

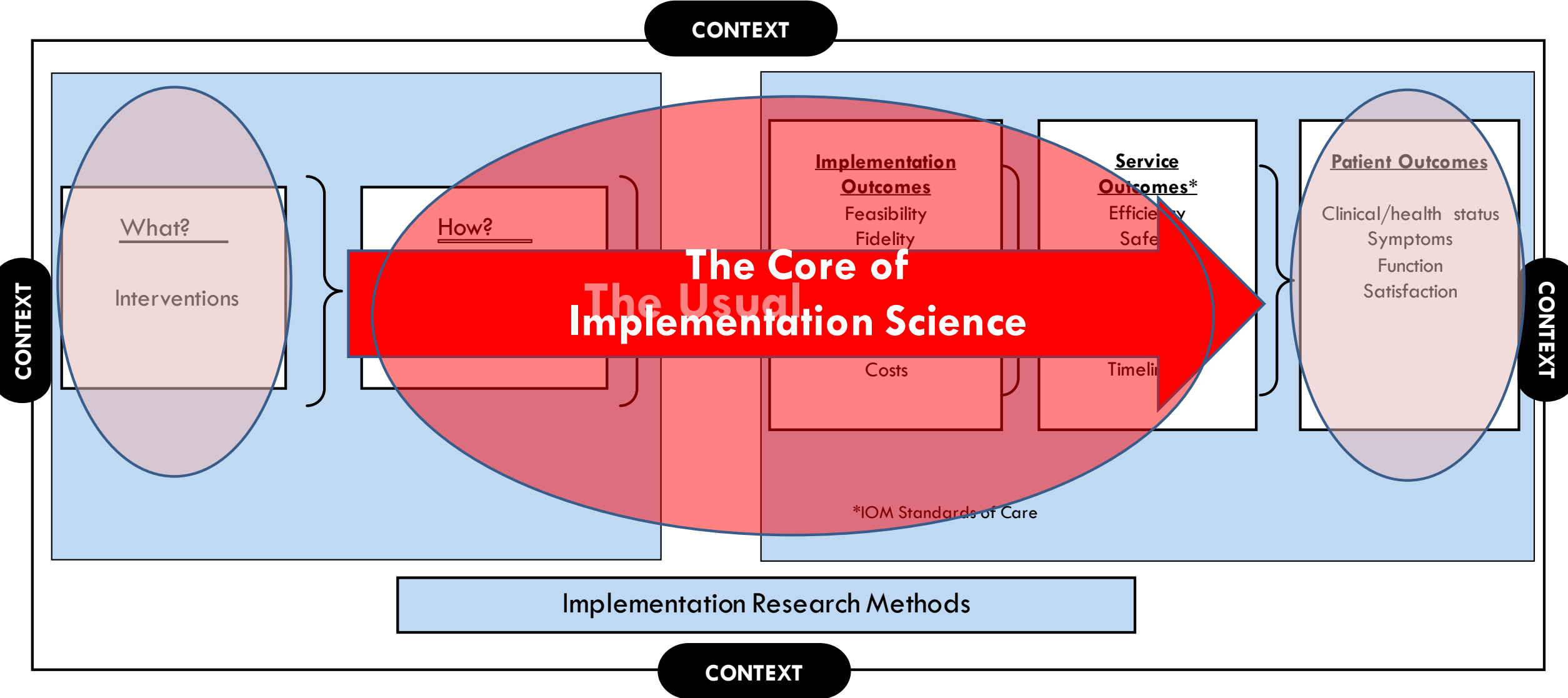
# IMPLEMENTATION OUTCOMES:

WHAT ARE THEY?

WHY ARE THEY IMPORTANT?

HOW ARE THEY MEASURED?

# Conceptual Model of Implementation Research



Proctor et al. (2009). *Administration and Policy in Mental Health and Mental Health Services Research*, 36, 24-34.

# *Implementation Outcomes Defined*



*“...the effects of deliberate and purposive actions to implement new treatments, practices, and services.”*

Proctor, Enola, et al. "Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda." *Administration and Policy in Mental Health and Mental Health Services Research* 38.2 (2011): 65-76.

