Using Theory in Implementation Science
Laura J. Damschroder, MS, MPH
Susan Michie, DPhil
Co-Leaders
SBM 35th Annual Meeting
April 23, 2014

The Traditional Research Approach

Problem Identification

Observational Research

Efficacy / Effectiveness Trials

Dissemination & Implementation Occurs Naturally?

Individual/Organization
ADOPT the EBT/P

Individual/Organization
IMPLEMENTS the EBT/P

EBT/P use is SUSTAINED

Repeated in individuals/organizations nationwide
Research Translation

LOST IN TRANSLATION

Ref: Dougherty & Conway. JAMA 2008;299:2109-2121

The problem of implementation

• Many do not follow evidence-based guidelines for good practice e.g.
  – making referrals
  – giving advice
  – prescribing drugs
  – keeping hands clean
• Research
  – Netherlands: 30-40% of patients did not receive ‘evidence-based’ health care
  – US: 20-25% received care that was unnecessary or even harmful

Implementation Defined

• Efforts designed to get interventions and related products into use via appropriate activities; the vehicle by which an intervention is assimilated into an organization


• The critical gateway that occurs between the time of an organizational decision to adopt a specific practice and the point at which routine use of that practice by receiving stakeholders is accomplished

The Science & The Research

• Implementation Research
  – "scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice...to improve the quality and effectiveness of health services and care" Eccles M, Mittman B. Welcome to Implementation Science. Implementation Science. 2006;1(1)
  – "...including core component identification, adaptation, replication, fidelity, fit, sustainability or evaluation."
  http://www.research-practice.org/glossary.aspx#I

• Implementation Science
  – Young science
  – Multi-disciplinary

Objectives of Implementation Science

• Replicate successful implementation
  • Core components
  • Rationale
• Generalize knowledge about how to implement and sustain interventions
• Navigate complex implementations
• Improve prospects for sustainability

What works where and why?

Grounding of Approach

• What works where and why?
  – Intervention X alters...
  ...Context, which then triggers...
  ...Mechanisms, which produce...
  ...Outcomes (intended and unintended)
State of the Literature - 1

- Systematic reviews of interventions consistently show
  - Some work some of the time $\rightarrow$ None work all of the time
  - “Findings revealed limited information about attributes of successful and unsuccessful team initiatives, barriers and facilitators to team initiatives, unique or combined contribution of selected interventions, or how to effectively establish these teams.”
  - More research is needed to understand what works where and why

State of the Literature – 2

- Largely atheoretical
  - Related to implementation$^1$
  - …and, by the way, too often, for interventions as well
- Theory used only as heuristic$^2$
  - Dropped after the introduction
  - Used to organize discussion of findings

State of the Literature - 3

- Inadequate descriptions of intervention(s), context, and implementation$^{1-3}$
  - Large majority of trials have no qualitative component
  - Implementation studies suffer from small samples
    - Example finding:$^4$
    - “Findings revealed limited information about attributes of successful and unsuccessful team initiatives, barriers and facilitators to team initiatives, unique or combined contribution of selected interventions, or how to effectively establish these teams.”
**What is theory?**

“A set of concepts and/or statements which specify how phenomena relate to each other.

Theory provides an organising description of a system that accounts for what is known, and explains and predicts phenomena.”

---

**Theory: MRC Guidance for developing and evaluating complex interventions**

Craig et al, 2009 BMJ

- **Development**
  - Identifying the evidence base
  - Identifying or developing theory
  - Modeling process and outcomes

- **Feasibility and piloting**
  - Testing procedures
  - Estimating recruitment and retention
  - Determining sample size

- **Evaluation**
  - Assessing effectiveness
  - Understanding process issues
  - Assessing cost effectiveness

- **Implementation**
  - Observation
  - Surveillance and monitoring
  - Long-term follow-up

---

**Power of Theory**

- Provides a framework to facilitate
  - Accumulation of evidence
    - Generalization through theory
    - Syntheses
  - Communication across research groups
    - Identifies barriers and facilitators to change
    - Identifies mechanisms of action

- Identifies mechanisms of action
  - Evidence that can be used to
    - Understand processes
    - Design and improve interventions
Theoretical Model for Weight Loss

Intervention Effectiveness: Short-term & Long-term weight loss

Small Changes & Maintain New Behavior

Baseline Behaviors (e.g. daily step count)

Demographic & Environmental Variables

Motivation, small and intention

Baseline Motivations (e.g. wanting to change)

Theoretical Model for Implementation

Resources

Champion(s)

Innovation-Values Fit

Management Support

Implementation Policy & Practices

Implementation Climate

Implementation Effectiveness

Innovation Effectiveness

Program Outcomes

Implementing the Innovation

References:
Theoretical Frameworks Today

• Acknowledge behaviors/forces at multiple levels
  – Collective
  – Individual
• Consolidated Framework for Implementation Research (CFIR)
• Theoretical Domains Framework (TDF)
• Behavior Change Wheel (BCW)

Consolidated Framework for Implementation Research: CFIR

• Explanatory Framework
• Based on 19 models/frameworks/theories related to implementation in organizational settings
• Majority of constructs relate to organizational level factors with in the Inner Setting
  – E.g., Nature and quality of Networks & Communications within the Inner Setting
• But also includes domains related to innovation characteristics, individuals, and processes


Theory Domains Framework: elaboration of COM-B

• To make theory more usable for implementation researchers
  – 18 researchers in health psychology
  – 14 implementation researchers from UK, Netherlands and Canada
• Generated and synthesised 33 theories and 128 constructs ....
  • into 14 domains (11 originally)

Cane et al (2011) Validation of the theoretical domains framework for use in behaviour change and implementation research, Implementation Science
Behavior Change Wheel (BCW)

- Systematic literature review identified 19 frameworks of behaviour change interventions
  - related to health, environment, culture change, social marketing etc.
- None met all criteria of
  - Comprehensiveness, coherence and linked to a model of behaviour
- So ... Developed a synthesis of the 19 frameworks


What do you think?

- What theories have you used?
- What are some challenges you have had in applying theory?
- Has theory been useful in your work?