Theories, Frameworks, and Models in Implementation Science

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Disclosure

- I have no financial relationships to disclose.

- Opinions are mine, not official positions of the National Cancer Institute, the National Institutes of Health, or the U.S. federal government.

Lecture Overview

1. What are theories, models, and frameworks?

2. Why are theories, models, and frameworks important in implementation science? How and why should they be used?

3. What are some common theories, models, and frameworks in implementation science?

4. Resources

What are theories, frameworks, and models?

- Various definitions and conceptualizations

- *Theory*: Set of principles designed to structure observation, understanding, and explanation of the world. Operationalizes relationships between variables and predictions for how they interact. Explanatory, descriptive, and generalizable.

- *Model*: More narrow set of variables and predictions than theory. More descriptive than explanatory and less generalizable to other phenomenon.

- *Framework*: Overarching structure, outline, or depiction of how concepts or variables are interrelated and presumed to influence outcome or phenomenon. Descriptive.

Why are they important?

- Help identify factors that influence or may influence a process or outcome

- Provide guidance for conceptualizing problem, phenomenon, behavior

- Understand factors related to phenomenon as first step toward changing processes and outcomes…

How can they be used?

- Inform hypotheses

- Understand processes and behavior

- Organizing framework for identifying potential barriers and facilitators

- *A priori* identification of implementation strategies to facilitate implementation process

- Guide appropriate selection of measures and outcomes

There is nothing so practical as a good theory.

Kurt Lewin, 1951

Examples in Implementation Science

- Over 60 different theories, models, and frameworks in implementation science

- *Many* are borrowed from other scientific disciplines

- *Some* are uniquely developed for implementation science

Tabak et al., 2012; Nilsen, 2015

5 Categories

1. **Process Models**
   - Specify steps (stages, phases) in process of translating research into practice.

2. **Determinant Frameworks**
   - Understand or explain influences on implementation outcomes.

3. **Classic Theories**
   - Theories that originate from other scientific disciplines.

Nilsen, 2015

5 Categories

4. **Implementation Theories**
   - Theories developed by implementation researchers (original or adapted from others theories) to understand or explain implementation processes and outcomes.

