

**Facilitated by
Byron Powell!**



Setting the Stage for Understanding Mechanisms of Implementation

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How we'll set the stage

Part 1



Where have we been & where are we going?

Part 2



What are implementation mechanisms & why do they matter?

Part 3



What do we know about implementation mechanisms?

Part 4



What are we going to do to inform the study of implementation mechanisms?

Part 1:

- Progress
- Time for the next step...



Evidence-based health practices, programs, and interventions



www.thecommunityguide.org

WHAT WORKS

Cancer Prevention and Control: Cancer Screening

Evidence-Based Interventions for Your Community

Research-Tested
Intervention Programs (RTIPs) <http://rtips.cancer.gov/rtips/>

■ RTIPs – Moving Science into Programs for People

Effective Interventions
HIV PREVENTION THAT WORKS



Cancer Control
PLANET

Plan, Link, Act, Network with Evidence-based Tools



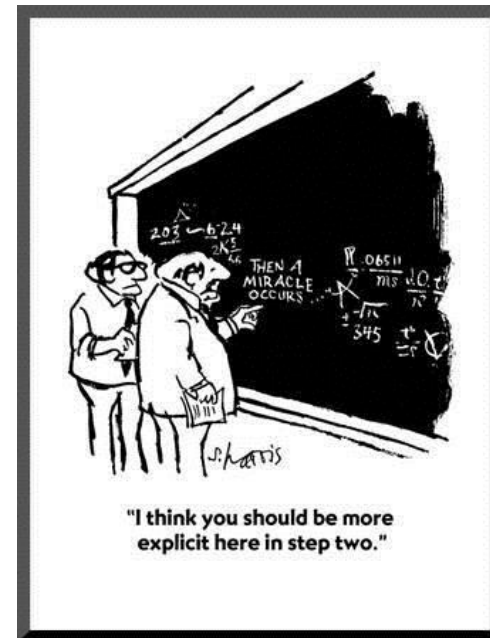
NREPP

SAMHSA's National Registry of
Evidence-based Programs and Practices

Implementation research from 2000-



What went wrong?



Theories, frameworks, and models

N = 61

<http://dissemination-implementation.org/>

Diffusion of Innovations	Exploration Adoption/ Preparation Implementation Sustainment	Interactive Systems Framework	Consolidated Framework for Implementation Research
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Tabak et al., 2012

Measurement: Toward standardization & harmonization

Society for Implementation Research Collaboration

- Instrument Review Project
- <http://www.societyforimplementationresearchcollaboration.org/sirc-projects/sirc-instrument-project/>

Grid-Enabled Measures

- Developed by the National Cancer Institute
- <http://cancercontrol.cancer.gov/brp/gem.html>



Rabin et al. Measurement Resources:

<https://implementationscience.biomedcentral.com/articles/10.1186/s13012-016-0401-y>

Part 2:

What are
implementation
mechanisms & why
do they matter?



Implementation mechanisms

2/3 of implementation efforts fail

Nearly 1/2 have no effect on outcomes of interest

Why do they matter?

Need to tailor strategies to diverse contexts

Cost and complexity are increasing

Key terms & definitions



Implementation
outcomes



Moderator



Determinants of
practice



Mediator



Implementation
strategies



Mechanism



Implementation outcomes

Proctor et al., 2011

The effects of deliberate and purposive actions to implement new treatments, practices, and services.

Implementation outcomes

- Acceptability
- Adoption
- Appropriateness
- Costs
- Feasibility
- Fidelity
- Penetration
- Sustainability



Service outcomes

- Efficiency
- Safety
- Effectiveness
- Equity
- Patient-centeredness
- Timeliness



Client outcomes

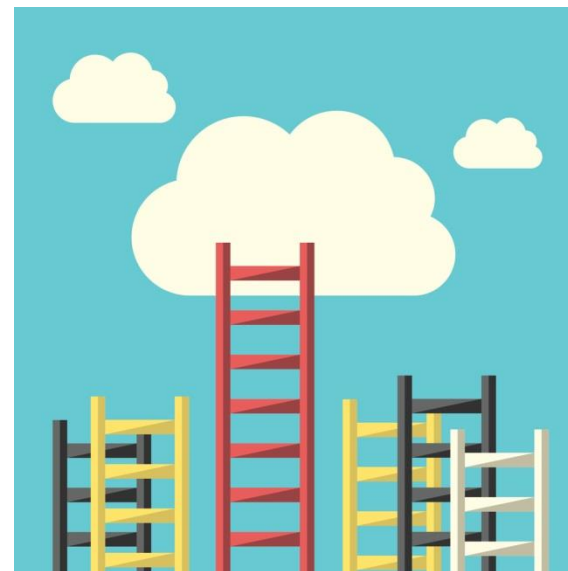
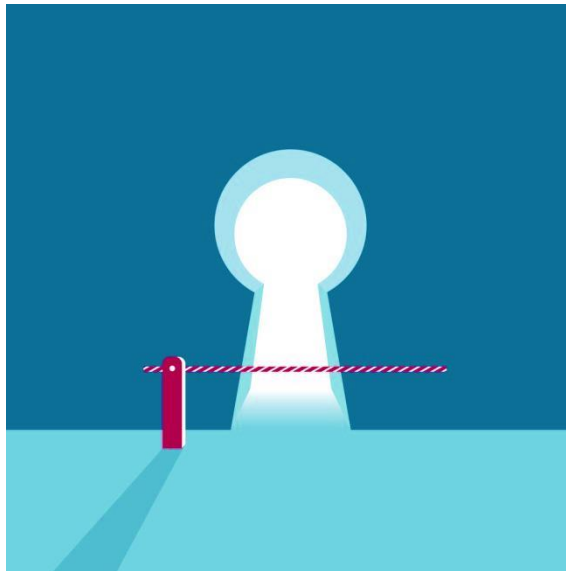
- Satisfaction
- Function
- Symptomatology

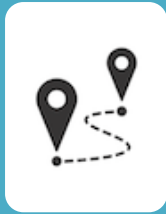


Determinants of practice

Krause et al., 2014

Factors that obstruct or enable changes in targeted professional behaviors or healthcare delivery processes.





Implementation strategies

*Proctor, Powell & McMillen, 2013;
Powell et al., 2012*

Methods or techniques used to enhance the adoption, implementation, and sustainability of clinical program or practice.

