Defining Implementation Science and Understanding Implementation Science in Practice

Byron J. Powell, PhD, LCSW
University of North Carolina at Chapel Hill

June 13, 2018

Presented at the Implementation Science Summer Institute at UNC-Chapel Hill
Overview

1. Introduction
2. Implementation Barriers & Facilitators
3. Implementation Strategies
4. Discussion
Defining Implementation Science and Understanding Implementation Science in Practice

Introduction
Growing Body of Evidence

- Programs (e.g., cognitive behavioral therapy)
- Practices (e.g., “catch them being good”)
- Principles (e.g., prevention before treatment)
- Procedures (e.g., screening for depression)
- Products (e.g., mHealth app for exercise)
- Pills (e.g., PrEP to prevent HIV infection)
- Policies (e.g., limit prescriptions for narcotics)

Brown et al. (2017)
Growing Body of Evidence
And yet...
Evidence-based medicine should be complemented by evidence-based implementation.

Grol & Grimshaw (1999)
Prioritization of D&I Science

NIH
National Institutes of Health
Turning Discovery Into Health

AHRQ
Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NCATS
National Center for Advancing Translational Sciences

DORIS DUKE Charitable Foundation

UNITED STATES DEPARTMENT OF VETERANS AFFAIRS

SAMHSA
Substance Abuse and Mental Health Services Administration

NATIONAL ACADEMY OF MEDICINE

Robert Wood Johnson Foundation

MATHEMATICA Policy Research

Children’s Bureau

WILLIAM T. GRANT FOUNDATION
Supporting research to improve the lives of young people
The scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice...It includes the study of influences on professional and organizational behavior.

Barriers/Facilitators & Implementation Strategies

Eccles & Mittman (2006)
Aarons et al. (2011); Brown et al. (2017); Powell et al. (2012); Proctor et al. (2009 & 2011)
Defining Implementation Science and Understanding Implementation Science in Practice

Implementation Barriers and Facilitators
Assessing Barriers/Facilitators

Methods
- Literature search
- Informal consultation
- Surveys
- Interviews, focus groups, ethnographic methods
- Mixed methods approaches
- Participatory methods

Helpful Resources
- Conceptual frameworks (e.g., CFIR, TDF, TICD Checklist, etc.)
- Specific measures - e.g., ILS (Aarons), OSC (Glisson et al., 2008), etc.
A total of 601 plausible determinants were identified (an additional 609 determinants were deemed unlikely to influence strategy development).

...the process for selecting the most important determinants to address require developing and testing in future work.

Krause et al. (2014)
Priorities Moving Forward

- Identifying and developing psychometrically and pragmatically strong measures (see SIRC Measures Repository for Helpful Resource)
- Moving from lists of constructs to causal theory
- Developing methods for prioritizing barriers and facilitators to be addressed
- Identifying and addressing barriers throughout implementation process
Defining Implementation Science and Understanding Implementation Science in Practice

Implementation Strategies
Methods or techniques used to enhance the adoption, implementation, sustainment, and scale-up of a program or practice.

Proctor, Powell, & McMillen (2013); Powell, Garcia, & Fernandez (In Press)
Types of Strategies

- **Discrete** - Single action or process (e.g., reminders, audit and feedback, supervision)
- **Multifaceted** - Combination of multiple discrete strategies (e.g., training + consultation), some of which have been protocolized and branded (e.g., Glisson’s ARC, Aarons’ LOCI)

Powell et al. (2012, 2015)
Literature Reveals Problems

“Tower of Babel”

Limited “Menu”

Poor Reporting

McKibbon et al. (2010); Michie et al. (2009); Powell et al. (2012); Proctor et al. (2013)
## Initial Strategies Compilation

<table>
<thead>
<tr>
<th>Plan strategies</th>
<th>Restructure strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Assess readiness</td>
<td>• Change systems</td>
</tr>
<tr>
<td>• Identify champions</td>
<td>• Revise roles</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Educate strategies</th>
<th>Quality mgmt. strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Educational meetings</td>
<td>• Audit and feedback</td>
</tr>
<tr>
<td>• Shadow clinicians</td>
<td>• Clinical supervision</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finance strategies</th>
<th>Policy context strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Alter incentives</td>
<td>• Change requirements</td>
</tr>
<tr>
<td>• Place on formulary</td>
<td>• Change liability laws</td>
</tr>
</tbody>
</table>