5. **Evaluation Frameworks**
   - Specific aspects of implementation that could be evaluated to determine implementation success.
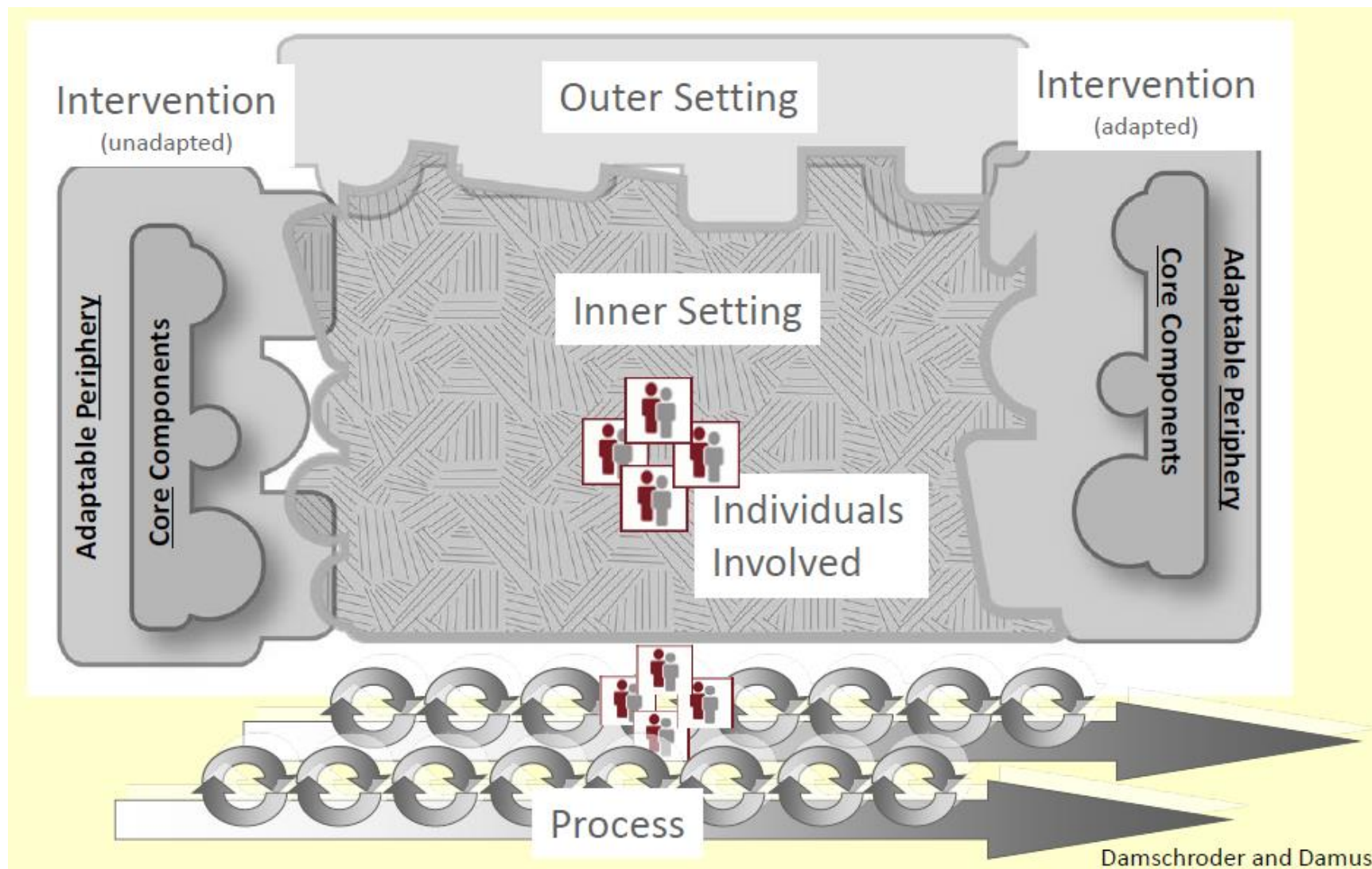
