Enhancing Team Processes and Team Effectiveness

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Work Teams Are

- Two or more individuals
- Who interact (face-to-face or virtual network)
- Have one or more common goals
- Exist to perform task-relevant functions
- Exhibit work interdependencies (goals, workflow, outcomes) and differentiated roles
- Embedded in an organizational system
- With boundaries and dynamic linkages to the system and task environment
Key Considerations:
Context, Levels, Task, and Time

- **Context**: Interactive and enacted
  - Person-situation interaction

- **Multilevel**: Top-down Effects and Bottom-up Emergence

- **Task**: Task-driven interdependencies
  - Determine goals, roles, and coordination demands

- **Time**: Temporal entrainment and dynamics
Top-Down Context Shapes Team & Individual Phenomena

- The hierarchical structure of social organizational systems creates a context … a set of stimuli

- Individuals are nested or embedded in that context

- Context influences and constrains behavior at lower levels of the system
Emergence – Process is bottom-up

“A phenomenon is emergent when it originates in the cognition, affect, behaviors, or other characteristics of individuals, is amplified by their interactions, and manifests as a higher-level, collective phenomenon” (Kozlowski & Klein, 2000, p. 55).


- Dynamic team processes emerge over time as relatively stable “emergent state” constructs
  - E.g., team mental models, transactive memory, team performance
Key Considerations: Context, Levels, Task, and Time

➢ Context: Interactive and enacted
  ➢ Person-situation interaction

➢ Multilevel: Top-down Effects and Bottom-up Emergence

➢ Task: Task-driven interdependencies
  ➢ Determine goals, roles, and coordination demands

➢ Time: Temporal entrainment and dynamics
Science Team Challenges
- They are like other work teams, but *complicated*

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Nonetheless, *until unique boundary conditions are established for science teams, the findings that apply to non-science teams are the best basis for improving science team effectiveness.*
Enhancing Team Effectiveness
(Kozlowski & Bell, 2003, 2013; Kozlowski & Ilgen, 2006)

- 60+ years of literature on work group & team effectiveness
- Focused on well-established, meta-analytic findings and research streams with promising findings
- Key processes that contribute to team effectiveness
  - Cognitive, motivational/affective, and behavioral processes
- Interventions that show demonstrated effects or promising findings for influencing the quality of team processes

*Findings guide application*

*Gaps guide future research*
Environmental dynamics and complexity drive team task demands
- Team processes align team member resources to fit demands
- Team outputs influence the environment
- Cycles are reciprocal over time
Key Team Processes and Recommended Interventions

Team Process Typology:

- Cognitions
  - Knowledge
  - "Thinking"
- Motivational States
  - Effort & Affect
  - "Feeling"
- Behaviors
  - Skills
  - "Doing"

Targeted Team Processes:

- Team Climate
- Mental Models
- Transactive Mem
- Team Learning
- Team Cohesion
- Team Efficacy
- Group Potency
- Conflict Mgmt
- Coord/comm
- Competencies
- Regulation & Adaptation

Recommended Interventions:

- Team Design
- Training & Development
- Leadership
Team Cognitive Processes and Structures: Team Climate

- An emergent, shared, collective interpretation of the “strategic imperatives” driving the team task environment
  - Climates for service, safety, innovation, learning ...
- Shaped by leadership, policies, and practices
- Well developed theoretical foundation, solid empirical support, ready for application
Team Cognitive Processes and Structures: Team Mental Models

- Shared representation of knowledge or beliefs among team members relevant to key elements of the task environment
  - Task (goals, strategies), members (composition, capabilities), equipment (tools, technology), and team process (coordination, interaction)
- TMM => anticipate needs and actions and “implicitly” coordinate behavior and improve team effectiveness
- Shaped by leadership, training, common experience
- Well developed theory, empirical / meta-analytic support, research to refine needed, but ready for application
Team Cognitive Processes and Structures: Transactive Memory

- A network of distributed, individual memory systems that combines the unique knowledge possessed by particular members with shared awareness of “who knows what”
- Members track expertise, direct new information to matching member, and use tracking to access information
- Members use each other as external memory aids, thereby creating a compatible and distributed memory system
- Shaped by F-2-F interaction, common experience
- Promising theory; recent empirical / meta-analytic support, conceptual refinement & research needed
Team Motivational Processes: Team Cohesion

