Cutting Through Complexity:
Using Cross Study Comparison to Identify Common Factors Associated with Implementation of Evidence Across Sectors

Melanie Barwick, Ph.D., C.Psych.

Senior Scientist Child Health Evaluative Sciences, Research Institute
Head, Child and Youth Mental Health Research Unit, Department of Psychiatry
The Hospital for Sick Children

Associate Professor
Department of Psychiatry
& Dalla Lana School of Public Health
University of Toronto, Canada

Child and Adolescent Research Centre
University of California, San Diego
January 23rd 2017

Healthier Children. A Better World.

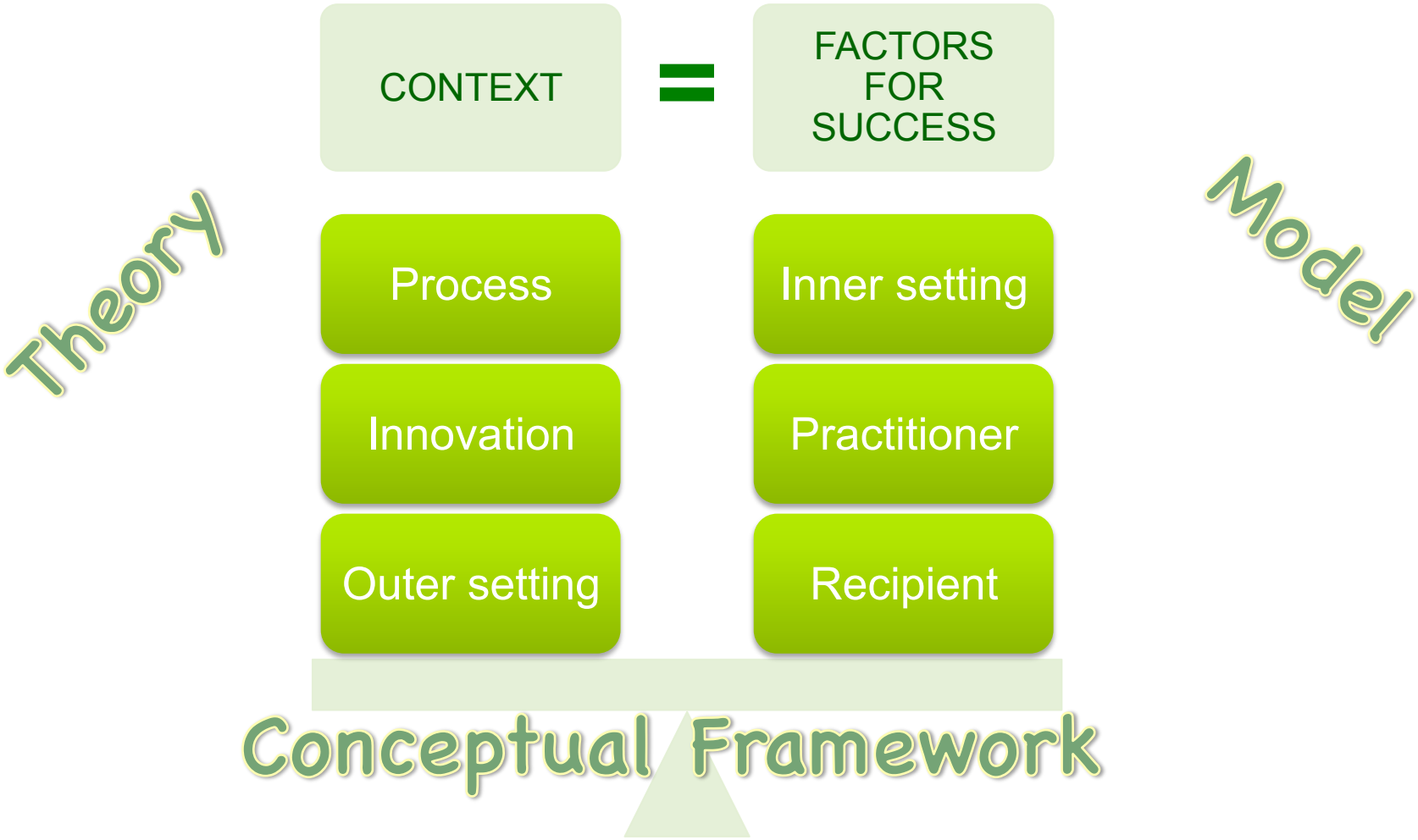
Healthier Children. A Better World.

