Using Implementation Science to Improve Research and Practice in K-12 Schools

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D&I and Health Research

"*Health scientists have successfully developed and tested a plethora of clinical and community interventions* **demonstrated to treat and prevent medical and behavioral illnesses**. *However, as leaders in research and clinical practice have noted, there is still* **an enormous gap between what we know** *can maximize the quality of health care and* **what is currently being delivered** *in practice and community settings. More present than ever within the research community is the belief that* **to optimize public health** *we must not only understand how to create the best interventions, but* **how to best ensure that they are effectively delivered** *within clinical and community practice. This is the focus of dissemination and implementation research, and building this knowledge base is imperative to get the best return on decades of investment in biomedical and behavioral research*."

- US Department of Health & Human Services/Office of Behavioral & Social Science Research, on Dissemination and Implementation

The Solution

Getting more of **what works**

to **more people**

in **more places**

in **less time**

"Evidence-based Health Innovations"

"The objects of D&I activities are interventions with proven efficacy and effectiveness (i.e., evidence-based). Interventions within D&I research should be defined broadly and may include **programs, practices, policies, and guidelines**. " *(Rabin et al., 2008)*

An innovation is "**an idea, practice, or object** that is perceived as new by an individual or other unit of adoption."*(Rogers, 2003)*

Examples of Health Innovations

- Health behavior change interventions (e.g., counseling intervention to reduce unprotected sexual activity)
- Screening or diagnostic tools (e.g., to detect suicide risk)
- Products or services (e.g., a garment designed to facilitate muscle recovery)
- Programs (e.g., youth violence prevention in schools, fitness programs for senior citizens to prevent falls)
- Practices (e.g., use of electronic medical records)
- Policies (e.g., worksite non-smoking policy)
- Health communications and marketing (e.g., social marketing of healthy foods, influenza immunization campaigns)

Difficulties in Studying Implementation

- Due to the numerous uncontrollable moving parts associated with each innovation's implementation context and process, it is has been extremely difficult for research to arrive at a universal framework that is testable, accounting for all possible relevant variables that could affect implementation outcomes.

Chaudoir, Dugan, & Barr (2013)

Study goals:

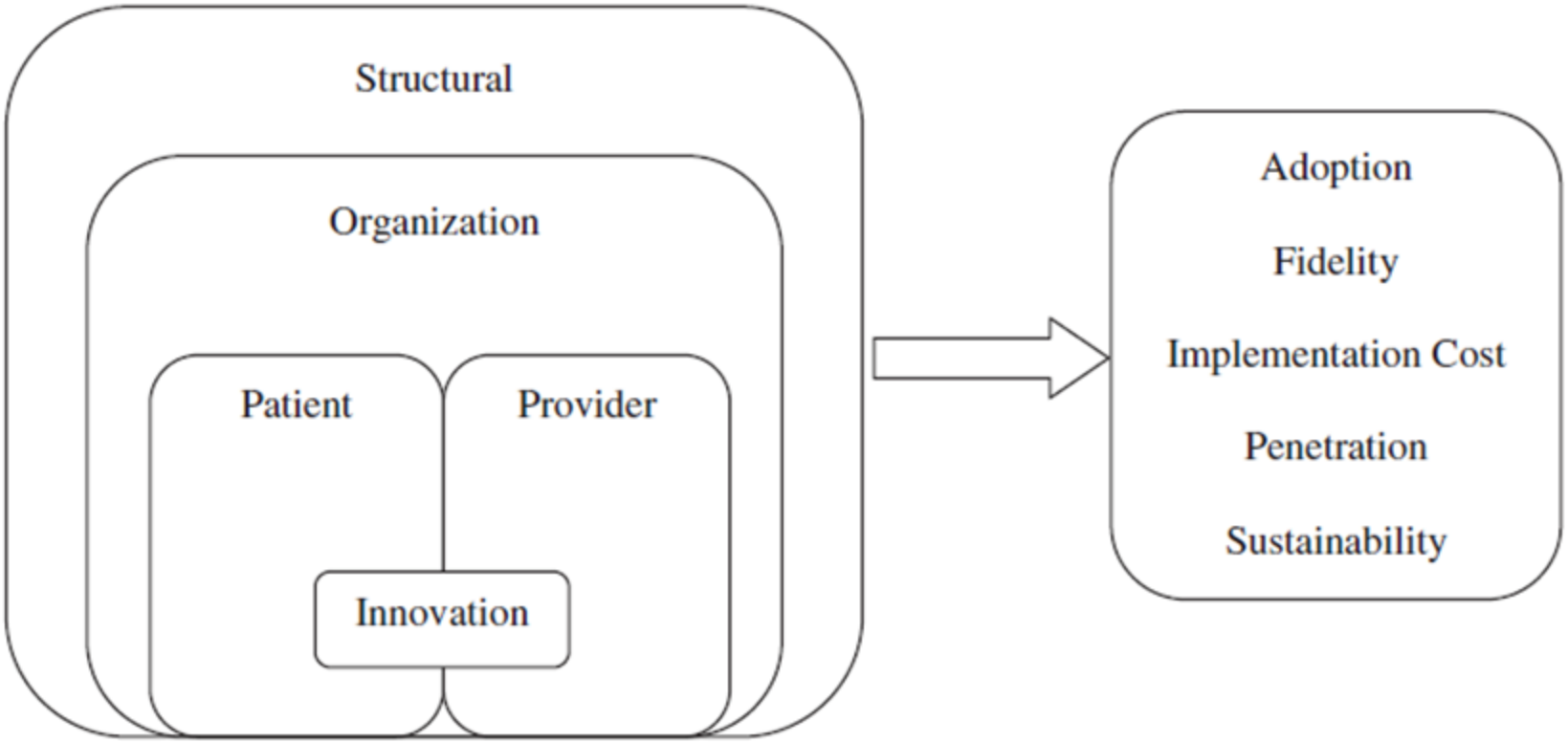
- Identify a framework that captures predominant constructs that impact implementation outcomes
- Systematic review to identify measures used to assess constructs predicting implementation outcomes