# ***Implementation Outcomes Have 3 Important Functions***

- ❑ Serve as indicators of implementation success
- ❑ Proximal indicators of implementation process
- ❑ Key intermediate outcomes in relation to service system or clinical outcomes in treatment effectiveness and quality of care research

## *Why Focus on Distinct Outcomes in D&I Research?*

**When an intervention fails, we must determine why:**

- ❑ Was the intervention ineffective in the new setting (intervention failure)?
- ❑ Was the intervention deployed incorrectly (dissemination/implementation failure)?

# ***Taxonomy of Implementation Outcomes***

Adm Policy Ment Health (2011) 38:65–76

DOI 10.1007/s10488-010-0319-7

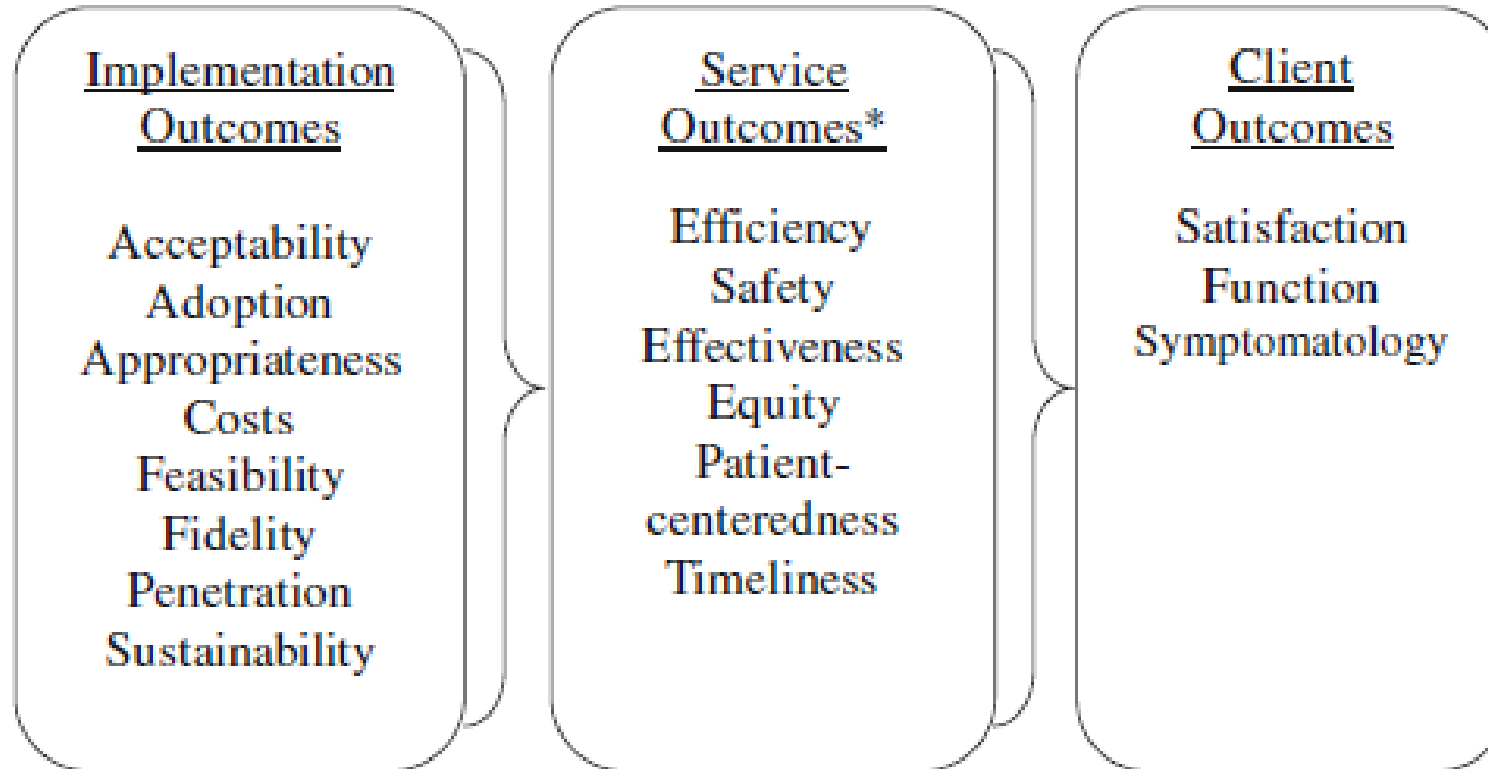
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ORIGINAL PAPER