SickKids RESEARCH INSTITUTE

Healthier Children. A Better World.

SickKids
RESEARCH
INSTITUTE

Some of what you need to know for evidence implementation



The utility of implementation theories

Theories and **conceptual frameworks** inform research and practice (Davidoff, Dixon-Woods, Leviton & Michie, 2015).

They **can enhance the interpretability of findings** and **ensure that effective implementation constructs, strategies and processes are considered** in implementation work (Mitchell, Fisher, Hastings, Silverman, Wallen, 2010; Sales, Smith, Curran, Kochevar, 2006; Van Achterberg, Schoonhoven, Grol, 2008).

Making our way through the morass of theories

Systematically basing implementation on a common framework of consistently described and labeled constructs would provide a **shared understanding** from which theories, constructs, and measures can be developed, adapted, applied, and described.

The **benefit lies in identifying constructs associated with implementation success**, and enabling identified **constructs to be mapped to measures** and/or to be **prospectively considered** in the implementation planning **process**

Both advances would promote synthesis of knowledge across diverse studies and settings.

Determinant Theories

Among the types of theories common to implementation science – **process models**, **determinant frameworks**, **classic theories**, **implementation theories**, and **evaluation frameworks** – it is the ***determinant theories*** that lend themselves to the aim of establishing external validity (Nilsen, 2015).

These frameworks **identify factors** and **explain the nature of their influence** on implementation outcomes; ideally, as predictors of outcomes or to help interpret outcomes retrospectively.

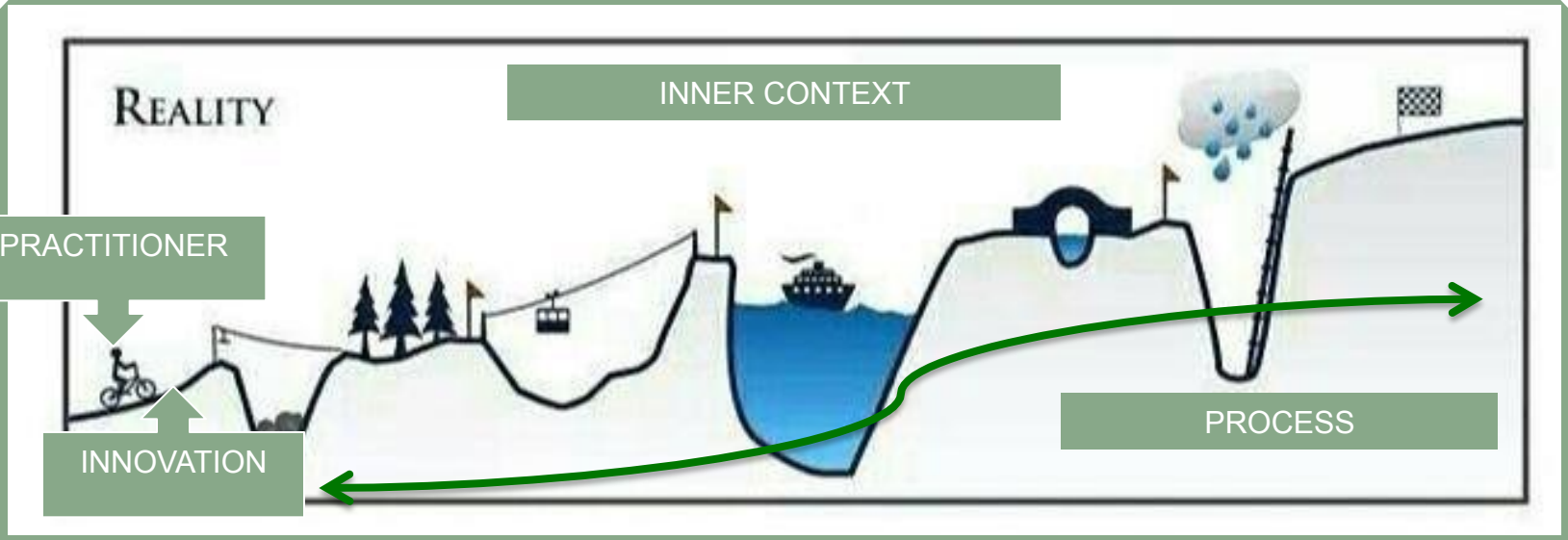
As a *determinant* type framework, the **Consolidated Framework for Implementation Research** (CFIR,Damschroder et al., 2009) specifies and defines domains and individual factors within those domains that may act as barriers or enablers (independent variables) that influence implementation outcomes (dependent variables).