Findings:

- 62 measures identified; few showed criterion validity (i.e., reliable association with an implementation outcome)
- Our resulting measures compendium increases capacity of researchers to conceptualize/measure implementation-related constructs

Chaudoir, Dugan, & Barr (2013)

Implementation predictors **Implementation outcomes**



Implementation Predictors

5 broad types of factors affect implementation of health innovations *(Chaudoir et al., 2013):*

1. Structural (Community)
2. Organizational
3. Provider
4. Patient
5. Innovation

Implementation Outcomes

Implementation outcomes (Proctor et al., 2011)

1. ~~Acceptability~~
2. ~~Appropriateness~~
3. ~~Feasibility~~
4. Adoption
5. Fidelity
6. Implementation Cost
7. Penetration
8. Sustainability

Clarifying Diffusion & Dissemination

Diffusion = relatively passive, unplanned process by which information about an innovation spreads through communication channels to members of a social system over time *(Carpenter, et al., 2005)*

- Based on social influence; potential and actual adopters communicate in such a way that potential adopters are motivated to adopt the innovation *(Dearing & Kreuter, 2010)*
- Understood as eliciting *"pull"* from potential adopters, by designing an innovation that users will be drawn to, adopt, and talk about

Dissemination = active, deliberate process by which innovation promoters intervene to inform potential adopters about innovation through predetermined media channels *(Carpenter et al., 2005)*

- Based on knowledge; it requires the creation and supply of information to potential adopters about the innovation by its sponsors *(Dearing & Kreuter, 2010)*
- Conceptualized as a strategy to activate the *"push"* of information from the innovation source to potential end users

Diffusion & Dissemination

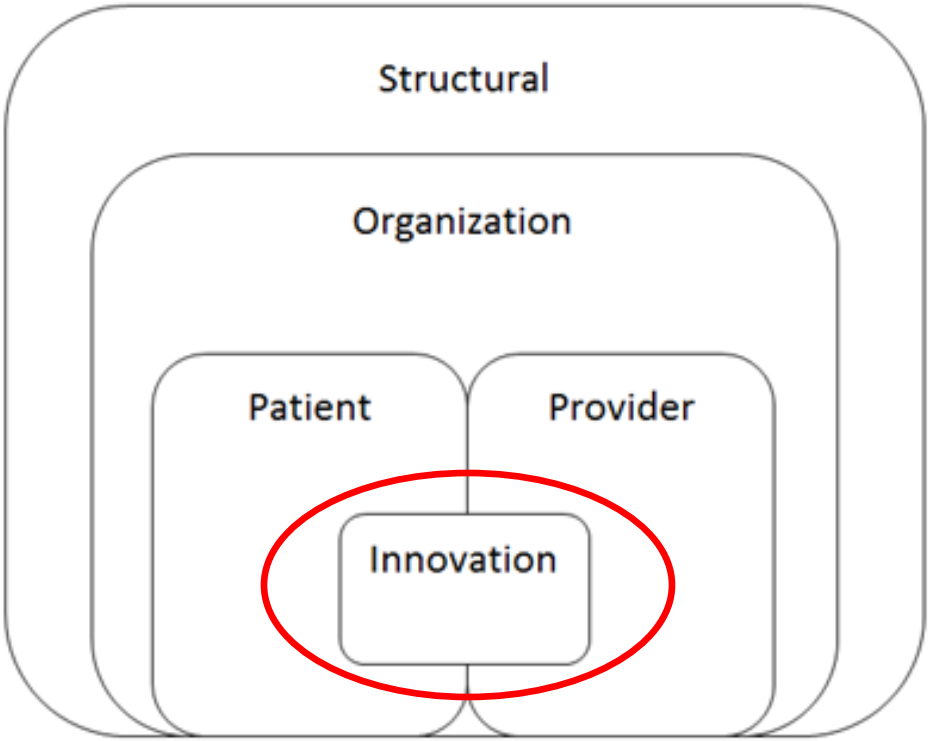
Diffusion and dissemination are complementary activities, although **diffusion** is often overlooked. Steps should be taken in formative stages of developing an innovation to ensure it meets the needs of and is perceived as desirable by potential adopters *(Carpenter et al., 2005, Dearing & Kreuter, 2010; Rogers, 2003)*