Plan strategies

- Needs assessment
- Site visits

Restructure strategies

- Change systems
- Revise roles

Educate strategies

- Educational meetings
- Make training dynamic

Quality mgmt. strategies

- Audit & feedback
- Use advisory boards

Finance strategies

- Use capitate payment
- Alter incentives

Policy context strategies

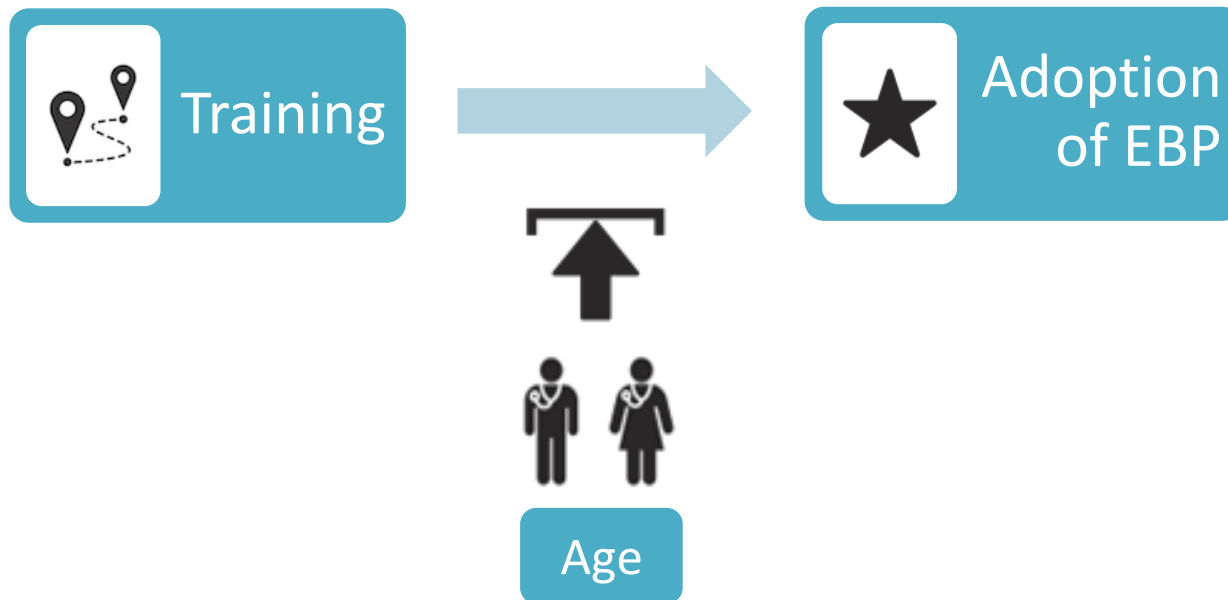
- Change requirements
- Change liability laws



Moderators

McKinnon & Luecken, 2008

Third variable that changes the relationship between two other variables such that the relationship between them differs depending on the level of the moderator variable.





Mediators

Kazdin, 2007

An intervening variable that may account (statistically) for the relationship between the independent and dependent variable.

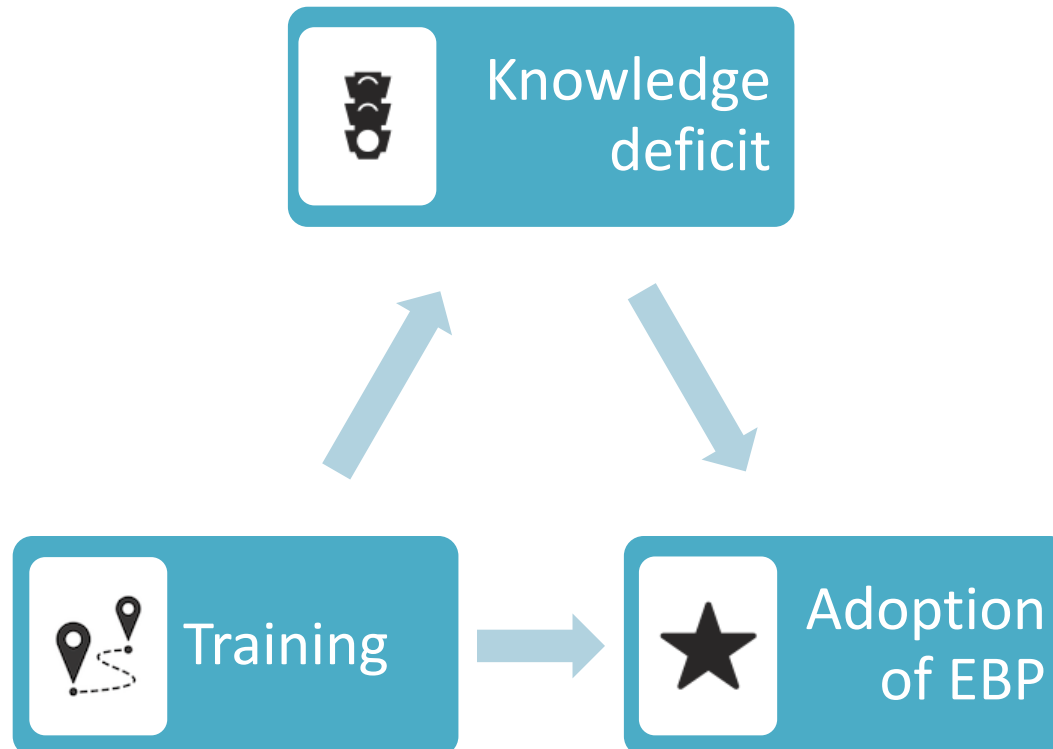




Mechanisms

Kazdin, 2007

The reasons why change occurred or how change came about.

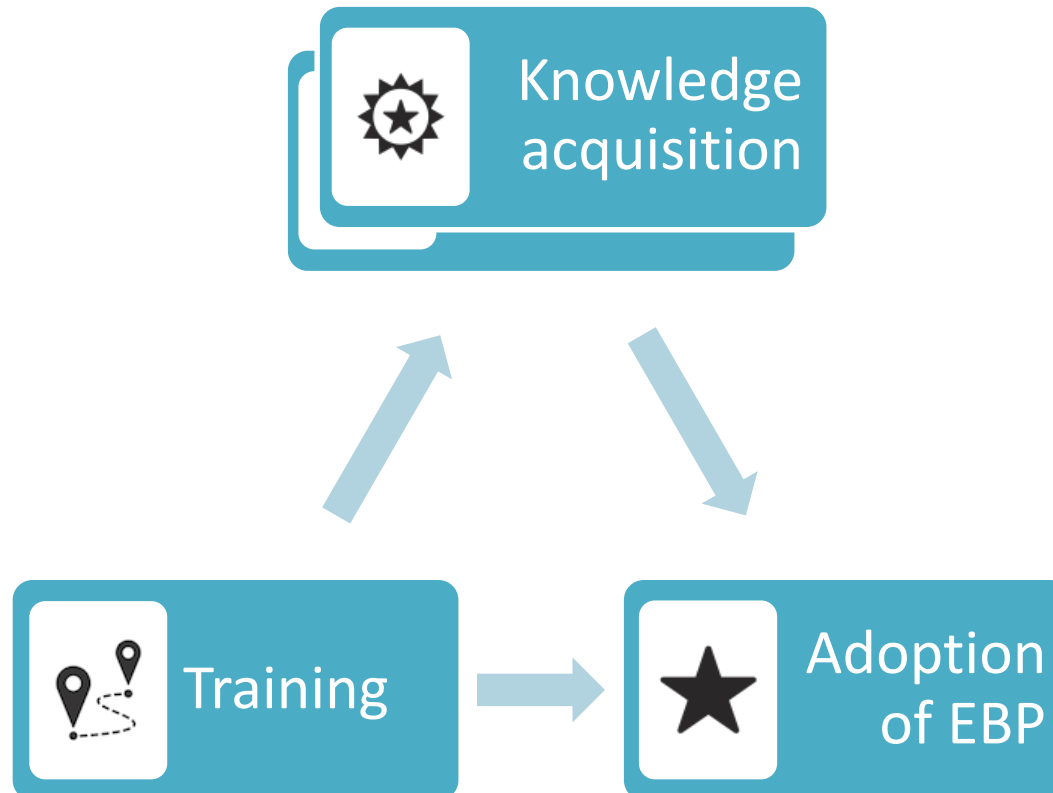




Mechanisms

Kazdin, 2007

The reasons why change occurred or how change came about.