Nilsen, 2015
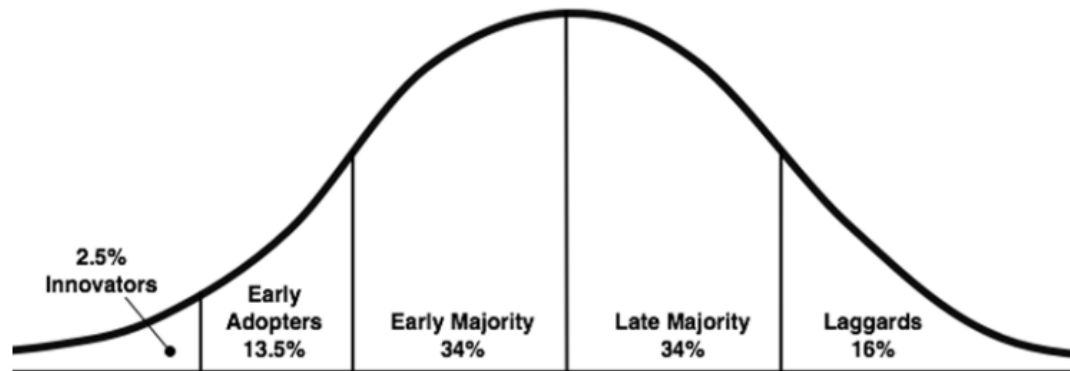
(1) Process Model: *Knowledge-to-Action*
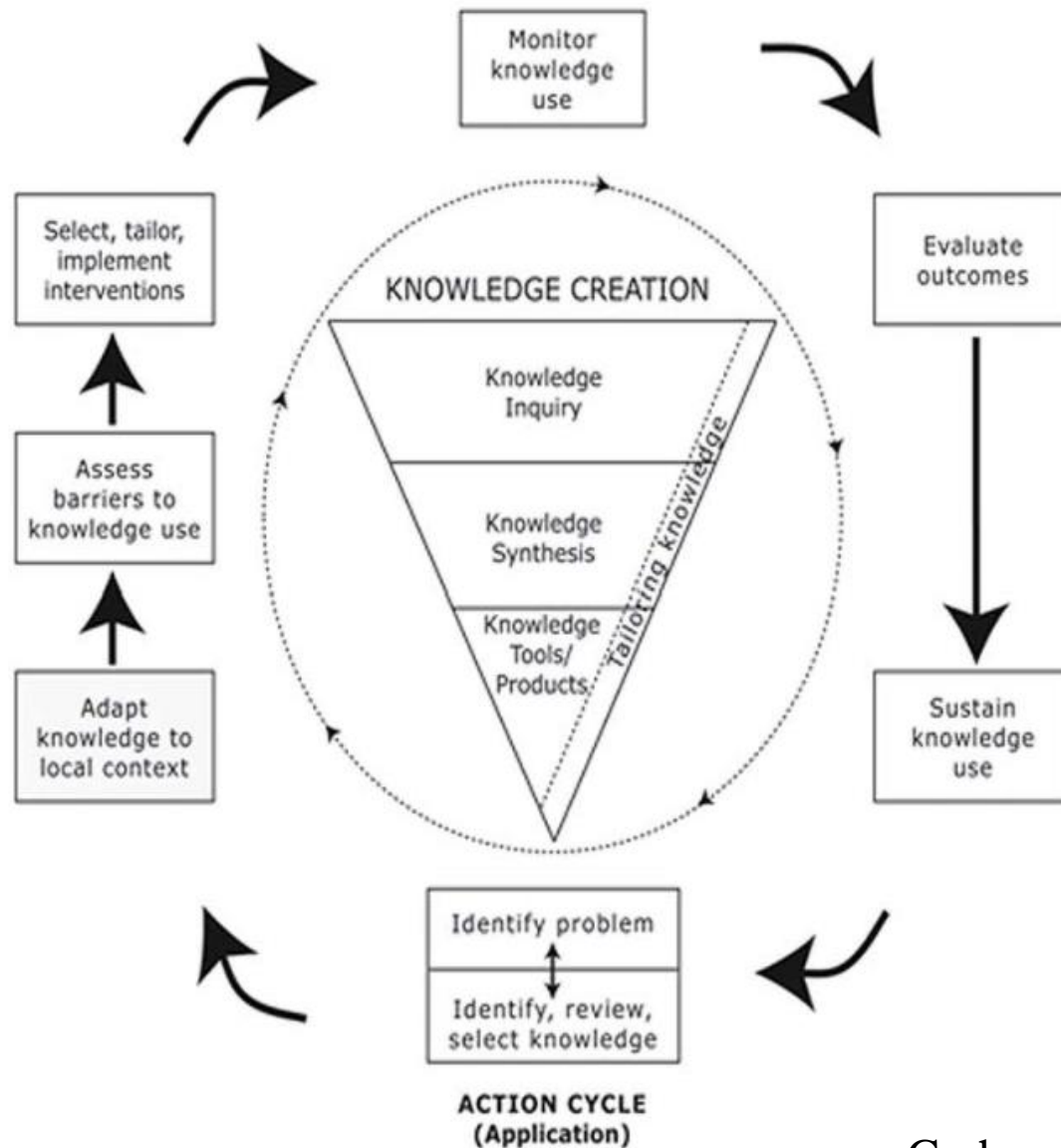
Graham et al., 2006