*Powell et al. (2012)*
A refined compilation of implementation strategies: results from the Expert Recommendations for Implementing Change (ERIC) project

Byron J. Powell1*, Thomas J. Waltz2, Matthew J. Chinman1,9, Laura J. Damschroder3, Jeffrey L. Smith4, Monica M. Matthieu5,6, Enola K. Proctor8 and JoAnn E. Kirchner4,9

Background:

Implementing Change (ERIC) project

Conclusions:

Almost all the strategies were found to be conceptually distinct from one another. Hierarchical cluster analysis supported the findings of the expert panel in organizing the 73 implementation strategies into similar groups and to rate each strategy.

Findings:

The third round involved a live polling and consensus process via a Web-based platform and conference call.

Keywords:

Implementation research, Implementation strategies, Knowledge translation strategies, Mental health, US Department of Veterans Affairs

Abstract

Updated Compilation

Use of concept mapping to characterize relationships among implementation strategies and assess their feasibility and importance: results from the Expert Recommendations for Implementing Change (ERIC) study

Thomas J. Waltz1,2*, Byron J. Powell2, Monica M. Matthieu6,7, Laura J. Damschroder7, Matthew J. Chinman9, Jeffrey L. Smith4, Enola K. Proctor8 and JoAnn E. Kirchner4,9

Updated Compilation

*See Additional File 6 of Powell et al. (2015) for most comprehensive version of the compilation.
Utility of Compilation

- Identifying “building blocks” of multi-level, multi-faceted strategies for research and practice
- Promoting a common language and improving reporting
- Tracking strategy use and assessing fidelity
- Highlighting under-researched strategies
Helpful Extensions

- Adapted for school mental health settings (Cook et al., Under Review; Lyon et al., Under Review)
- Planned adaptation for child maltreatment prevention programs in LMICs (Martin et al., In Process)
- Technical assistance and uses of research evidence in child welfare (Metz, Boaz, & Powell, In Process)
Complementary Resources

The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting of Behavior Change Interventions

Susan Michie, DPhil, CPsychol · Michelle Richardson, PhD · Marie Johnston, PhD, CPsychol · Charles Abraham, DPhil, CPsychol · Jill Francis, PhD, CPsychol · Wendy Hardeman, PhD · Martin P. Eccles, MD · James Cane, PhD · Caroline E. Wood, PhD

ABSTRACT

The objective of this study is to develop an extensive taxonomy of 93 hierarchically clustered behaviour change techniques (or methods; BCTs) to derive effectiveness of such techniques. This resulted in 93 BCTs clustered into 16 groups.

Methods

In a Delphi-type exercise, 14 experts rated large numbers of BCTs. One hundred and eighty-three BCTs were rated at least five times, and these met the minimum criteria for inclusion in the taxonomy. The objective was to reach consensus on the most appropriate BCT names to be included in the taxonomy. The taxonomy was then confirmed in a second Delphi exercise, and the resulting 93 BCTs clustered into 16 groups.

Results

Consensus was achieved on the most appropriate BCT names to be included in the taxonomy and the clusters into which they were placed. Of the 26 BCTs occurring at least five times, 23 had adjusted kappas of 0.60 or above. Of the 93 BCTs, there was agreement on 82% of coding 85 intervention descriptions by BCTs was achieved.

Conclusions

This resulted in 93 BCTs clustered into 16 groups. A method for specifying interventions, but we anticipate further development and evaluation based on taxonomies would be extended to also meet these needs.

Supplemental material for this article can be accessed here:

https://doi.org/10.1080/17437199.2015.1077155

A taxonomy of behaviour change methods: an Intervention Mapping approach

Gerjo Kok, Nell H. Gottlieb, Gjalt-Jorn Y. Peters, Patricia Dolan Mullen, Guy S. Parcel, Robert A.C. Ruiter, María E. Fernández, Christine Markham and L. Kay Bartholomew

“School of Psychology & Neuroscience, Maastricht University, Maastricht, MD, The Netherlands; 2School of Public Health, University of Texas, Houston, TX, USA; 3School of Psychology, Open University, Heerlen, DI, The Netherlands