Designing for Diffusion

5 characteristics of an innovation that influence decisions to adopt or reject *(Rogers, 2003)*:

1. Simplicity
2. Trialability
3. Observability
4. Relative advantage
5. Compatibility

** It is important to gather end-user feedback about innovation during design phase to ensure it is perceived as having these five characteristics (a participatory approach)*



For each of the following statements about the *Healthy Sleep Intervention*, circle 'Yes' if it describes what you think, 'No' if it does not describe what you think, and 'Not sure' if you cannot decide. The *Healthy Sleep Intervention* is…

Construct	Survey Item
Simplicity	Is simple to understand Is simple to implement in this organization
Trialability	Can be tried out on a limited basis before deciding to adopt permanently
Observability	Will be visible to the people in this organization
Relative advantage	Is a better sleep intervention compared to our existing intervention
Compatibility	Fits with the beliefs and values of the people in this organization
Feasibility	Can be carried out successfully in this organization with the resources (time, personnel, etc.) we have available
Adaptability	Can be adapted to suit the needs of this organization
Cost	Is a cost-effective sleep intervention
Effectiveness	Will be effective in achieving my organization's goals for better worker health
Credibility	Is grounded in good science

Response scale: *0 = No, 1 = Not Sure, 3 = Yes*

(Dugan & Punnett, 2017)

Predictors Measured

Innovation Characteristic	% Favorable Ratings
Simple (to understand)	**78.8%**
Simple (to use)	**33.3%**
Trialable	**69.7%**
Observable	**36.7%**
Relative advantage	**36.4%**
Adaptable	**78.8%**
Compatible	**90.9%**
Feasible	**66.7%**
Cost	**77.4%**
Effective	**60.6%**
Credible	**93.9%**

n = 100

- 75% or more in agreement
- 50% to 74% in agreement
- Less than 50% in agreement

Predictors Measured

Innovation Characteristic	% Favorable Ratings
Simple (to understand)	92.8%
Simple (to use)	91.8%
Trialable	85.4%
Observable	36.7%
Relative advantage	82.5%
Adaptable	68.4%
Compatible	90.9%
Feasible	84.4%
Cost	86.5%
Effective	80.4%
Credible	67.3%

n = 100

75% or more in agreement

50% to 74% in agreement

Less than 50% in agreement

Two D&I Models

(Wandersman et al., 2008)

- Innovations that are most effective in research are not necessarily the most commonly used in practice
- Early recognition that “the gap” is bi-directional; practitioner perspectives should be considered on how best to bring research and practice together
- Two models for D&I:
  - **Source-based models:** emerges from perspective of the innovation developer (source). A linear process, the innovation can be traced from gestation to marketing (research, development, testing, packaging, dissemination). Known as "research-to-practice” models, they originate from researchers. *(They are the dominant models used.)*
  - **User-based models:** Also a linear process - innovation can be traced from user’s (i.e., individual, organization) awareness of a need or opportunity for change to the incorporation of the innovation into the user’s behavioral repertoire. Known as "community centered" models, they originate with the world of practice and the community.

Community-Based Participatory Research (CBPR)

- CBPR seeks to directly benefit the public by actively and equitably involving the community in the research process. In CBPR, community-based organizations (CBOs) or groups (e.g., churches, neighborhood or social orgs, community clinics, residents) play a direct role in the design and conduct of the research study by (www.ahrq.gov/research/cbprrole.htm):
  - Bringing community members into the study as partners, not just subjects
  - Using the knowledge of the community to identify public health concerns, enhance understanding of health problems, and design interventions to improve health care
  - Connecting community members directly with how the research is done and with the research products. Puts findings into action to immediately improve the health and well-being of the community that participated in the study
- CBPR is an especially useful research approach in the reduction of health disparities (Wallerstein & Duran, 2006)

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