(2) Determinant Frameworks: *CFIR*
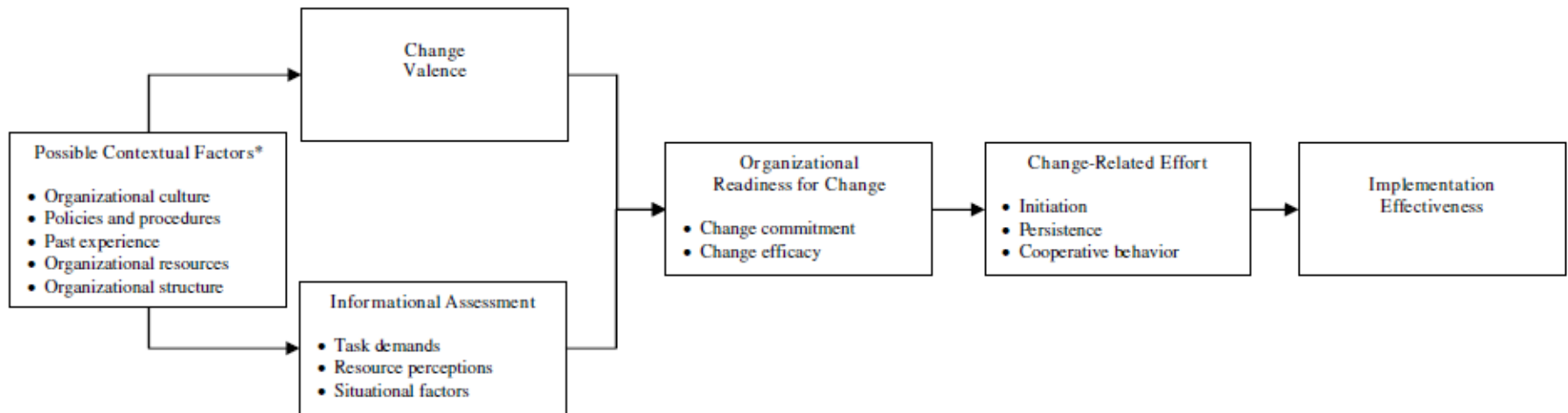

Damschroder et al., 2009

(3) Classic Theories: *Diffusion of Innovations*

- Stages in adoption process: Knowledge, Persuasion, Decision, Implementation, Confirmation

- Key elements in diffusion process: Innovation, Adopters, Communication Channels, Time, Social System

Rogers, 1995

(4) Implementation Theories:
Organizational Readiness for Change

Change
Valence

Possible Contextual Factors*

- Organizational culture
- Policies and procedures
- Past experience
- Organizational resources
- Organizational structure