McHugh, Presseau, Luecking, & Powell (In Prep)
Evidence for Strategies

- Some strategies have systematic reviews assessing their effectiveness (e.g., audit and feedback, opinion leaders, facilitation), whereas others are unlikely to be tested as stand-alone strategies (e.g., obtain formal commitments, shadowing clinicians).
- Increasingly, focus is not on whether or not they work, but how does it work? Why? Where? For whom? How can we enhance effectiveness?
<table>
<thead>
<tr>
<th>Strategy Review</th>
<th>Number of Trials</th>
<th>Effect Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed Educational Materials</td>
<td>14 Randomized Trials 31 ITS</td>
<td>Median absolute improvement 2.0% (range 0% to 11%)</td>
</tr>
<tr>
<td>Educational Meetings</td>
<td>81 Randomized Trials</td>
<td>Median absolute improvement 6% (IQR 1.8% to 15.3%)</td>
</tr>
<tr>
<td>Educational Outreach</td>
<td>69 Randomized Trials</td>
<td>Median absolute improvement in prescribing behaviors 4.8% (IQR 3% to 6.6%), other behaviors 6% (IQR 3.6% to 16%)</td>
</tr>
<tr>
<td>Local Opinion Leaders</td>
<td>18 Randomized Trials</td>
<td>Median absolute improvement 12% (6% to 14.5%)</td>
</tr>
<tr>
<td>Audit and Feedback</td>
<td>140 Randomized Trials</td>
<td>Median absolute improvement 4.3% (IQR .5 to 16%)</td>
</tr>
<tr>
<td>Computerized Reminders</td>
<td>28 Randomized Trials</td>
<td>Median absolute improvement 4.2% (IQR .8 to 18.8%)</td>
</tr>
<tr>
<td>Tailored Interventions</td>
<td>26 Randomized Trials</td>
<td>Meta-Regression using 15 trials. Pooled odds ratio of 1.56 (95% CI, 1.27 to 1.93, p &lt; .001)</td>
</tr>
</tbody>
</table>

Examples of Cochrane EPOC reviews updated from Grimshaw et al. (2012)
Multi-faceted Strategies

- Mixed evidence regarding the effectiveness of multifaceted strategies. Two plausible explanations:
  - Lack of a priori rationale for selection of components (could be “kitchen sink” approach)
  - Some multifaceted strategies may focus on only one type of barrier; some single component strategies may address multiple barriers

Grimshaw et al. (2012); Lau et al. (2015); Squires et al. (2014); Wensing et al. (2017)
Resources to Assess Evidence

- Cochrane EPOC (epoc.cochrane.org)
- Campbell Collaboration (campbellcollaboration.org)
- Health Systems Evidence (healthsystemsevidence.org)
Now what?

How do we design and tailor strategies?
Far Too Often We...

“Kitchen Sink” Approach

Most frequently used model of change: ISLAGIATT
- Martin Eccles

“It seemed like a good idea at the time!”

Grimshaw et al. (2004); Henggeler et al. (2002); Squires et al. (2014)
Implementation as Usual

- Decision making not driven by evidence, theory, or implementation “best practices”
- Strategies not used with frequency, intensity, and fidelity required
- Wider range of strategies needed
- Organizational context poorly addressed

Powell et al. (2013); Powell (2014); Powell & Proctor (2016)
Tailored interventions to address determinants of practice (Review)


Tailored interventions to address determinants of practice.
DOI: 10.1002/14651858.CD005470.pub3.
www.cochranelibrary.com

15 cluster RCTs, OR = 1.56 (95% CI = 1.27 to 1.93, p < .001)

“...results suggest a mismatch between identified barriers and the quality improvement interventions selected for use.”

Baker et al. (2015); Bosch et al. (2007)
Enhance Methods for Designing and Tailoring

- Need better methods for IDing and prioritizing barriers
- Need “systematic and rigorous methods...to enhance the linkage between identified barriers and strategies”

Baker et al. (2015); Bosch et al. (2007); Colquhoun et al. (2017); Grol et al. (2013); Powell et al. (2017)
The Ideal