## **Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda**

**Enola Proctor · Hiie Silmere · Ramesh Raghavan ·  
Peter Hovmand · Greg Aarons · Alicia Bunger ·  
Richard Griffey · Melissa Hensley**

# Taxonomy of Implementation Outcomes



\*IOM Standards of Care

Proctor, Enola, et al. "Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda." *Administration and Policy in Mental Health and Mental Health Services Research* 38.2 (2011): 65-76.

**Table 1** Taxonomy of implementation outcomes

Implementation outcome	Level of analysis	Theoretical basis	Other terms in literature	Salience by implementation stage	Available measurement
Acceptability	Individual provider Individual consumer	Rogers: “complexity” and to a certain extent “relative advantage”	Satisfaction with various aspects of the innovation (e.g. content, complexity, comfort, delivery, and credibility)	Early for adoption Ongoing for penetration Late for sustainability	Survey Qualitative or semi-structured interviews Administrative data Refused/blank
Adoption	Individual provider Organization or setting	RE-AIM: “adoption” Rogers: “trialability” (particularly for early adopters)	Uptake; utilization; initial implementation; intention to try	Early to mid	Administrative data Observation Qualitative or semi-structured interviews Survey
Appropriateness	Individual provider Individual consumer Organization or setting	Rogers: “compatibility”	Perceived fit; relevance; compatibility; suitability; usefulness; practicability	Early (prior to adoption)	Survey Qualitative or semi-structured interviews Focus groups
Feasibility	Individual providers Organization or setting	Rogers: “compatibility” and “trialability”	Actual fit or utility; suitability for everyday use; practicability	Early (during adoption)	Survey Administrative data
Fidelity	Individual provider	RE-AIM: part of “implementation”	Delivered as intended; adherence; integrity; quality of program delivery	Early to mid	Observation Checklists Self-report
Implementation Cost	Provider or providing institution	TCU Program Change Model: “costs” and “resources”	Marginal cost; cost-effectiveness; cost-benefit	Early for adoption and feasibility Mid for penetration Late for sustainability	Administrative data
Penetration	Organization or setting	RE-AIM: necessary for “reach”	<i>Level of institutionalization? Spread? Service access?</i>	Mid to late	Case audit Checklists
Sustainability	Administrators Organization or setting	RE-AIM: “maintenance” Rogers: “confirmation”	Maintenance; continuation; durability; incorporation; integration; institutionalization; sustained use; routinization;	Late	Case audit Semi-structured interviews Questionnaires Checklists



# Implementation Outcomes

- Acceptability
  - ▣ Perception that a given innovation (or intervention) is agreeable, palatable, or satisfactory
- Adoption
  - ▣ Intention, initial decision or action to employ an innovation (or intervention)
- Appropriateness
  - ▣ Perceived fit of an innovation for a practice setting, provider or consumer
- Feasibility
  - ▣ Extent to which an innovation (or intervention) can be used or carried out within a setting
- Fidelity
  - ▣ Degree to which an innovation (or intervention) is implemented as prescribed in the original protocol
- Costs
  - ▣ Cost impact of an implementation effort (cost of intervention, implementation strategy, and the location of service delivery)
- Penetration
  - ▣ Integration of a practice within a service setting and its subsystem (number of providers who deliver/total number of providers) – “Reach”
- Sustainability
  - ▣ Extent to which a new treatment is maintained or becomes part of normal practice

# Role of implementation outcomes in research studies

# Implementation Study Design

## □ Efficacy

- Randomized controlled trial; high internal validity; limited external validity
  - Is Cognitive Behavioral Therapy (CBT) for child anxiety efficacious in a research setting?