Informational Assessment

- Task demands
- Resource perceptions
- Situational factors

Organizational
Readiness for Change

- Change commitment
- Change efficacy

Change-Related Effort

- Initiation
- Persistence
- Cooperative behavior

Implementation
Effectiveness

Weiner, 2009

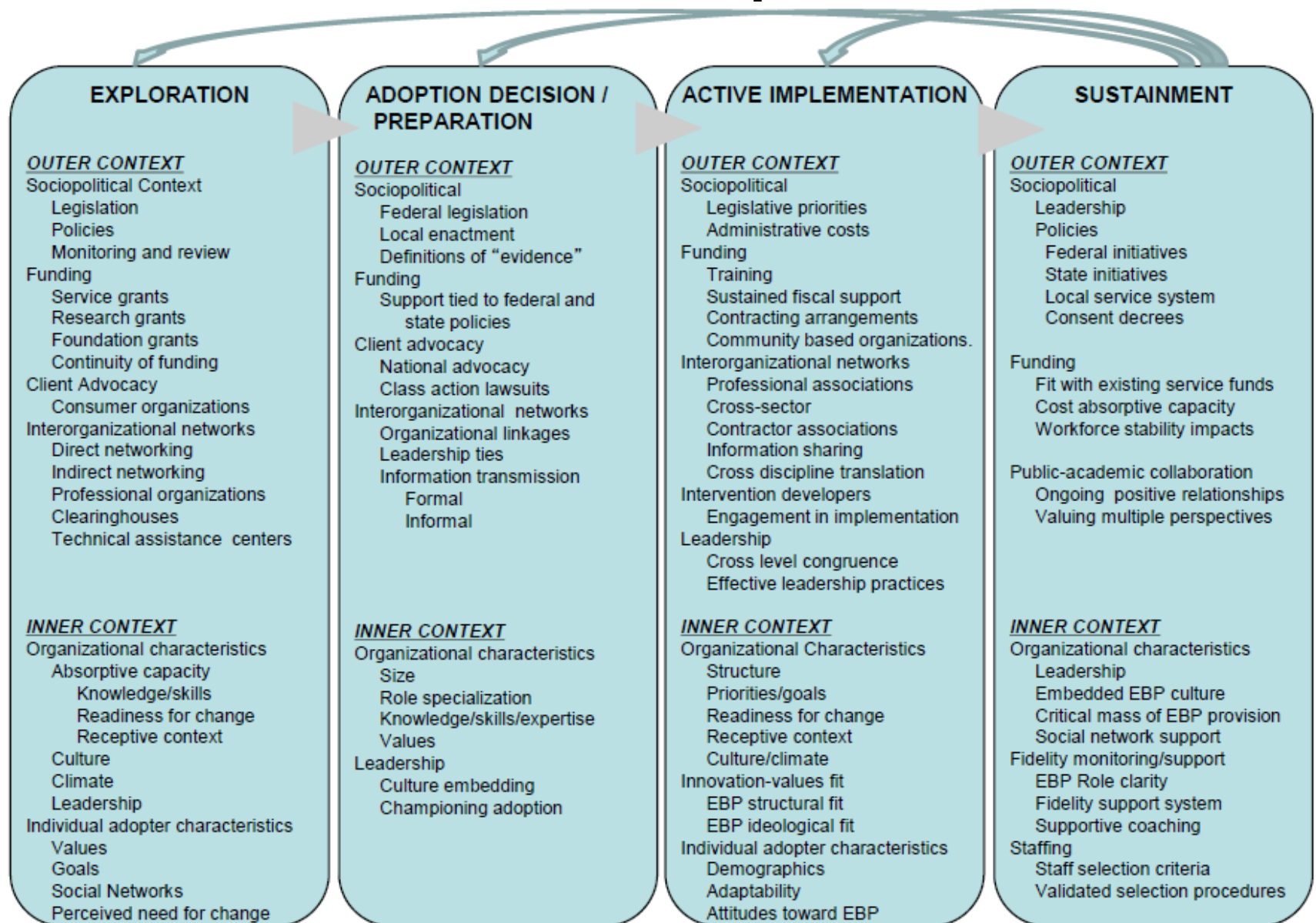# (5) Evaluation Frameworks: *RE-AIM*

FIGURE 1. Elements of the RE-AIM Framework

Glasgow et al., 1999

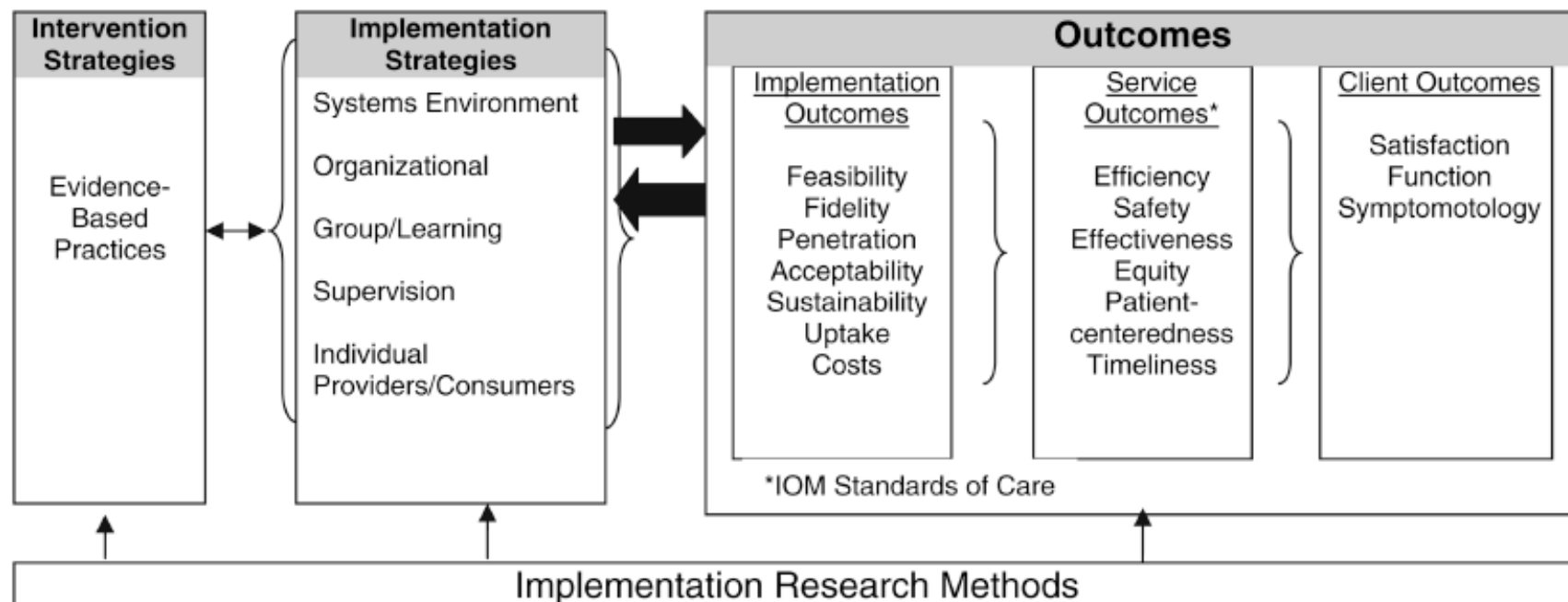# Additional Examples: *EPIS*

EXPLORATION

OUTER CONTEXT
Sociopolitical Context
  Legislation
  Policies
  Monitoring and review
Funding
  Service grants
  Research grants
  Foundation grants
  Continuity of funding
Client Advocacy
  Consumer organizations
Interorganizational networks
  Direct networking
  Indirect networking
  Professional organizations
  Clearinghouses
  Technical assistance centers