How it all fits together

Determinant	Implementation Strategy	Mechanism	Implementation Outcome
Provider knowledge deficit	Education (provision of information)	Awareness-building, knowledge-acquisition	Feasibility, acceptability, appropriateness, adoption
Provider skill deficit	Training (teaching & practice with corrective feedback)	Skill acquisition, refinement, mastery	Fidelity to EBP
Turnover	Train-the-trainer	Continuous on-site expertise available for consultation	Sustainability
Provider engagement	Clinical champion-led implementation team	Organizational culture, climate	Feasibility, acceptability, appropriateness

Part 3:

What do we know about
implementation mechanisms?



Systematic Reviews: Two approaches to “What do we know?”

Williams, 2016

Targeted review of implementation RCTs

- RCTs that used an implementation strategy to manipulate a potential mechanism and tested the mechanism via mediation analysis
- Catalogue, identify, recommend

Lewis et al.,
in prep

Broad survey of the field

- DI studies that address mechanisms in all areas of health using any methodology
- Describe, illustrate, assess

Overview of Williams, 2016

1,309 records
screened on title/
abstract

88 RCTs located &
full texts reviewed

9 RCTs tested
implementation
mechanisms via
mediation analysis

Adm Policy Ment Health (2016) 43:783–798
DOI 10.1007/s10488-015-0693-2



ORIGINAL ARTICLE

Multilevel Mechanisms of Implementation Strategies in Mental Health: Integrating Theory, Research, and Practice

Nathaniel J. Williams¹

Published online: 16 October 2015
© Springer Science+Business Media New York 2015

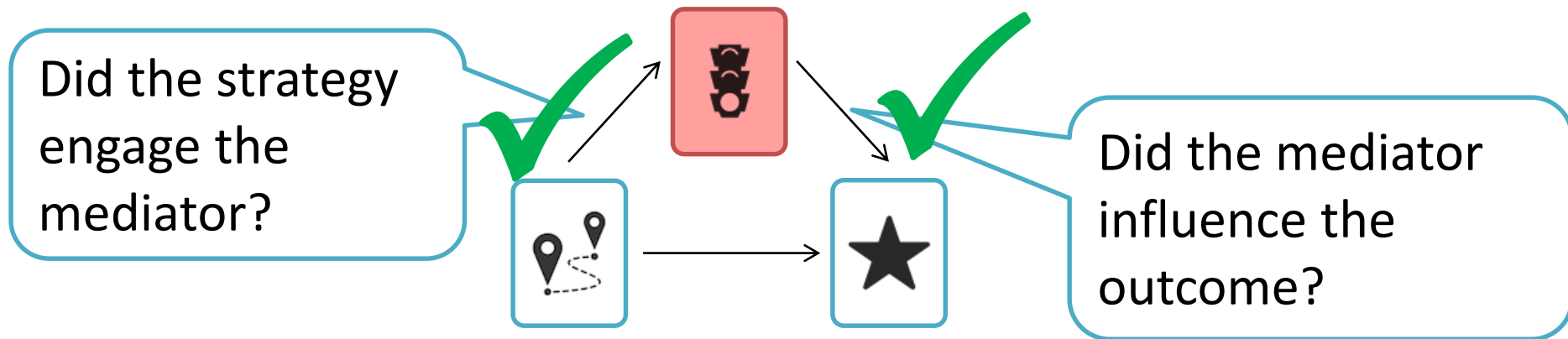
Abstract A step toward the development of optimally effective, efficient, and feasible implementation strategies that increase evidence-based treatment integration in mental health services involves identification of the multilevel mechanisms through which these strategies influence implementation outcomes. This article (a) provides an orientation to, and rationale for, consideration of multilevel mediating mechanisms in implementation trials, and (b) systematically reviews randomized controlled trials that examined mediators of implementation strategies in mental health. Nine trials were located. Mediation-related methodological deficiencies were prevalent and no trials supported a hypothesized mediator. The most common reason was failure to engage the mediation target. Discussion focuses on directions to accelerate implementation strategy development in mental health.

Keywords Mechanism · Mediation · Multilevel · Implementation strategy · Mental health · Systematic review

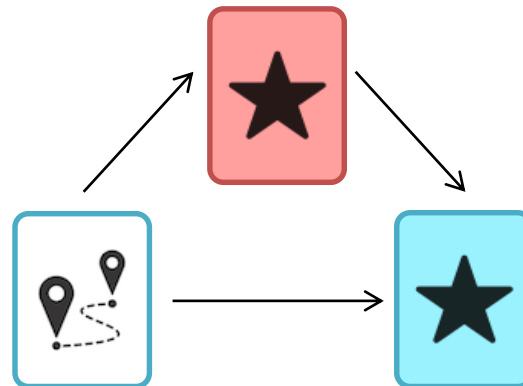
deficits result in unnecessary disease burden for millions of youth and adults who experience mental illnesses each year and waste limited resources that could otherwise be allocated to effective care (Kessler et al. 2009; Steel et al. 2014). In response, the National Institute of Mental Health and the Institute of Medicine have prioritized research on implementation strategies designed to increase the adoption and integration of EBTs into mental health service systems (Insel 2009; Institute of Medicine 2001). Investigators have responded to these calls with hundreds of studies that describe barriers and facilitators to EBT implementation as well as scores of randomized controlled trials (RCTs) testing implementation strategies in mental health settings (Chaudoir et al. 2013; Greenhalgh et al. 2004; Novins et al. 2013). Randomized trials have tested a variety of implementation strategies with multiple components and multiple targeted outcomes at multiple system levels (Powell et al. 2014). However, despite the proliferation of research, the accumulating body of evidence offers little information regarding *how* and *why* effective implementation strategies facilitate EBT adoption and integration. Although numerous candidate mechanisms are