## □ Effectiveness

- More diverse samples; real world settings; better external validity
  - Is CBT for child anxiety effective in a real-world clinic?

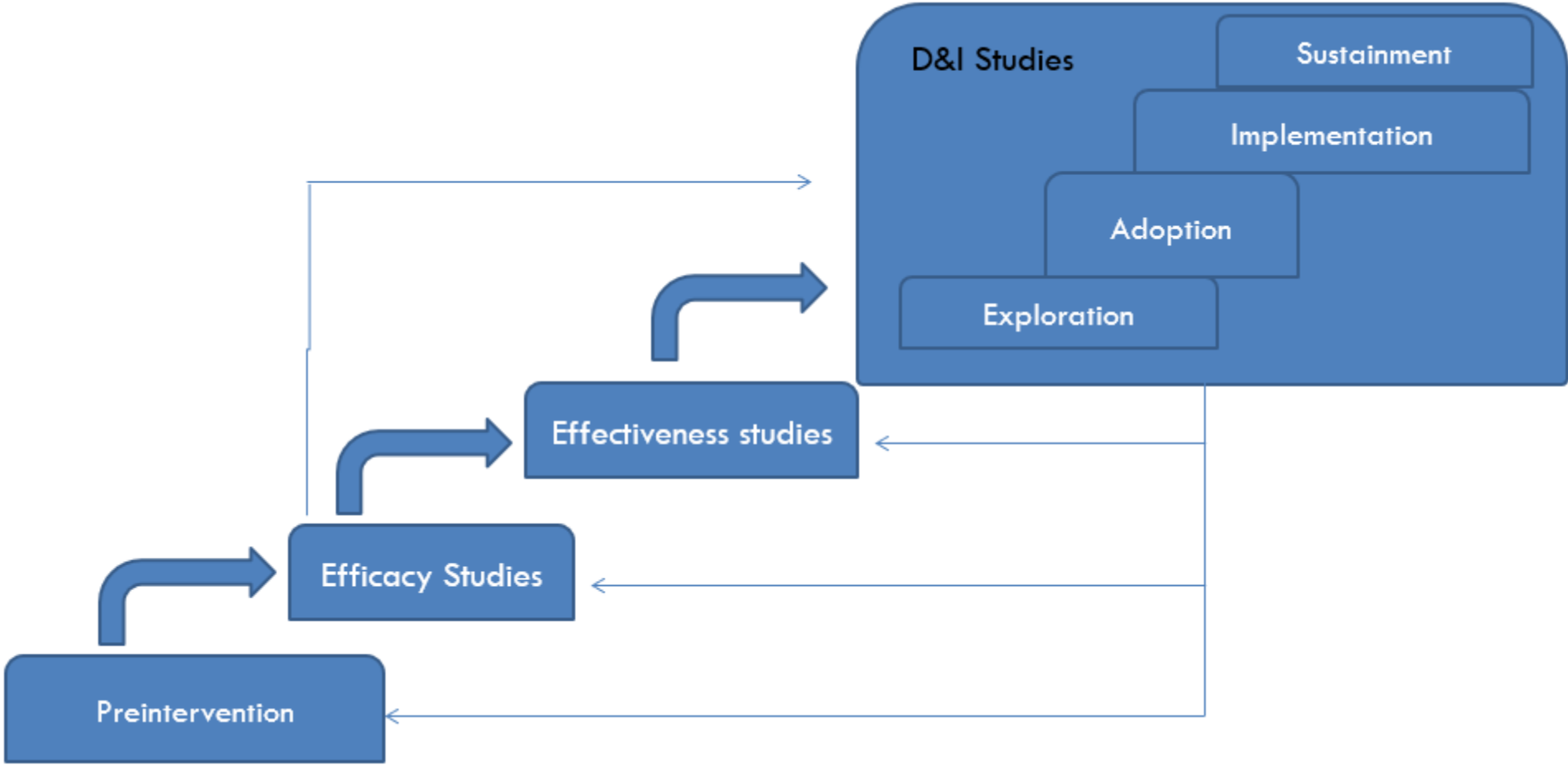
## □ Implementation

- Focus just on the implementation process of an intervention
  - Can training and consultation as implementation strategies improve the implementation of CBT for child anxiety?