- Forces of task commitment and mutual social attraction that bond members to the team
- Task commitment aspect consistently associated with team effectiveness; social aspect a bit less so
- Perhaps the most studied of team processes
- Solid meta-analytic support
- Teams that are successful stay together are cohesive; precise antecedents are not entirely clear
Team Motivational Processes: Team Efficacy and Potency

- Based on Bandura’s concept of self-efficacy
- Shared belief in the team’s capability to strategize, marshal resources, and apply effort to accomplish its goals
  - Efficacy is domain specific, potency is generalized
- Extensive research, solid meta-analytic support
- Shaped by leadership, training, “mastery” experiences, and persuasion
- Additional research to refine the antecedents needed
- Application ready
Team Action and Behavioral Processes: Team Member Competencies

- The knowledge, skills, abilities, and other characteristics that enable individuals to coordinate their knowledge and effort effectively
- Mutual performance monitoring, back-up behavior, and feedback; coordination; communication; decision making; adaptability; shared situational awareness; interpersonal relations; and team leadership
- Convergence in the literature, shaped by team design features, training, and leadership
Team Action and Behavioral Processes: Team Regulation, Performance Dynamics, & Adaptation

- Team performance as an episodic process
- Driven by shifting environmental contingencies / task demands
- Necessitates performance adaptation by team members
- Multilevel processes of self- and team goal regulation
- Well developed integrative theory, convergent research
- Key features: goals, strategies, feedback, reactions (SE, TE)
- Shaped by leadership, training, experience; application ready
Team Effectiveness Interventions: Task and System Design

- Basics – Context supports teamwork via rewards, training, requisite information, and resources
- Group Composition – *Pattern* of team member KSAOs
  - Selection technology is I-level; T-level selection is in its infancy
- Role Design – Team member roles and distribution of skills
  - Team, Agent, and Technology Modeling; promising
- Collaborative Tools – Technologies for info sharing and DM
  - Supporting systems for virtual teams; promising
Team Effectiveness Interventions: Performance Regulation and Adaptation

- **Goal Setting** – Prompts and directs SR-TR and effort
  - Strong meta-analytic support at I and T-levels
- **Feedback** – Necessary to support SR-TR
  - Meta-analytic support mixed at I-level, little research at T-level
  - Promising theory and techniques
- **PROMeas** – Designed to prompt TR in the workplace
  - Promising application ready to go
- **Technology Augmentation** – Variety of tools to prompt and direct SR-TR via computer technology
  - Promising lab demonstrations; needs development
Team Effectiveness Interventions: Training Strategies

- Wide range of team training strategies are available
- Meta-analytic support for several training strategies that enhance team skills and effectiveness
  - Team member training – Team KSAOs and competencies
  - Cross training – Train on others’ roles to build TMM and coord
  - Simulation-based training – Allows accelerated development of broad and deep skills; especially important for critical roles
  - Adaptability-CRM training – Centers on coord and communication
- Research to refine; ready for broad application
Team Effectiveness Interventions: Leadership

- Meta-analytic support for several general theories of leadership
  - Task oriented and social relations oriented leader behaviors
  - Transformational and transactional leadership
  - Leader-member exchange

- Emerging theory on TEAM leadership; meta-analytic support
  - Dynamic task functions – shaping team regulation processes
  - Dynamic team development functions – building individual, dyadic, and team skills to support team self management
Conclusion for Improving Science Team Effectiveness:

- Translate Team Science Findings!

- Much is known that can & should be applied:
  
  A wealth of solid research support for the importance of several key team processes re: team effectiveness
  
  - Cognitive – Unit-team climate, TMM, TM, psych safety
  - Motivational – Team cohesion and team efficacy
  - Behavioral – Team competencies and regulatory processes

  A wealth of theory and solid support for the utility of interventions that enhance team processes and / or performance
  
  - Team design, team training, team leadership
Future Research: Improving Team Science Effectiveness

- Refine applications to the context of science teams
- Examine potential boundary conditions for translation based on the “challenges” of science teams

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Future Research: Improving Team Effectiveness

- **What we don’t know** *(mostly implicate levels and time):*
  - Team Development
    - How development shapes team processes
    - Most team research has been cross-sectional
  - Multilevel Dynamics
    - How the individual & team levels dynamically interact
    - Most research has been I OR T, NOT I AND T
  - Emergence
    - How team phenomena arise from individual interactions
    - Research assumes emergence, but does not assess directly