Two types of mechanisms examined

1. strategy → determinant of practice → implementation outcome



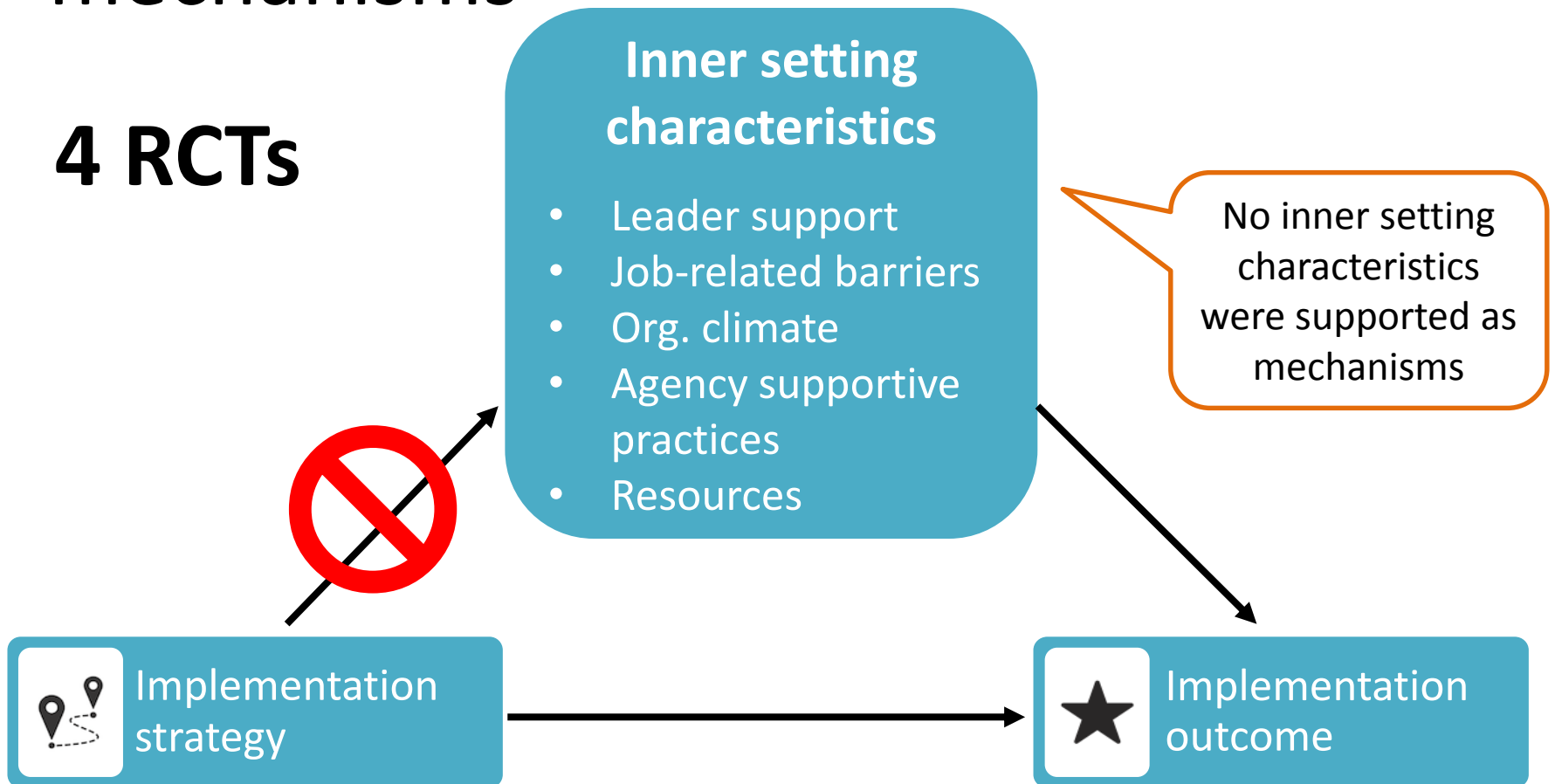
2. strategy → implementation outcome → clinical outcome



