of the team's work. Delivers sloppy or incomplete work. • Misses deadlines. Is late, unprepared, or absent for team meetings. • Does not assist teammates. Quits if the work becomes difficult.

Methods

- 3 question team satisfaction survey
 - I am satisfied with my present teammates
 - I am pleased with the way my teammates and I work together
 - I am very satisfied with working with this team
 - 5 point Likert type scale: strongly disagree to strongly agree
- 2015-2016 Psychological Safety questions added (Edmondson's 7 questions)

Methods

- Students accessed CATME mid-point (Dec):
 - Self and anonymous peer assessment
- Students returned to CATME and reviewed evaluations (Jan)
- Students accessed CATME at end (April)
 - Self and anonymous peer assessment

Methods

- Descriptive statistics
- Item analysis, including item difficulty
- Inter-item correlations to test for redundancy
- Cronbach's alphas for internal consistency for both administrations during each year.
- Exploratory factor analysis for 2014-2015
- Confirmatory factor analysis for 2015-2016
- Cumulative scoring used for each team member

Results

- Respondents:
 - At least one completed CATME peer evaluation: 655 (93.9%) 2014-2015 and 696 (98.1%) 2015-2016
 - Teams with all members completed evaluations: 516 (78.8%) 2014-2015 and 451 (64.8%) 2015-2016
 - Evaluation of missing-ness: no correlations to gender, year or program

Results – Team Items

	2014-2015	2015-2016
	Mean (SD)	Mean (SD)
Team Competencies		
C - Contributing (S)	4.55 (0.71)	4.60 (0.36)
C - Contributing (F)	4.24 (1.25)	4.59 (0.33)
I - Interacting (S)	4.59 (0.66)	4.59 (0.34)
I - Interacting (F)	4.25 (1.23)	4.53 (0.29)
K - Keeping (S)	4.52 (0.73)	4.57 (0.34)
K - Keeping (F)	4.18 (1.25)	4.50 (0.30)

F=Fall; S=Spring administrations

Results – Team Items

	2014-2015	2015-2016
Team Satisfaction	Mean (SD)	Mean (SD)
I am satisfied with my present teammates (S)	4.64 (0.72)	4.73 (0.62)
I am satisfied with my present teammates (F)	4.40 (1.27)	4.75 (0.59)
I am pleased with the way my teammates and I work together (S)	4.62 (0.73)	4.12 (0.65)
I am pleased with the way my teammates and I work together (F)	4.38 (1.26)	4.72 (0.63)
I am very satisfied with working in this team (S)	4.59 (0.78)	4.69 (0.68)
I am very satisfied with working in this team (F)	4.32 (1.31)	4.70 (0.64)

F=Fall; S=Spring administrations

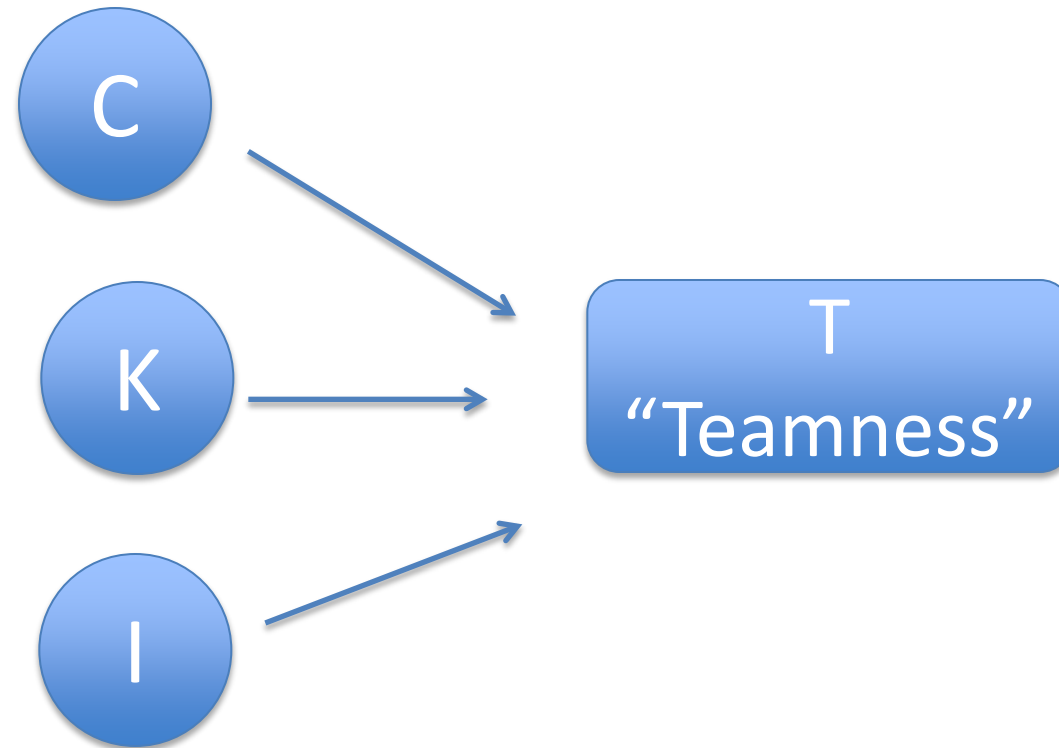
Results - Correlations

- Strong correlations among team competency items (.70-.89) and team satisfaction (.90 -.96)

Results

- Test retest reliability was confirmed using formative and summative data for the 2015-2016 data
 - (C=0.325, P=0.00; I=0.339 P=0.00; K=0.405 P=0.00).
- Concurrent validity assessed between psychological safety, and team satisfaction with the team competencies.
 - Evidence of moderate to strong correlations.

Results – Factor Analysis



90% of variance associated with 1 factor

Discussion

- Results suggest CATME is a valid and reliable tool for health professions students' peer assessment of teamwork behaviors.
- Global teamwork satisfaction items appear to capture valid measures of effective teamwork.
- Psychological safety items related to effective teamwork (as expected).

Limitations

- Missing data not imputed; a conservative strategy for non-response selected; large sample size however.
- Validation only focused on a subset of CATME items.
- CATME calibrator function not used.
- Students' work not in a clinical context – future research could explore this.

Conclusion

- Measuring students' longitudinal interprofessional teamwork challenging, particularly with large groups.
- Peer assessment possible approach.
- CATME appears to be an efficient, effective method.
 - Brief, online, student-driven

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