## □ Hybrid Implementation-Effectiveness Study

- Combination of implementation and effectiveness study
  - Can training and consultation improve implementation of CBT for child anxiety?
  - Does child anxiety improve?

# Stages of Research and Phases of D&I



# Comparisons

Design	Efficacy/Effectiveness	Implementation
Manipulation	Clinical intervention	Implementation strategy/intervention
Outcome	Clinical outcomes (symptoms, quality of life)	Implementation outcomes (fidelity, adoption)
Unit of analysis	Patient	Provider, Organization
Approach to data collection	Typically quantitative	Mixed methods – inclusion of qualitative data
Summative outcomes	Health outcomes; process/quality measures typically considered intermediate; costs	Adoption/uptake of the “clinical” intervention; process measures/quality measures typically considered outcomes

Curran, Geoffrey M., et al. "Effectiveness-implementation hybrid designs: combining elements of clinical effectiveness and implementation research to enhance public health impact." *Medical care* 50.3 (2012): 217.

# Implementation outcomes: Common pitfalls

14

- ❑ Skipping over implementation outcomes
- ❑ Including too many implementation outcomes
- ❑ Using home-grown measures
- ❑ Failure to directly measure
- ❑ Unit of analysis inconsistency

# Tips for investigators:

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## Implementation outcomes should

- ❑ Be justified in terms of a pressing service system problem (the quality gap, current levels of uptake of the EBI tested)
- ❑ Be reflected in aims
- ❑ Derive from guiding conceptual model/ framework
  - ❑ Help inform mechanisms or process of practice change
- ❑ Correspond to the phase of implementation
- ❑ Measured robustly

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# Measuring implementation outcomes



# What we look for in a good measure

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- **Reliability** – is about the consistency or repeatability of measure
- **Validity** – is about the accuracy of a measure
- **Practicality** – is about the usefulness and ease of use of a measure

# Implementation Outcome Measures

Lewis et al. *Implementation Science* (2015) 10:102  
DOI 10.1186/s13012-015-0287-0



## STUDY PROTOCOL

Open Access

### Advancing implementation science through measure development and evaluation: a study protocol



Cara C. Lewis<sup>1,2\*</sup>, Bryan J. Weiner<sup>3</sup>, Cameo Stanick<sup>4</sup> and Sarah M. Fischer<sup>1</sup>

Lewis et al. *Implementation Science* (2015) 10:155  
DOI 10.1186/s13012-015-0342-x



## SYSTEMATIC REVIEW

Open Access

### Outcomes for implementation science: an enhanced systematic review of instruments using evidence-based rating criteria



Cara C. Lewis<sup>1,2\*</sup>, Sarah Fischer<sup>1</sup>, Bryan J. Weiner<sup>3</sup>, Cameo Stanick<sup>4</sup>, Mimi Kim<sup>5,6</sup> and Ruben G. Martinez<sup>7</sup>

Lewis et al. *Systematic Reviews* (2018) 7:66  
<https://doi.org/10.1186/s13643-018-0728-3>

Systematic Reviews

## PROTOCOL

Open Access

### An updated protocol for a systematic review of implementation-related measures




Cara C. Lewis<sup>1,2,3\*</sup>, Kayne D. Mettert<sup>1</sup>, Caitlin N. Dorsey<sup>1</sup>, Ruben G. Martinez<sup>4</sup>, Bryan J. Weiner<sup>5</sup>, Elspeth Nolen<sup>5</sup>, Cameo Stanick<sup>6</sup>, Heather Halko<sup>7</sup> and Byron J. Powell<sup>8</sup>