1. strategy → determinant → implementation

Inner setting characteristics tested as mechanisms

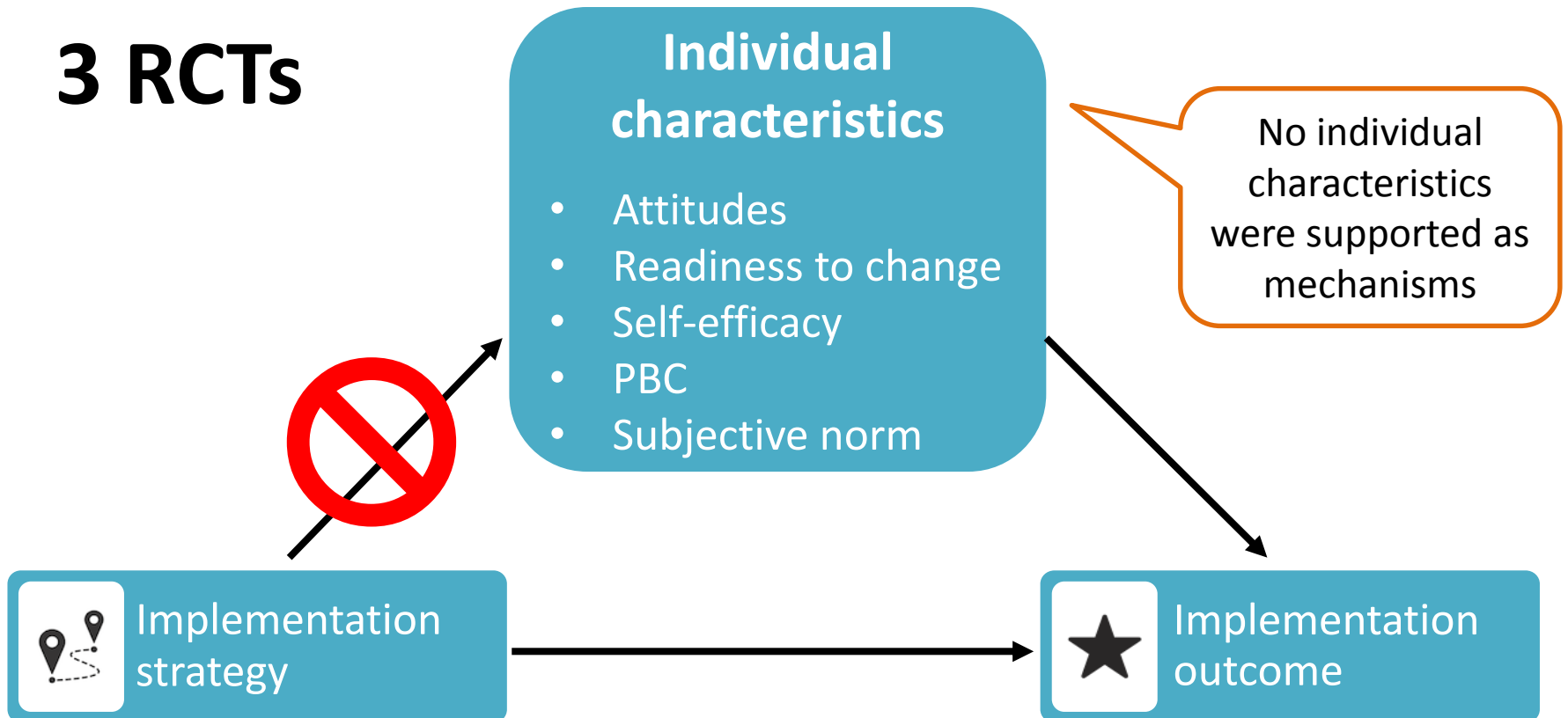
4 RCTs



1. strategy → determinant → implementation

Individual characteristics tested as mechanisms

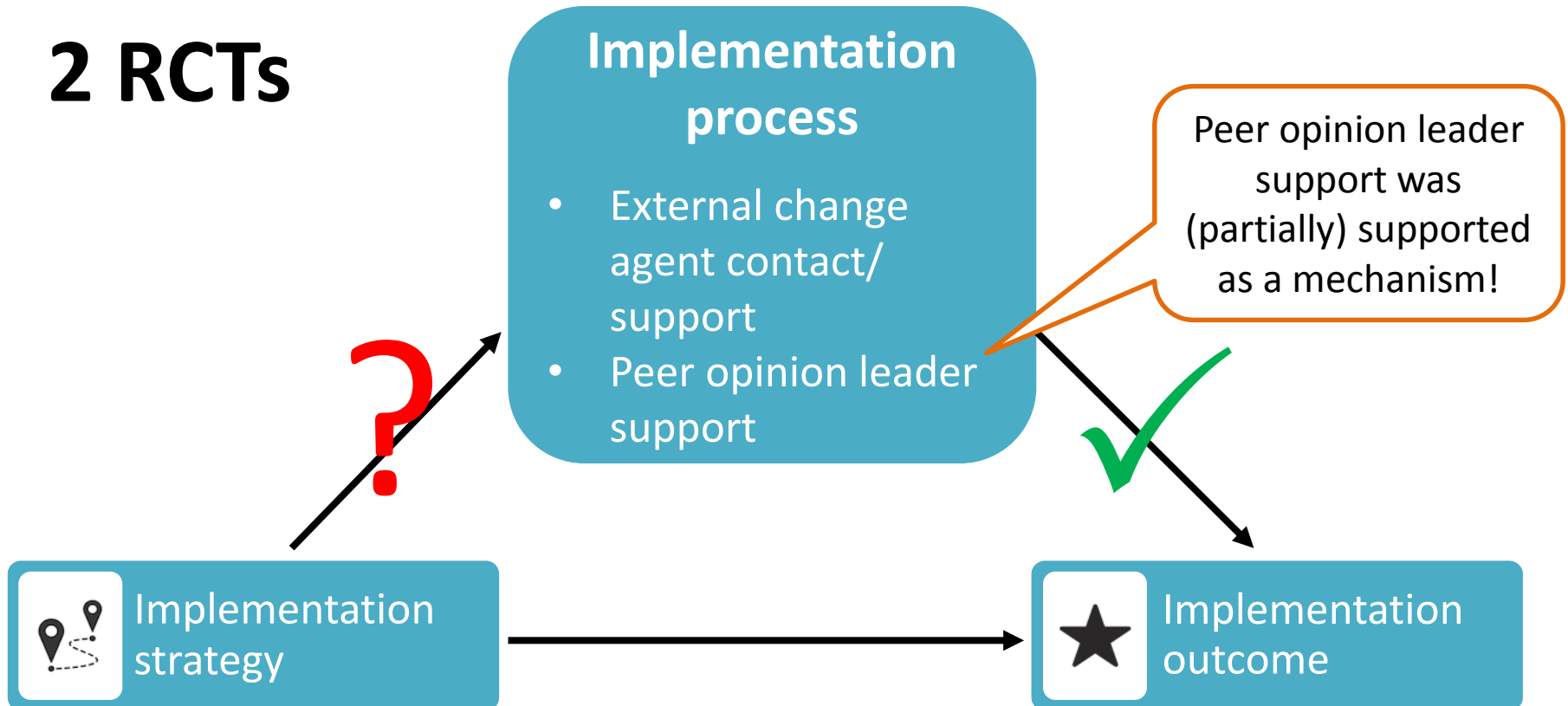
3 RCTs



1. strategy → determinant → implementation

Features of the implementation process tested as mechanisms

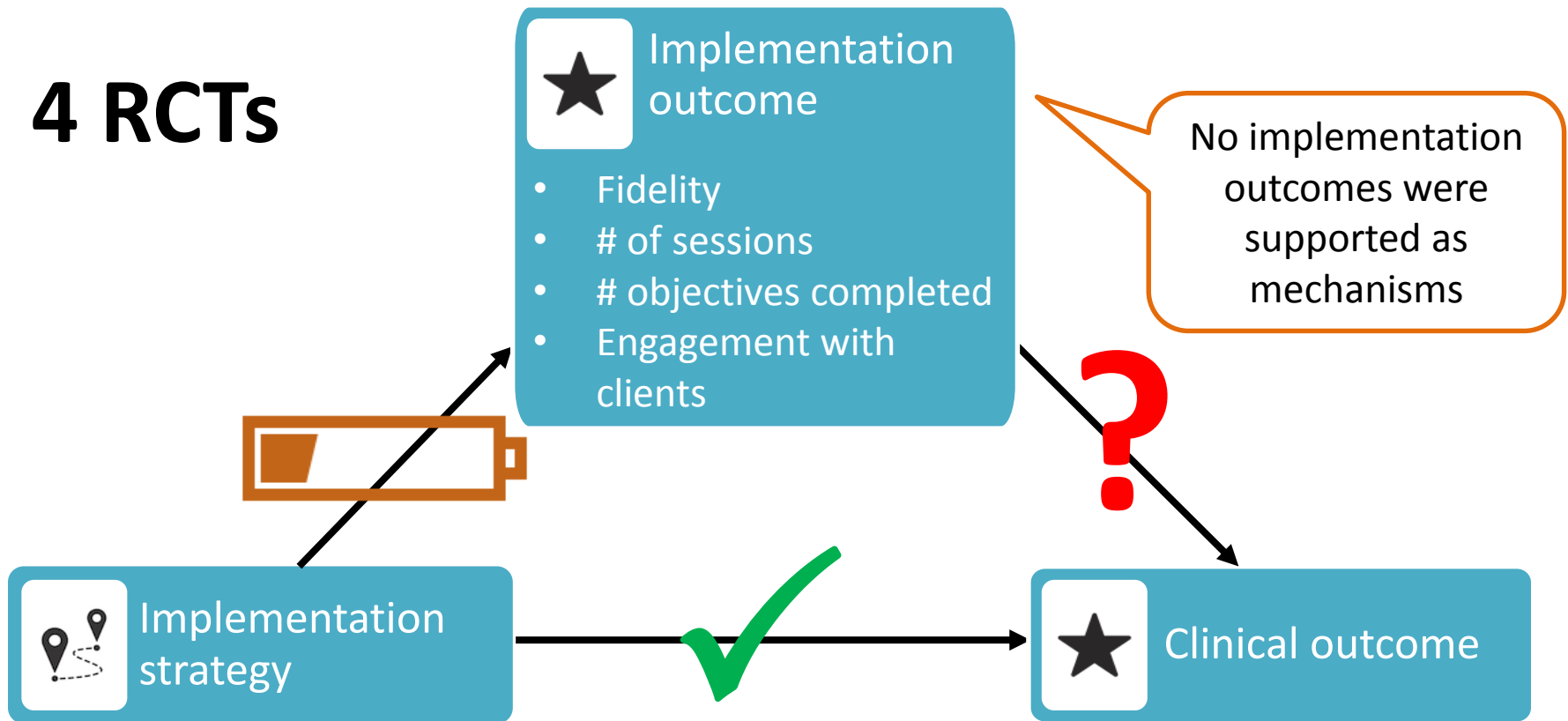
2 RCTs



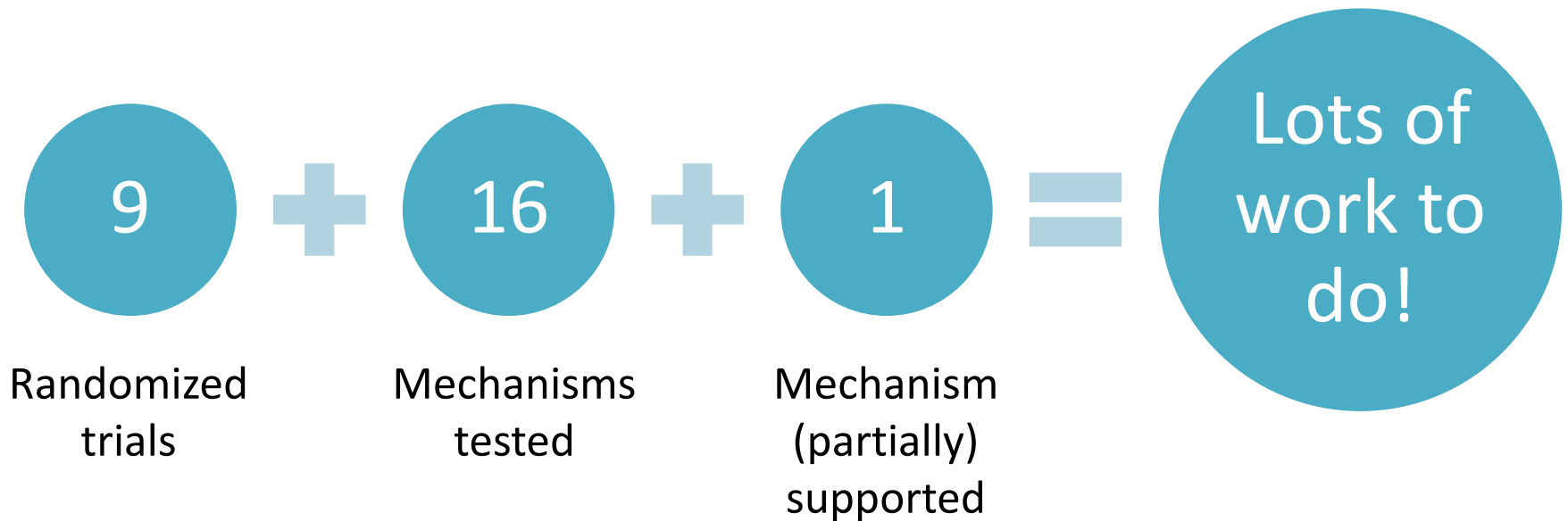
2. strategy → implementation → clinical

Implementation outcomes tested as mediators

4 RCTs



Summary of implementation trials testing mechanisms in mental health



Overview of Lewis et al.

