Building Effective Partnerships: HESI Annual Meeting

Center for Clinical and Translational Research

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Objectives

• Understand the objectives and impetus for the Clinical and Translational Science Award (CTSA) program
• Have a better understanding for the metrics involved in evaluating the CTSA program
• Learn about the science of teams
• Understand the impact of team training/building
NIH Roadmap 2002

• New pathways to discovery
• Research teams of the future
• Re-engineering the clinical research enterprise
CTSA Program 2006

• Implementing discoveries demands evolution of science.
• New prevention strategies and treatments must be brought into practice more rapidly.
• Lower barriers between disciplines, and encourage, innovative approaches to solve complex problems.
• Break silos, barriers, and conventions.
CTSA Goals

• **Create** academic **homes** for CT research.

• **Provide** investigators and research teams with **research cores, tools** and a local **environment** that encourages and facilitates the conduct of CT research, including with **community** and **industry partners**.

• **Train** the scientific **workforce** needed for the translational sciences.
Research Gap

CROSSING THE VALLEY OF DEATH
A chasm has opened up between biomedical researchers and the patients who need their discoveries. Declan Butler asks how the ground shifted and whether the US National Institutes of Health can bridge the gap.

T0-T4, Bench to Bedside

*Khoury, 2007
Evaluating the CTSA

• **Time**—IRB submissions, accrual, NOGA, publication

• **Number**—technology transfer products, users, services used, publications

• **ROI**—pilot programs

• **Collaborations**—grants, publications
Evaluating the CTSA

- Influence
- Culture change
- Career trajectory
- Career development
- Institutional collaboration
- CTSA impact
CTSA Current Goals

• Workforce development
• Collaboration and Engagement
• Integration
• Processes and Methods
CTSA Program Leaders

• Chris Austin, MD
  – NCATS, Director

• Petra Kauffman, MD
  – Clinical Innovation, Director

• CTSA Website
The need

• Collaborative innovation is...
  – Dynamic
  – Complex
  – Must be executed by a team

• How can we improve collaborations to create innovation?
  – Understand the context
  – Understand the processes of collaboration
  – Understand the science
Contingency approach (Reeves et al., 2011)

- Networking
- Coordination
- Collaboration
- Teamwork
Teamwork and Collaboration

• Enactment of team-level **attitudes**, **behaviors**, and **cognitions** that impact how well teams perform their tasks (Salas, Cooke, & Rosen, 2008)

• Collaboration is an **evolving process** whereby **two or more social entities** actively and reciprocally **engage in joint activities aimed at achieving at least one shared goal** (Bedwell, Wildman, DiazGranados, Salazar, Kramar, & Salas, 2012)
IPO Model (Goldstein, 1980)
Team Performance

Affect
- Motivational Components
  - Psychological safety
  - Collective Efficacy
  - Collective Orientation
  - Cohesion
  - Goal Orientation
  - Culture

Behaviors
- Behavioral Strategies
  - Supporting Behavior/Backup Behavior
  - Information exchange
  - Debriefing/Reflection
  - Leadership
  - Team Self Correction
  - Mutual Performance Monitoring
  - Adaptation

Cognition
- Knowledge Components
  - Mental Models
    - Technology/equipment
    - Job/Task
    - Team Interaction
    - Strategic: Shared vision
    - Transactive Memory
    - Collaborative Problem Solving
    - Meta-Cognition
    - Knowledge of Stress
Motivation for the Meta-Analyses (MA)

• Update to the literature
• Understand team training methods
  – Differences between team building and team training
• Examine moderators
• Better understand impact of team training on team performance
Training Content

• Team Building (Klein, DiazGranados, Salas, et al., 2009)
  – Goal setting
  – Interpersonal relations
  – Role clarification
  – Problem solving
Training Content

• Team training (Salas, DiazGranados, Klein, et al., 2008)
  – Taskwork
  – Teamwork
  – Mixed
Outcomes examined