INNER CONTEXT
Organizational characteristics
  Absorptive capacity
    Knowledge/skills
    Readiness for change
    Receptive context
  Culture
  Climate
  Leadership
Individual adopter characteristics
  Values
  Goals
  Social Networks
  Perceived need for change

ADOPTION DECISION / PREPARATION

OUTER CONTEXT
Sociopolitical
  Federal legislation
  Local enactment
  Definitions of "evidence"
Funding
  Support tied to federal and
    state policies
Client advocacy
  National advocacy
  Class action lawsuits
Interorganizational networks
  Organizational linkages
  Leadership ties
  Information transmission
    Formal
    Informal

INNER CONTEXT
Organizational characteristics
  Size
  Role specialization
  Knowledge/skills/expertise
  Values
Leadership
  Culture embedding
  Championing adoption

ACTIVE IMPLEMENTATION

OUTER CONTEXT
Sociopolitical
  Legislative priorities
  Administrative costs
Funding
  Training
  Sustained fiscal support
  Contracting arrangements
  Community based organizations.
Interorganizational networks
  Professional associations
  Cross-sector
  Contractor associations
  Information sharing
  Cross discipline translation
Intervention developers
  Engagement in implementation
Leadership
  Cross level congruence
  Effective leadership practices

INNER CONTEXT
Organizational Characteristics
  Structure
  Priorities/goals
  Readiness for change
  Receptive context
  Culture/climate
Innovation-values fit
  EBP structural fit
  EBP ideological fit
Individual adopter characteristics
  Demographics
  Adaptability
  Attitudes toward EBP

SUSTAINMENT

OUTER CONTEXT
Sociopolitical
  Leadership
  Policies
    Federal initiatives
    State initiatives
    Local service system
    Consent decrees

Funding
  Fit with existing service funds
  Cost absorptive capacity
  Workforce stability impacts

Public-academic collaboration
  Ongoing positive relationships
  Valuing multiple perspectives

INNER CONTEXT
Organizational characteristics
  Leadership
  Embedded EBP culture
  Critical mass of EBP provision
  Social network support
Fidelity monitoring/support
  EBP Role clarity
  Fidelity support system
  Supportive coaching
Staffing
  Staff selection criteria
  Validated selection procedures

Aarons et al., 2011

Additional Examples:
Conceptual Model of Implementation Research

Proctor et al., 2009

How Do I Select a Theory, Model, or Framework?

- Selection informed by overall objective of research study
  - Trying to describe implementation process?
  - Testing implementation strategies?
  - Evaluating implementation process?

- Which model or combination of models helps inform hypotheses, study design, measures, and outcomes?

- CFIR, Diffusion of Innovations, and RE-AIM most commonly referenced in NIH grant applications

- Applications typically include at least one if not more

Guidance

Dissemination & Implementation Models
in Health Research & Practice

Home   Resources   Submit Models   About Us

Select
Search, view, and select D&I Models

Adapt
Read strategies for adapting D&I Models to research or practice context

Integrate
Read strategies for incorporating D&I Models into the full spectrum of your project

Measure constructs
Find a list of constructs and links to measurement tools associated with the D&I Models

http://www.dissemination-implementation.org/

Search, view, and select D&I Models through one of the following:

View All D&I Models   Review and choose among available D&I Models. You can also see all references for the D&I models.

Search D&I Models   Search for D&I Models using specific criteria.

Once you have selected a D&I Model that best fits your research question, you can learn more about applying your model on the ADAPT or INTEGRATE pages. Additionally, you can find list of constructs and affiliated measures associated swith the selected D&I Model on the MEASURE page.

The list of all D&I Models and their characteristics. You can compare up to five models by selecting the check box next to the model name. Additional information on each model can be found by clicking on the Description link under each Model name.