1979 records screened
on title/ abstract

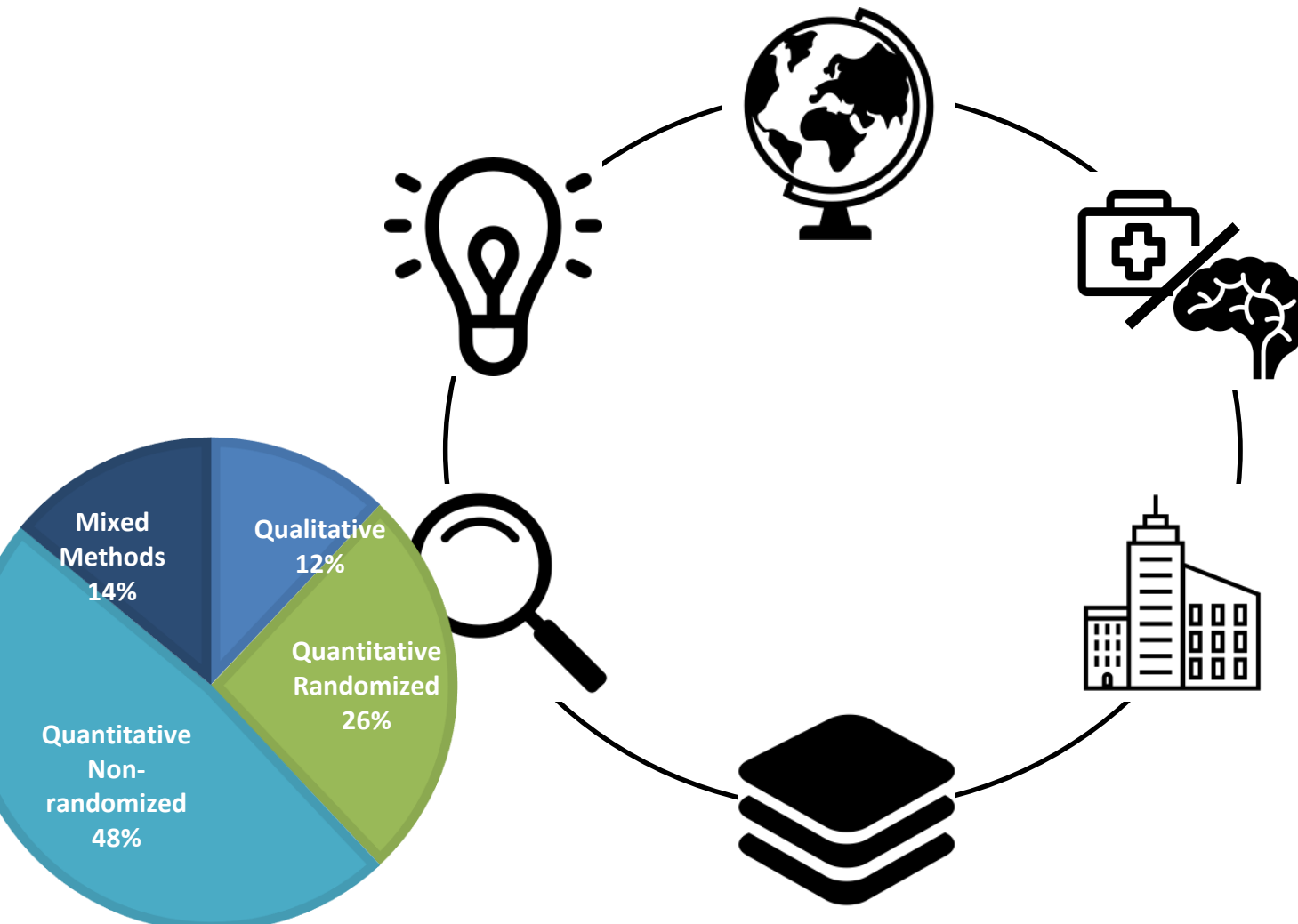


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graph TD; A[1979 records screened on title/ abstract] --> B[204 full-text records assessed for eligibility]; B --> C[50 studies included for data extraction (6 overlap with Williams, 2016)];
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204 full-text records
assessed for eligibility

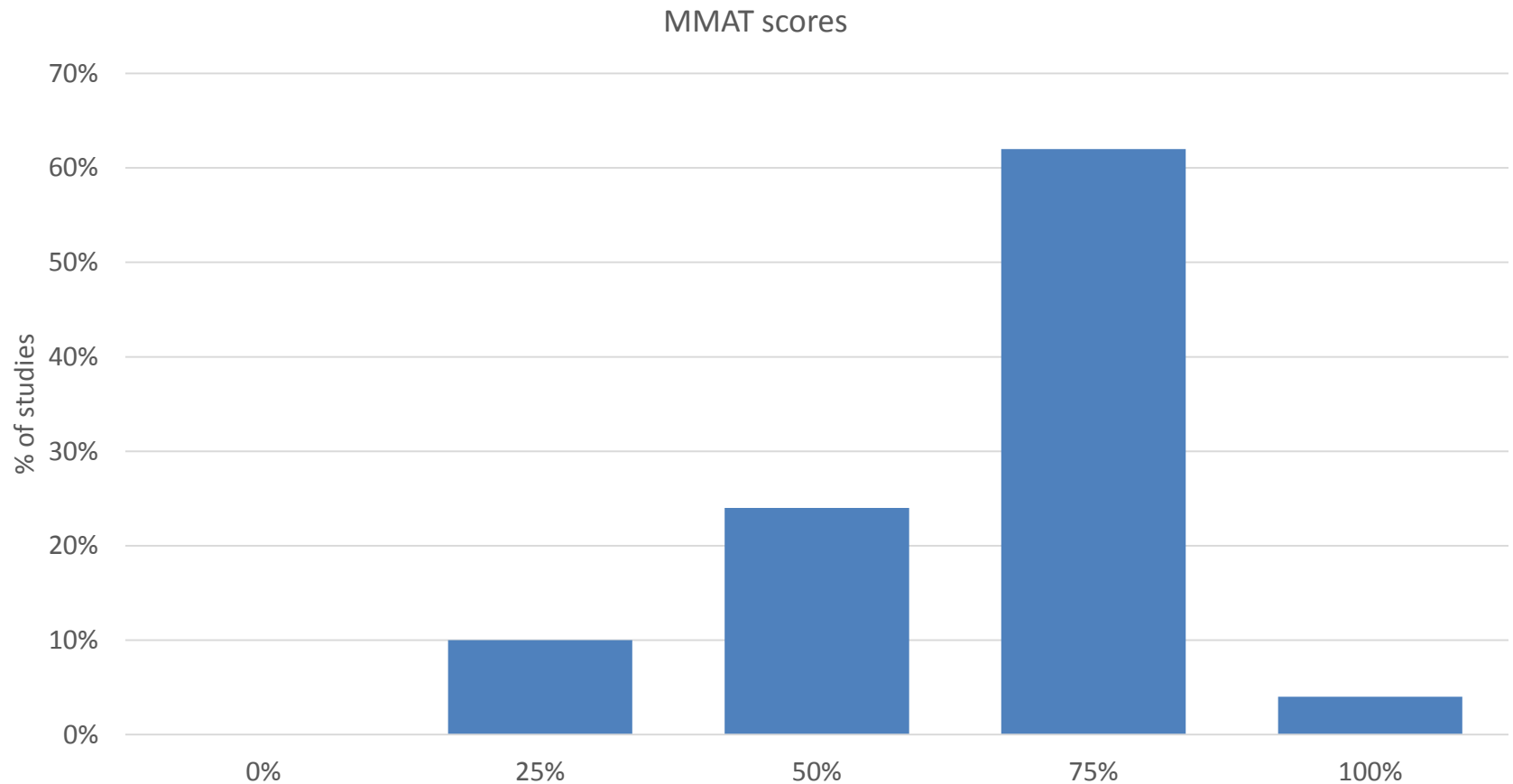
50 studies included for
data extraction (6 overlap
with Williams, 2016)

