THE CAPACITY-OPPORTUNITY-MOTIVATION (COM) MODEL OF DATA USE IN TEAMS

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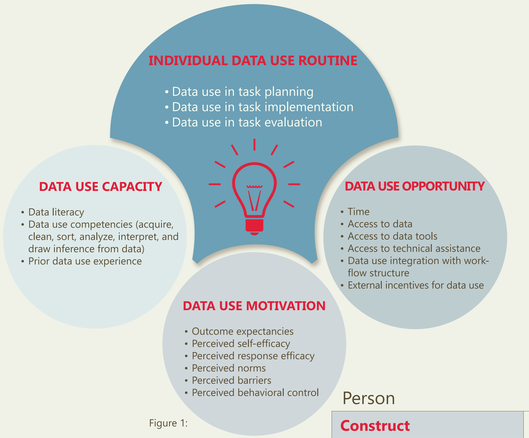

Figure 1:
COM Model of Individual-Level Data Use Routine

Introduction

Data-informed decision making is widely viewed as a powerful driver of professional and organizational improvement but many health organizations continue to struggle with implementing effective data use routines. Because data use is complex and challenging, there is an emerging consensus that it is best undertaken collaboratively. As a consequence, major investments are being made in creating and supporting collaborative data structures such as data teams and professional learning communities in professional fields as diverse as health, education, criminal justice, business, and public administration. However, the lack of clear articulation of the mechanisms and processes through which such data-based collaborations may facilitate institutionalization of data use routines is currently impeding efforts to rigorously assess their efficacy. The goal of this project is to propose a theory-grounded framework for tracking and evaluating data use in teams.

Method

Team data use routines generally involve a cycle of planning, action, and reflection that is integral to the workflow structure of both the individual and the team within the organization. Since data use is a purposive behavior, in theory, it can be explained and predicted from the interplay among the three determinants of any purposive behavior: capacity, opportunity, and motivation (COM; Michie et al., 2014). Accordingly, a review of the research literature on evidence-informed decision-making in teams published over the past decade (N = 67 original and review articles) was conducted to extract the key COM components and mechanisms that can productively guide the design, implementation, and evaluation of collaborative data use interventions. The resulting organizing framework recognizes that at the level of the individual team member, data use involves a cognitive process of transforming data into knowledge and using it to inform decisions about actions or practice (see Figure 1), whereas team data use routines involve social interaction processes and the emergent perceptual states that result from these processes (e.g., mutual trust and cohesion), and which are necessary to support effective data-based collaboration (see Figure 2).

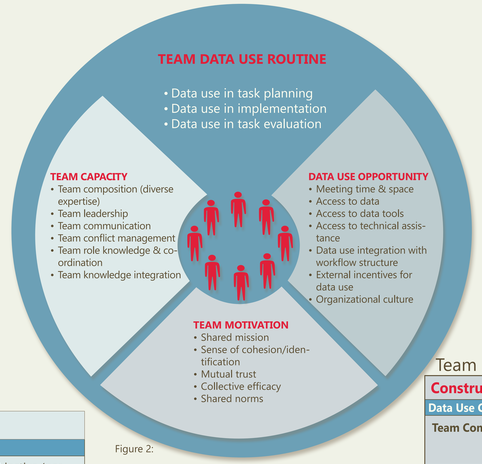

Figure 2:
COM Model of Team-Level Data Use Routine

Linking COM Constructs to Inputs and Outcomes

According to the COM framework, when a team's cognitive, motivational, and behavioral resources are appropriately aligned with task demands, the team is effective. While many interventions that aim to facilitate collaborative data use target the data use capacity of individual members, the available body of research strongly suggests that motivational factors and team processes are equally crucial to enable and support sustainable data use collaborations. Actions and interventions that foster positive team processes may offer the most promising route to enhance team effectiveness by targeting three aspects of a team: team composition, team capacity to collaborate, and team cohesiveness. Such efforts must also be supported by the reorganization of organizational infrastructure, policies, and resources to enable the integration of collaborative data use into the structure of workflow and incentives.

Implications for D&I Research

The COM framework is useful for (a) guiding the development of logic models as well as evaluations of data use collaboratives; (b) deriving SMART goals by placing data use on a behavioral continuum; and (c) connecting program inputs and outputs to unpack the "black box". Because it allows for the systematic tracking, monitoring, and evaluating of data use routines, it is equally useful for diagnosing the element (capacity, motivation, or opportunity) that can benefit the most from targeted investments, tracking progress toward achieving data use goals, and applying more rigorous methodologies and measures to evaluate data use.