Colquhoun et al. (2017); Powell et al. (2017)
# Barrier-Strategy Linkages

<table>
<thead>
<tr>
<th>Identified barrier</th>
<th>Relevant implementation strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of knowledge</td>
<td>Interactive education sessions</td>
</tr>
<tr>
<td>Perception/reality mismatch</td>
<td>Audit and feedback</td>
</tr>
<tr>
<td>Lack of motivation</td>
<td>Incentives/sanctions</td>
</tr>
<tr>
<td>Beliefs/attitudes</td>
<td>Peer influence/opinion leaders</td>
</tr>
<tr>
<td>Systems of care</td>
<td>Process redesign</td>
</tr>
</tbody>
</table>

Bhattacharyya (2012); Palda (2007)
Potential Methods

Methods to Improve the Selection and Tailoring of Implementation Strategies

Byron J. Powell, PhD
Rinad S. Beidas, PhD
Cara C. Lewis, PhD
Gregory A. Aarons, PhD
J. Curtis McMillen, PhD
Enola K. Proctor, PhD
David S. Mandell, ScD

Methods for designing interventions to change healthcare professionals’ behaviour: a systematic review

Heather L. Colquhoun1*, Janet E. Squires2,3, Niina Kolehmainen4, Cynthia Fraser5 and Jeremy M. Grimshaw2,6

Abstract

Background: Systematic reviews consistently indicate that interventions to change healthcare professional (HCP) behaviour are haphazardly designed and poorly specified. Clarity about methods for designing and specifying interventions is needed. The objective of this review was to identify published methods for designing interventions to change HCP behaviour.

Methods: A search of MEDLINE, Embase, and PsycINFO was conducted from 1996 to April 2015. Using inclusion/exclusion criteria, a broad screen of abstracts by one rater was followed by a strict screen of full text for all potentially relevant papers by three raters. An inductive approach was first applied to the included studies to identify commonalities and differences between the descriptions of methods across the papers. Based on this process and knowledge of related literatures, we developed a data extraction framework that included, e.g. level of change (e.g. individual versus organization); context of development; a brief description of the method; tasks included in the method (e.g. barrier identification, component selection, use of theory).

Results: 3966 titles and abstracts and 64 full-text papers were screened to yield 15 papers included in the review, each outlining one design method. All of the papers reported methods developed within a specific context. Thirteen papers included barrier identification and 13 included linking barriers to intervention components; although not the same 13 papers. Thirteen papers targeted individual HCPs with only one paper targeting change across individual, organization, and system levels. The use of theory and user engagement were included in 13/15 and 13/15 papers, respectively.

Conclusions: There is an agreement across methods of four tasks that need to be completed when designing individual-level interventions: identifying barriers, selecting intervention components, using theory, and engaging end-users. Methods also consist of further additional tasks. Examples of methods for designing the organisation and system-level interventions were limited. Further analysis of design tasks could facilitate the development of detailed guidelines for designing interventions.

Keywords: Knowledge translation, Systematic review, Intervention design, Methodology

* Correspondence: heather.colquhoun@utoronto.ca
1 Department of Occupational Science and Occupational Therapy, University of Toronto, 160-500 University Ave, Toronto, Ontario M5G 1V7, Canada

Full list of author information is available at the end of the article

© The Author(s). 2017
Open Access
This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. The Creative Commons Public Domain Dedication waiver (http://creativecommons.org/publicdomain/zero/1.0/) applies to the data made available in this article, unless otherwise stated.

Colquhoun et al. (2017); Powell et al. (2017)
Identified 15 papers w/replicable methods

There appear to be four steps common to intervention design: barrier identification, linking barriers to intervention component selection, use of theory, and user engagement.

Limited methods target change in organizations or systems

Colquhoun et al. (2017)
COAST-IS Pilot Study

NC CTP
North Carolina Child Treatment Program

A PARTNER IN
NCTSN
The National Child Traumatic Stress Network

IMPROVING THE IMPLEMENTATION AND SUSTAINMENT OF EBPS IN MENTAL HEALTH: DEVELOPING AND PILOTING THE COLLABORATIVE ORGANIZATIONAL APPROACH TO SELECTING AND TAILORING IMPLEMENTATION STRATEGIES (COAST-IS)

POWELL, BYRON JAMES

UNIV OF NORTH CAROLINA CHAPEL HILL

2017 NIMH NIMH

38
Specify Mechanisms

- Focus on establishing mechanisms of change
- Identify mediators, moderators, and pre-conditions
- Increase use of causal theory and model proposed causal pathways

Lewis et al. (2017); National Institutes of Health (2016); Weiner et al. (2012); Williams et al. (2016)
Specifying Causal Pathways