Characterizing the landscape of mechanism-focused D&I research



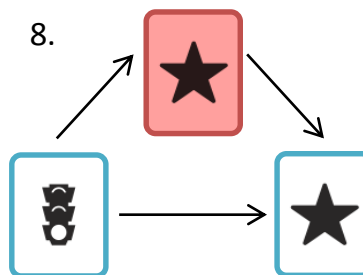
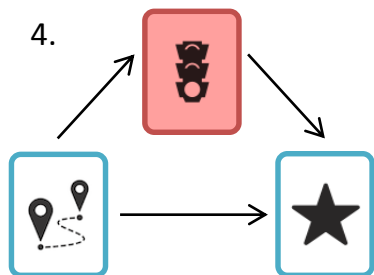
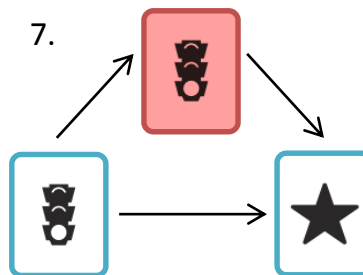
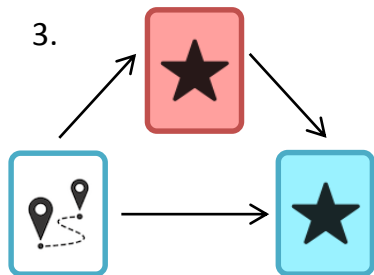
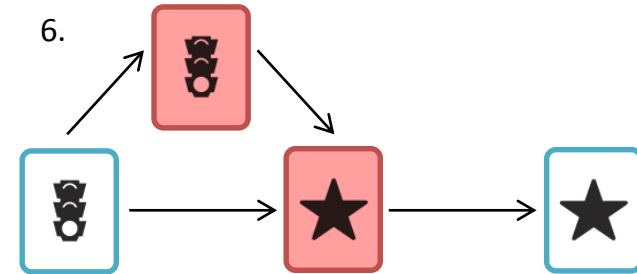
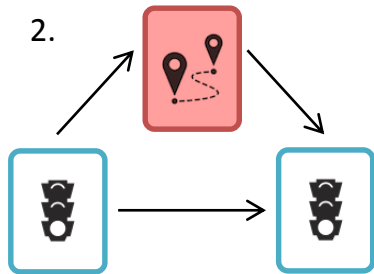
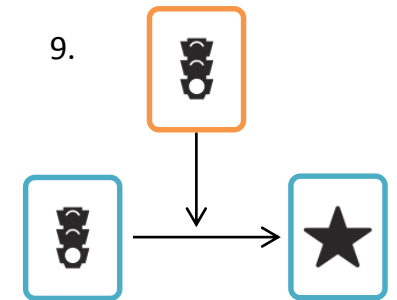
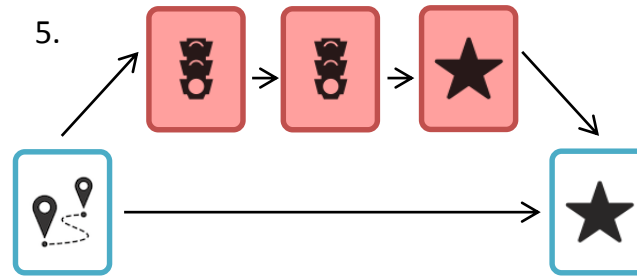
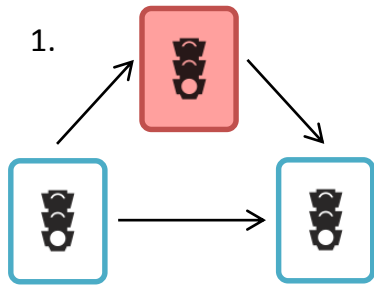
March 22, 2019

What is the quality of studies attempting to identify mechanisms?



Hong, Quan Nha, et al. "The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers." *Education for Information Preprint* (2018): 1-7.