*Systematic Reviews of Methods to Measure Implementation Constructs-Review*

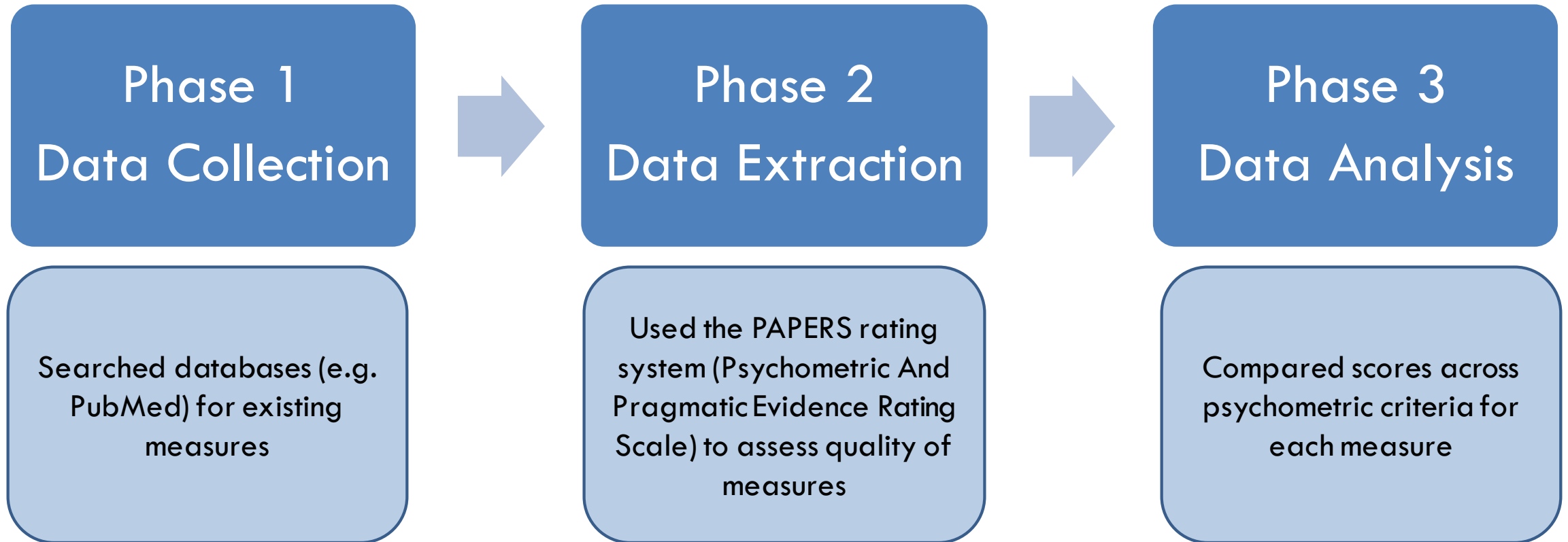


### Measuring implementation outcomes: An updated systematic review of measures' psychometric properties

Kayne Mettert<sup>1</sup> , Cara Lewis<sup>1</sup> , Caitlin Dorsey<sup>1</sup>, Heather Halko<sup>2</sup> and Bryan Weiner<sup>3</sup>