• Affective
• Behavioral
• Cognitive
• Performance
Moderators tested

• Team size
  – Small \((n = 2)\)
  – Medium \((2 < n < 5)\)
  – Large \((n \geq 5)\)

• Team member stability
  – Intact vs. adhoc teams
Team Building MA Hypotheses

• Hypotheses
  – Team building interventions will result in enhanced team outcomes.
  – Team building will be most effective for improving affective outcomes.
  – The role clarification component of team building will be most effective for improving team functioning.
  – Large teams will show greater benefits from team building than small- or medium-sized teams.
Team Training MA Hypotheses

• Hypotheses
  – Team training is positively related to overall team outcomes.
  – Team training that includes a combination of teamwork and taskwork content will be more effective than interventions that target either phenomenon in isolation.
  – Team training will be more effective for intact teams than for ad hoc teams.
  – Team training will be more beneficial for small and large teams than for medium sized teams.
Methodology

• Meta-analytical techniques
  – Schmidt & Le (2005)

• Random effects model
  – True effect sizes to vary

• Literature search
  – Team building—130 articles identified, after coding 20 articles included
  – Team training—500+ articles after initial review
    168 articles identified for coding
Methodology

• Raters coded for:
  – Team type
  – Team membership stability
  – Number of teams
  – Average team size
  – Training content
  – Effect size(s)

• Rater reliability was tested
• Effect sizes were weighted by sample size
Methodology

• Team building
  – 60 correlations from 20 primary studies
  – 1,562 teams

• Team training
  – 93 correlations from 45 primary studies
  – 1,660 teams
Team Building MA Results

• Team building does improve team outcomes
  – Omnibus test: $\rho = .31$
  – Affective and process outcomes ($\rho = .44$)

• Team building components improve outcomes
  – Role clarification: $\rho = .35$
  – Interpersonal relations: $\rho = .26$
  – Problem solving: $\rho = .24$
  – Goal-setting: $\rho = .37$

• Team size does matter
  – Large teams: $\rho = .66$ compared to $\rho = .26$
Team Training MA Results

• Team training does improve team outcomes
  – Omnibus test: $\rho = .34$
  – Cognitive and process outcomes ($\rho = .42$ and 44)

• Team training content improves team outcomes
  – Teamwork training: $\rho = .38$
  – Taskwork training: $\rho = .35$
  – Mixed training: $\rho = .40$

• Team stability
  – Intact teams ($\rho = .54$) and adhoc teams ($\rho = .38$)

• Team size
  – Large teams: $\rho = .50$ compared to $\rho = .39$ and $\rho = .34$
Implications

• Team training can explain 12-19% of the variance of a team’s performance
• Not all teams will benefit from the same intervention
• Consider the outcomes needed
• Specify the type of training needed and the focus
Intervention at VCU

• Integrative capacity
  – Capability that is sustained through an interactive system linking social, psychological, and cognitive team processes to provide a team with the resources needed to succeed in interdisciplinary scientific activities.

• Transdisciplinary intellectual orientation
  – Enduring values, beliefs, conceptual skills and behaviors that support collaboration in interdisciplinary research activities.
• The importance of integrative capacity varies, depending upon the degree of knowledge integration needed to reach a science team’s objectives.
  – Cross-functional, cross-disciplinary, and multi-disciplinary teams = low integrative capacity
  – Interdisciplinary teams = integrative capacity is critical
Intervention at VCU

• Individual and team-based instructional strategies
• How to build leadership capacity
• Mitigate inter-disciplinary divides
• Build social identity
• Measure the teams integrative capacity index
Intervention at VCU

• Boundary spanning leadership training
  – Effectively make connections between one another’s ideas, methods and approaches

• Communication structuring strategies
  – Fostering the sharing of broad and deep knowledge from individual members of the group
  – Empowering leadership style
Conclusion

• There is a science of teams
• Consider the context
• Evaluate the attitudes, behaviors and cognitions
• Not one intervention is the answer
• Evaluate the outcomes of the team
Thank you for your time!

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References