Compare Models

	Model	D &/or I	Construct Flexibility	Socio-Ecological Levels					Field of Origin	# Times Cited	Rating
				Individual	Organization	Community	System	Policy			
☐	"4E" Framework for Knowledge Dissemination and Utilization Description	D=I	3	I	O	C			Aging and mental health	35	
☐	A Model for Evidence-Based Practice Description										4.75
☐	ACE Star Model of Knowledge Transformation Description	D>I	4	I	O		S		Nursing		
☐	Active Implementation Framework Description	I-Only	3	I	O	C			Any domain	904	
☐	Advancing Research and Clinical Practice through Close Collaboration (ARCC) Model of Evidence-Based Practice in Nursing and Healthcare Description	D>I	5	I	O				Nursing	50	
☐	Availability, Responsiveness & Continuity (ARC): An Organizational & Community Intervention Model Description	I-Only	5		O	C			Mental health	89	

Adapt

+/- What are the benefits of using existing models?

Researchers can choose from a wealth of existing models. There are many benefits to using an existing model. It encourages researchers to build on previous findings. Demonstrating a new application of the model increases the generalizability of the model thereby enhancing the field's understanding of a model and its constructs.

+/- Why adapting of D&I models might be necessary?

A researcher will almost always adapt a model in some way; therefore, adaptation is often an important part of using a model. Adaptation often improves the appropriateness of the selected model to the intervention being disseminated or implemented, the population, and the setting. Further, adaptation contributes to the field by testing modifications to existing models, such as disregarding pieces shown to be ineffective or adding ones with additional evidence. Models should be viewed as living documents, or works in progress, not as static entities.

+/- What should be considered before adapting a D&I model?

For researchers considering adapting an existing model, a number of issues are important to note. Initial identification of a D&I model to adapt should consider factors that influence the fit of a model such as the target population and/or setting (sociodemographics, geography, language, and culture) and the technology and resources needed for intervention delivery (e.g., high-speed Internet connection, media skills).

+/- What type of modifications can be made to D&I models?

Integrate

+/- When should a D&I model be selected?

Selection of a model should occur as part of study planning and design. The Select section of this website provides assistance for the selection of an appropriate D&I model.

+/- What are some resources describing the use of D&I models?

Several resources provide more-detailed guidance on how to use a selected model to inform a D&I study:

Veteran Affairs' Quality Enhancement Research Initiative

National Cancer Institute's Implementation Science Team

Training Institute for Dissemination and Implementation Research in Health

Canadian Knowledge Translation Clearinghouse

+/- In what stages of the research study should D&I models be used?

Once the appropriate model has been selected, it should be applied throughout the study. In general, the model should be considered in a study's design, aims, activities, methods, measures, and evaluation. Models can be used directly or after some modification to make them more appropriate for the study. If using the model directly, with minimal adaptation, it is important to ensure that the model is appropriate for the proposed intervention and cultural preferences of the target population. To learn more about ways of adapting a D&I model, visit the Adapt section of this website.

+/- How can D&I models support the evaluation of studies?

Measure constructs

The following page provides a list of constructs affiliated with D&I models and links to measures for these constructs. Additional information on each construct is provided when clicking the Description button.

Construct ⓘ	Definition ⓘ	Number of Models ⓘ	Measure ⓘ
Acceptability/feasibility Description ⧉	Acceptability: Perception among implementation stakeholders that a given treatment, service, practice or innovation is agreeable, palatable, or satisfactory....[D]different from the larger construct of service satisfaction...it is more specific, referencing a particular treatment or set of treatments, while satisfaction typically references the general service experience." Stakeholders need specific knowledge about aspects or components of the treatment/innovation are needed in order for acceptability to be assessed. Acceptability should be considered in conjunction with other constructs throughout the implementation process (e.g. acceptability must be considered for adoption during the early stages). Feasibility: The extent to which a new treatment, or an innovation, can be successfully used or carried out within a given agency or setting. Related to appropriateness but may include other concerns specific to an agency or organization like resources or staff training needs. Feasibility should be considered during the early stages of implementation during adoption.	5	GEM D&I link: Acceptability malonetta birth control antibiotikauden.site malonetta amning" target="_blank">GEM D&I link: Feasibility

Summary

- Theories, models, and frameworks are critical for understanding and changing implementation processes and outcomes

- Overarching guidance for understanding context

- Woven into all aspects of one's research proposal or grant application—hypotheses, study design, selection of implementation strategies (where applicable), measures, and outcomes

- Important area for future research

Contact Information

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