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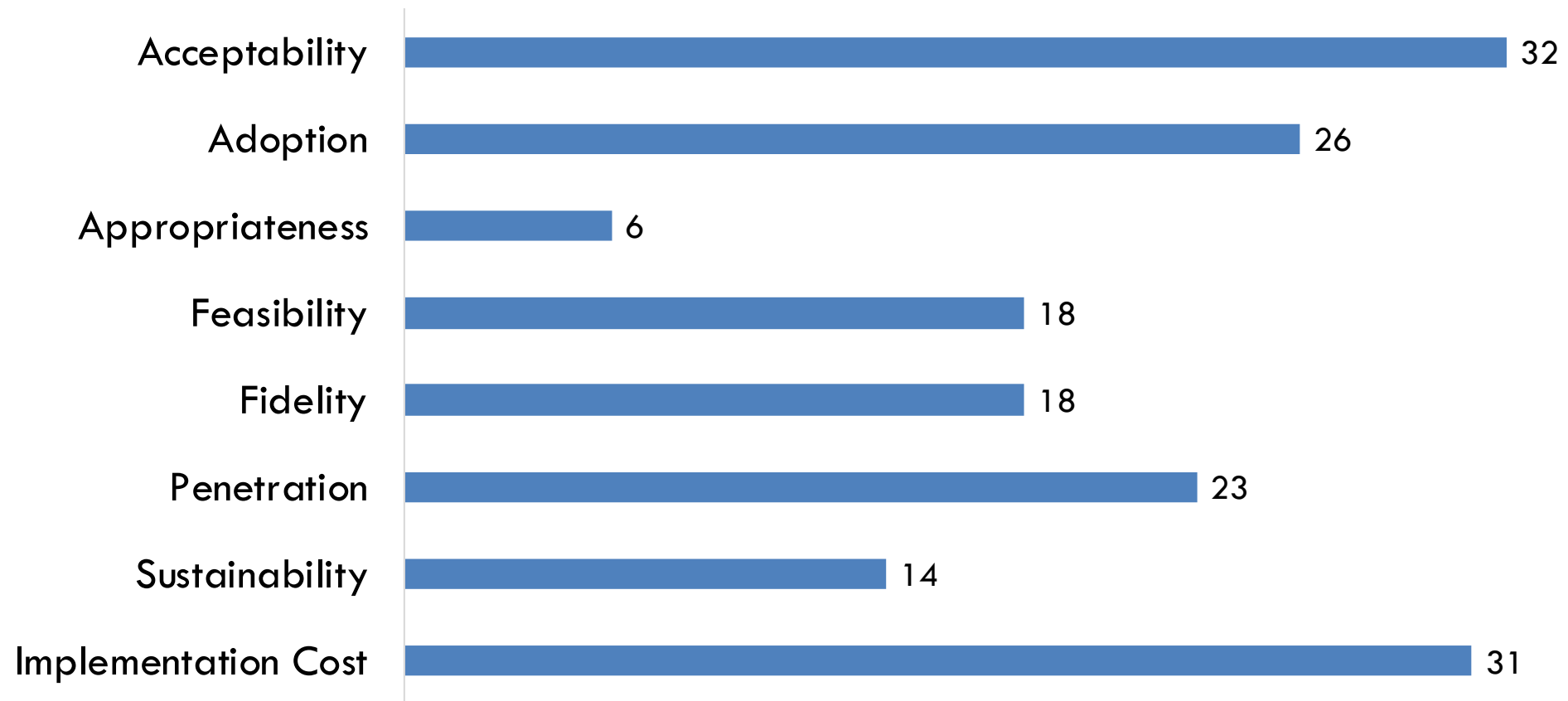
# Study Overview – Three Phases



Mettert, Kayne, et al. "Measuring implementation outcomes: An updated systematic review of measures' psychometric properties." *Implementation Research and Practice* 1 (2020): 2633489520936644.

# Results

Number of Measures Identified for Each Outcome





# Measurement Challenges

- Measures are poorly distributed (some constructs have lots of measures, some have a few)
- Many measures have unknown / questionable quality
- Measures exhibit synonymy, homonymy, and instability
  - ▣ Synonymy: different terms have the same meaning
  - ▣ Homonymy: same term can have multiple meanings
  - ▣ Instability: terms shift unpredictably over time
- Measures are not practical
- Translating self-report measures can be difficult\*

# Measure Repositories

- Society for Implementation Research Collaboration
  - ▣ <https://www.societyforimplementationresearchcollaboration.org/sirc-projects/sirc-instrument-project/>
  
- Grid-Enabled Measures developed by the National Cancer Institute
  - ▣ <https://www.gem-beta.org/Public/Home.aspx>
  
- DIRC CMHSR Measures Collection
  - ▣ <https://icts.wustl.edu/items/dissemination-and-implementation-research-core-dirc/>