Lewis et al. (2018)
Improve Description, Tracking, and Reporting

- Poor description, tracking, and reporting:
  - Limits replication in science and practice
  - Precludes answers to how and why strategies work
- Numerous reporting guidelines exist
- Need pragmatic approaches for tracking strategies

Albrecht et al. (2013); Boyd et al. (2018); Bunger et al. (2017); Hoffman et al. (2014); Proctor et al. (2013)
Poor Reporting Limits Evidence

Understanding the Components of Quality Improvement Collaboratives: A Systematic Literature Review

ERUM NADEEM,¹ S. SERENE OLIN,¹ LAURA CAMPBELL HILL,² KIMBERLY EATON HOAGWOOD,¹ and SARAH McCUE HORWITZ¹

¹New York University; ²Columbia University

“Reporting on specific components of the collaborative was imprecise across articles, rendering it impossible to identify active QIC ingredients linked to improved care.”
Name it, Define it, Specify it!

<table>
<thead>
<tr>
<th>Domain</th>
<th>Strategy: clinical supervision</th>
<th>Strategy: clinician implementation team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actor(s)</td>
<td>Clinician who is expert in the clinical innovation and recommended by the treatment developer.</td>
<td>A team of clinicians who are implementing the clinical innovation.</td>
</tr>
<tr>
<td>Action(s)</td>
<td>Provides clinical supervision via phone to answer questions, review case implementation, make suggestions, and provide encouragement.</td>
<td>Reflect on the implementation effort, share lessons learned, support learning, and propose changes to be implemented in small cycles of change.</td>
</tr>
<tr>
<td>Target(s) of the action</td>
<td>Clinicians newly trained in the innovation. Knowledge about the innovation, skills to use the innovation, optimism that the innovation will be effective, and improved ability to access details about how to use the innovation without prompts.</td>
<td>Clinicians newly trained in the innovation. Knowledge about how to use the innovation in this context, intentions to use the innovation, social influences.</td>
</tr>
<tr>
<td>Temporality</td>
<td>Clinical supervision should begin within one week following the end of didactic training.</td>
<td>First meeting should be within two weeks of initial training.</td>
</tr>
<tr>
<td>Dose</td>
<td>Once per week for 15 minutes for 12 weeks, plus follow-up booster sessions at 20 and 36 weeks.</td>
<td>Once monthly for one hour for the first six months.</td>
</tr>
<tr>
<td>Implementation outcome(s) affected</td>
<td>Uptake of the innovation, penetration among eligible clients/patients, fidelity to the protocol of the clinical innovation.</td>
<td>Uptake of the innovation, penetration among eligible clients/patients, fidelity to the protocol of the clinical innovation, sustainability of the innovation.</td>
</tr>
<tr>
<td>Justification</td>
<td>Research that suggests that post-training coaching is more important than quality or type of training received [70].</td>
<td>Cooperative learning theory [71].</td>
</tr>
</tbody>
</table>

Proctor, Powell, & McMillen (2013)
Applied Example

TF-CBT Learning Collaborative (11 component strategies*)

- Prepare change package
  - Commitment
  - Learning sessions
  - PDSA cycles
  - Conference calls
  - Web support

- Quality improvement technique training
  - Metrics reporting
  - Coaching calls
  - Onsite visits
  - Rostering

*Each specified according to Proctor et al. (2013) standards

Bunger et al. (2014)
Table 1 Specification of the TF-CBT learning collaboratives (LCs)