Person

Construct	Definition	Relevance
Data Use Capacity		
Data Literacy	The ability to consume, comprehend and communicate data as information.	Capacity is both objective (actual) and subjective (perceived) and it is useful to capture both. Subjective capacity is based on prior experience with data use; objective capacity is captured by task performance measures, but these are likely task- and organization-specific.
Data Competencies	Planning and executing data collection and analysis, evaluating, interpreting and drawing inference from data, and communicating and sharing findings.	
Data Use Motivation		
Outcome Expectancies	Anticipated outcomes (personal, organizational, and client) of data use and the value placed on these outcomes.	Motivation is more fluid than capacity, and therefore requires shorter time intervals between successive measurements. Valid and reliable measurement instruments are readily available from the behavior change literature. If there is interest in predicting future data use, it is important to also measure intention to use data in the course of completing a specific future task.
Self-Efficacy	Confidence in one's ability to use data to achieve a specific task or meet a certain standard.	
Response Efficacy	Confidence that data use can produce the desired outcomes.	
Perceived Norms	Belief that other group members expect one to use data in a particular way and for a particular purpose.	
Perceived Barriers	Perceived cost of or personal challenges posed by data use.	
Perceived Behavioral Control	Perceived ease or difficulty of data use.	
Data Use Opportunity		
Data Use Infrastructure	A digital infrastructure or system that promotes data sharing and consumption, including timely access to relevant data, tools for collecting, archiving, and analyzing data, and technical assistance resources.	Opportunities are factors that enable or impede the likelihood of data use. As such their effect on data use by individuals and teams may be mediated via their effect on capacity and motivation to use data. Taking stock of available organizational resources and policies, as well as mapping workflow structures are commonly used to measure these factors.
Workflow Integration	The extent to which data use is integral to the structure of a person's or an organization's work-related procedures and routines.	
External Incentives	Use of rewards or sanctions to regulate behavior.	
Organizational Culture	Shared norms and values regarding data use and collaboration within the organization.	

Team

Construct	Definition	Relevance
Data Use Capacity		
Team Composition	A team that is composed of individuals with diverse and complementary task-specific expertise and knowledge is more often associated with positive data use collaborations.	Team data use capacity is essentially a function of effective teamwork to complete a specific task or a series of tasks. Measures of team performance assess alignment on goals, roles and accountability, assessment and feedback, support, and processes (e.g., planning, brainstorming, problem-solving, and conflict resolution). Such measures are obtained through self-reports (surveys) or observations made by independent raters.
Team Leadership	Effective teamwork can be greatly facilitated by leaders that foster positive interpersonal processes and set direction for the group.	
Team Communication	A communication dynamic that fosters members' ability to share and explain their own ideas, express their feelings in an open way, listen carefully to others, sense how others feel, and reflect on any barriers to positive communication.	
Team Conflict Management	The ability to identify and handle conflicts sensibly, fairly, and productively to enhance learning and team performance.	
Team Role Knowledge	Understanding of the roles, tasks, skills, and knowledge each team member possesses.	
Team Knowledge Integration	The ability to bring diverse knowledge from multiple sources to bear on a complex problem or task.	
Data Use Motivation		
Shared Mission	Agreement regarding the mission, vision, and value of collaborative data use.	Team motivation to engage in collaborative data use depends on the strengths of bonds or social ties among members. Relationships that are characterized by agreement on team motivation to engage in collaborative data use depends on the strengths of bonds or social ties among members. Relationships that are characterized by agreement on goals, mutual respect and trust, and strong norms that put the teams' success over that of the individual are strongly motivated to engage in collaborations. Measures of these constructs are available from the literature on professional learning communities.
Cohesion/identification	The extent to which team members socially identify with the group and feel that they need to stick together to complete the task.	
Mutual Trust	The perception that team members are dependable, competent, and trustworthy.	
Collective Efficacy	The shared belief that team efforts will produce the intended or desired outcome of collaboration.	
Shared Norms	Expectations regarding team members' conduct and contributions to collaborative teamwork.	
Commitment	Team members' determination to work together effectively to accomplish the goals of the team.	
Data Use Opportunity	Same as for person level	