Illustrating approaches to understanding mechanisms



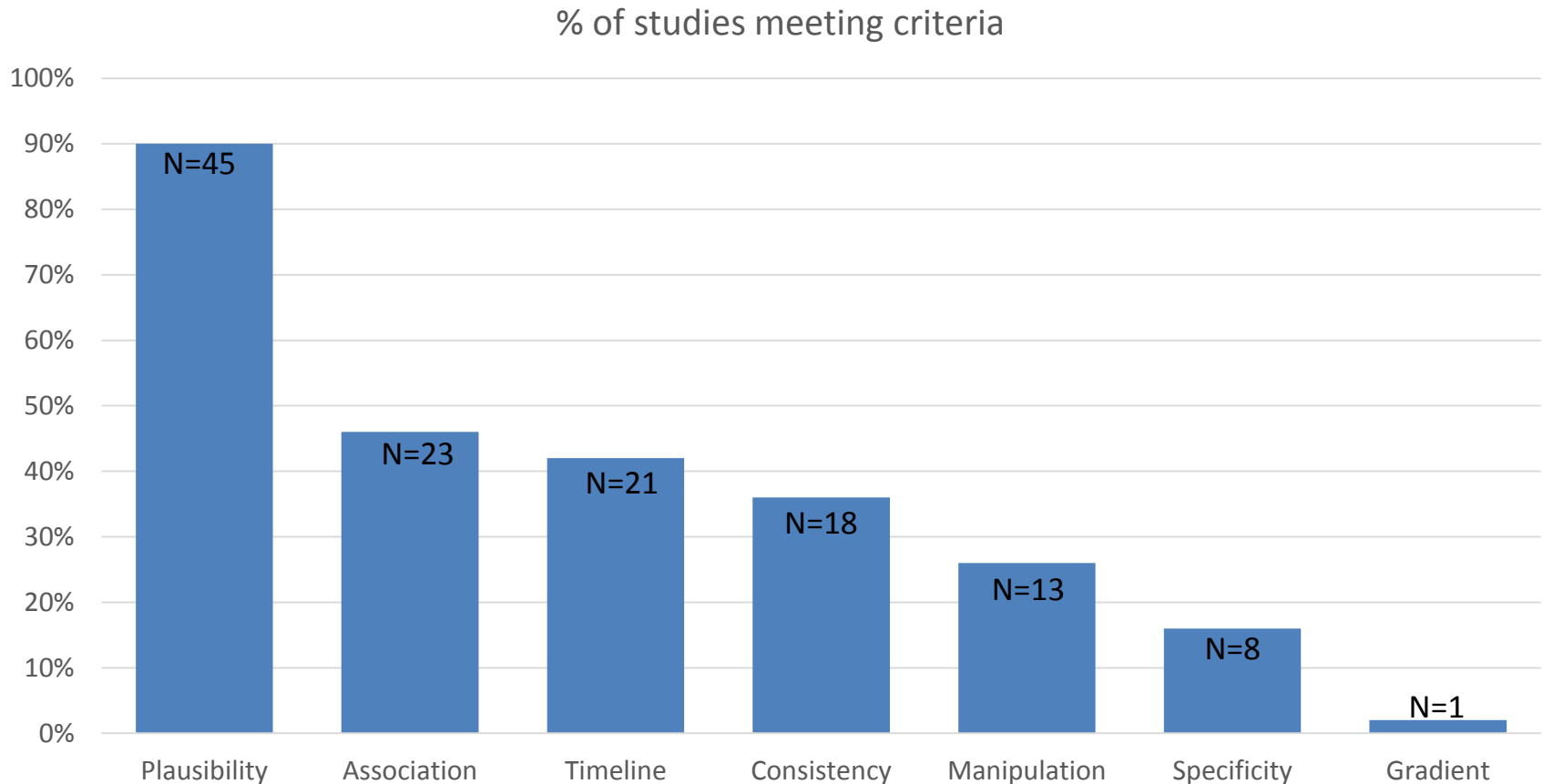
Criteria for establishing mechanisms

7 criteria for
building a
strong case
for a
mechanism

*Bradford-Hill, 1965;
Kazdin, 2007*

- Strong association
- Specificity
- Consistency
- Experimental manipulation
- Timeline
- Gradient
- Plausibility or coherence

Which criteria are D&I studies using to identify mechanisms?



Part 4: What are we going to do to inform the study of implementation mechanisms?



Advancing Mechanisms of Implementation to Accelerate Sustainable Evidence-Based Practice Integration

AHRQ Grant Number: 1R13HS025632

AIMS:

- 1. To generate research, policy, and practice priorities for a research agenda to guide the study of implementation mechanisms.*
- 2. To actively disseminate the research agenda to research, policy, and practice audiences.*

<https://societyforimplementationresearchcollaboration.org/mechanisms-network-of-expertise/>

Advancing Mechanisms of Implementation to Accelerate Sustainable Evidence-Based Practice Integration

We need your input:

- *Research priorities*
 - *What are the pressing research questions or gaps? What keeps you from studying implementation mechanisms?*
- *Policy priorities*
 - *What implementation strategies do you think are worth funding? How do you expect systems should measure or monitor policy implementation?*
- *Practice priorities*
 - *How do you choose which strategies to use to support implementation of a new practice? How do you know if it was an implementation failure versus an intervention failure?*

Advancing Mechanisms of Implementation to Accelerate Sustainable Evidence-Based Practice Integration

Workgroup Key Issues and Co-Leads

<p>Design & Analysis Definition: Research designs and analytic methods (e.g., qualitative, multilevel modeling) for isolating strategies and mechanisms.</p> <p><i>Aaron Lyon & Greg Aarons</i></p>	<p>Measurement Definition: Methods, administration, and qualities of measures used for testing mechanisms.</p> <p><i>Bryan Weiner & Cara Lewis</i></p>
<p>Strategy→Mechanism→Outcome Definition: Implementation strategy, putative mechanism(s) on which it has an effect, and both proximal and distal outcomes</p> <p><i>Brian Mittman & Byron Powell</i></p>	<p>Causal Theory & Context Definition: Frameworks, theories, models, and the role of contextual factors as targets for strategy-mechanism pairings</p> <p><i>Rinad Beidas & Nate Williams</i></p>

Advancing Mechanisms of Implementation to Accelerate Sustainable Evidence-Based Practice Integration

Mechanisms Network of Expertise (MNoE)

Principal Investigator

Cara C. Lewis, PhD

MNoE Investigative Team

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Rinad S. Beidas, Ph.D.
Aaron R. Lyon, Ph.D.
Brian S. Mittman, Ph.D.
Byron J. Powell, Ph.D., LCSW
Bryan J. Weiner, Ph.D.
Nathaniel Williams, Ph.D., LCSW

Plan to Grow Internationally

Expanded MNoE

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Laura Damschroder, MPH, MS
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Aubyn Stahmer, Ph.D.
Jonathan Tobin, Ph.D.
Shannon Wiltsey Stirman, Ph.D.
Katie Witkiewitz, Ph.D.

MNoE Key Activities

3-Year Workplan

	Year 1	Year 2	Year 3
Quarterly Web-Based Meetings	Q1: Webinar Q2: Matrix Mapping Q3: Conference Coding Q4: Roadmaps	Q1: Partner Interviews Q2: Prep for Concept Mapping Q3: Finalize Research Agenda Q4: Prep Manuscripts	Q1: Assign Dissemination Products Q2: Prep Workshops & Talks Q3: Present at SIRC Q4: Complete Dissemination Products
Face-to-Face	SIRC 2019	Deep Dive 2020	SIRC 2021

September 12-14, 2019
Seattle, WA, USA



5th Biennial Conference of the Society for Implementation Research Collaboration



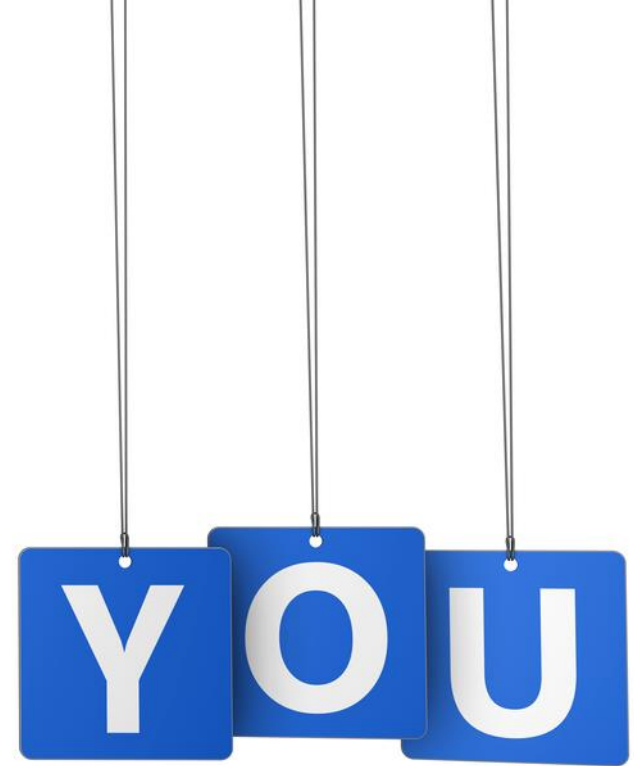


SIRC Website
→ *Initiatives*
→ *Proposed Journal*

~ New Journal ~

Now Accepting Manuscripts

International, peer-reviewed, open access, online-only journal providing rapid publication of interdisciplinary research that advances the implementation in diverse contexts of effective approaches to assess, prevent, and treat mental health, substance use, or other addictive behaviors, or their co-occurrence, in the general population or among those at-risk or suffering from these disorders.



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