<table>
<thead>
<tr>
<th>Specification of LC components</th>
<th>Actions</th>
<th>Target</th>
<th>Temporality</th>
<th>Dose</th>
<th>Outcome</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preparatory work</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepare change package</td>
<td>Faculty experts prepare resources on TF-CBT, and implementation strategies</td>
<td>Agency implementation team members’ knowledge before learning sessions</td>
<td>Before learning sessions</td>
<td>Once</td>
<td>Adoption, fidelity, penetration, and sustainment of TF-CBT</td>
<td>Theoretical Knowledge (CFIR &amp; TDF); planning (CFIR)</td>
</tr>
<tr>
<td><strong>Commitment</strong></td>
<td>Implementation team members describe their commitment to, and resources allocated for implementing TF-CBT</td>
<td>Agency implementation team members’ awareness of their readiness to implement</td>
<td>Before learning sessions; before TF-CBT implementation</td>
<td>Once</td>
<td>Adoption, fidelity, penetration, and sustainment of TF-CBT</td>
<td>Theoretical Knowledge (CFIR &amp; TDF); planning (CFIR); intentions; environmental context and resources (TDF)</td>
</tr>
<tr>
<td><strong>Active learning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning sessions</td>
<td>Present information about trauma and TF-CBT practice components; skill practice and behavioral rehearsal; case vignettes and problem-based learning; share experiences, expertise, and lessons learned</td>
<td>Agency implementation team members’ knowledge, skills, and access to expertise within and outside of their home agency</td>
<td>3 sessions over 12 months (approx. month 1, months 3–4, month 9)</td>
<td>Three 2-day sessions</td>
<td>Adoption, fidelity, penetration, and sustainment of TF-CBT</td>
<td>Theoretical Knowledge (CFIR &amp; TDF); self-efficacy (CFIR); skills; beliefs about capabilities (TDF)</td>
</tr>
<tr>
<td>PDSA cycles</td>
<td>Use TF-CBT with test cases, identify barriers, plan strategies to remove barriers, study and refine strategy; support learning within teams; support team members</td>
<td>Agency implementation team members’ knowledge, skills, access to clinical expertise at their home agency; Removes barriers; Promotes supportive organizational climate for TF-CBT</td>
<td>Three action periods in between learning sessions</td>
<td>12 months total</td>
<td>Adoption, fidelity, penetration, and sustainment of TF-CBT</td>
<td>Theoretical Planning; executing; reflecting &amp; evaluating (CFIR); environmental context and resources (TDF)</td>
</tr>
</tbody>
</table>

Bunger et al. (2014)
A Method for Tracking Implementation Strategies: An Exemplar Implementing Measurement-Based Care in Community Behavioral Health Clinics

Meredith R. Boyd
Indiana University

Byron J. Powell
University of North Carolina at Chapel Hill

David Endicott
Indiana Statistical Consulting and Department of Political Sciences Indiana University

Cara C. Lewis
Indiana University, Kaiser Permanente Washington Health Research Institute, and University of Washington School of Medicine

Tracking implementation strategies: a description of a practical approach and early findings

Alicia C. Bunger1, Byron J. Powell2, Hillary A. Robertson3, Hannah MacDowell1, Sarah A. Birken2 and Christopher Shea3

Tracking Strategy Use

Boyd et al. (2017); Bunger et al. (2017); Walsh-Bailey et al. (2018)
Conduct More Comparative Effectiveness Research

- Diversify the strategies tested
- Need for more comparative studies of discrete, multifaceted, and tailored strategies
- Utilize a wider range of designs and methods

Brown et al. (2017); Institute of Medicine (2009); Lau et al. (2015); Mazucca et al. (2018); Powell et al. (2014)
Increase Economic Evaluations

- In a review of 235 implementation studies, only 10% provided information about implementation costs
- Severely inhibits decision making regarding strategies
- Practical tools have been developed (e.g., COINS)
- Common framework facilitating comparability is needed

Raghavan et al. (2018); Saldana et al. (2014); Vale et al. (2007)
Defining Implementation Science and Understanding Implementation Science in Practice

Discussion
Acknowledgments

National Institutes of Health
- NIMH K01MH113806 (Powell, PI)
- NIMH LRP (Powell, PI)
- NIMH R25MH080916 (Proctor, PI)
- NIMH R01MH106510 (Lewis, PI)
- NIMH R01MH103310 (Lewis, PI)
- NIH UL1TR001111 (Buse, PI)
- NIAID P30A1050410 (Golin, PI)

Department of Veterans Affairs
- Mental Health QUERI QLP 55-025
- Expert Recommendations for Implementing Change Team
- National Child Traumatic Stress Network
- North Carolina Child Treatment Program
- Society for Implementation Research Collaboration
Contact Information

Byron J. Powell, PhD, LCSW
Department of Health Policy and Management | Gillings School of Global Public Health
Cecil G. Sheps Center for Health Services Research
Frank Porter Graham Child Development Institute
University of North Carolina at Chapel Hill
bjpowell@unc.edu | 919-843-2576 | http://sph.unc.edu/adv_profile/byron-powell
Twitter: @byron_powell