Healthier Children. A Better World.

SickKids
RESEARCH
INSTITUTE

implementation

OUTER CONTEXT



Consolidated Framework for Implementation Research

SOURCE: Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Implement Sci. 2009 Aug 7;4:50.

Healthier Children. A Better World.

SickKids RESEARCH INSTITUTE

Use of CFIR in Research to date

Kirk *et al. Implementation Science* (2016) 11:72
DOI 10.1186/s13012-016-0437-z

Implementation Science

SYSTEMATIC REVIEW Open Access

A systematic review of the use of the Consolidated Framework for Implementation Research

M. Alexis Kirk[1,2*], Caitlin Kelley[3], Nicholas Yankey[3], Sarah A. Birken[1], Brenton Abadie[4] and Laura Damschroder[3]

26 of 429 unique articles met inclusion criteria and demonstrated a great breadth of application over a wide variety of study objectives, settings, and units of analysis.

Most studies used the CFIR to guide data analysis only. Few evaluated the CFIR

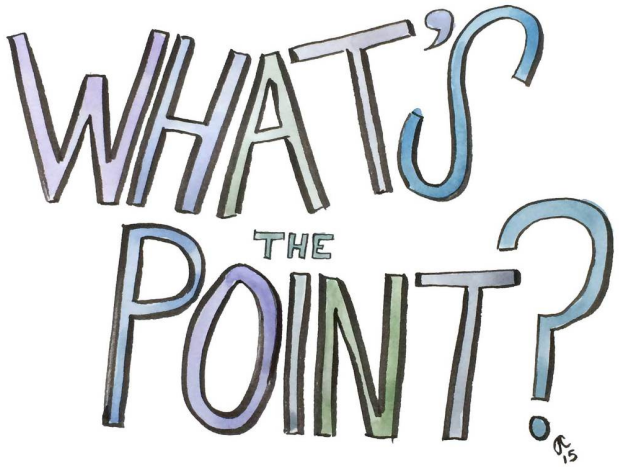
We need more studies to assess and further develop CFIR's ability to explain what and how factors influence implementation success and to determine which factors are more important.

We used the CFIR to highlight factors associated with implementation success based on findings from studies across a **diverse array of settings and interventions**:

1) **MOVE! Stu**dy - weight management program disseminated nationally to men in Veteran Affairs medical centers in the United States (Damschroder &Lowery 2013)
2) **EBF Study** - implementation of exclusive breastfeeding for improving maternal and child health in two low-income countries, Ethiopia and Mali (Barwick, Barac, & Zlotkin, 2015).
3) **E-health Study** - implementation of an e-health intervention, internet-based patient-provider communication (IPPC), in five hospitals in Norway (Varsi, Ekstedt, Gammon, & Ruland, 2015).

The 3 studies implemented different evidence-based interventions in diverse settings.

All used CFIR as a guiding conceptual framework & similar methods for data analyses as documented by Damschroder & Lowery (2013).



Identifying contextual factors associated with effective implementation can help differentiate between high and low implementers & highlight factors that can be manipulated throughout the implementation process to improve success.

Table 1 Study Characteristics & CFIR Operationalization

Table 1. Study Characteristics and Operationalization of the CFIR

	Damschroder & Lowery (2013)	**Barwick et al. (2015)**	**Varsi et al. (2015)**
Study Design	mixed methods	mixed methods	qualitative methods
Data Collection Techniques	phone semi-structured interviews (24 transcripts)	in person semi-structured interviews and focus groups (32 transcripts)	in person semi-structured interviews (17 transcripts)
Duration of interviews and focus groups	60 minutes	90 to 120 minutes	10 to 75 minutes
Setting	health; high income (USA)	global health; low income (Ethiopia, Mali)	e-health; high income (Norway)

	Damschroder & Lowery (2013)	Barwick et al. (2015)	Varsi et al. (2015)
Intervention	MOVE! (weight management)	exclusive breastfeeding (EBF)	internet-based patient-provider communication (IPPC)
Inner Setting	5 Veteran Affairs medical centers delivering the MOVE!	2 international NGOs delivering a package of interventions to increase maternal, newborn and child health	5 units treating patients with cancer or diagnoses within internal medicine
Outer Setting	the Veterans Heath Administration and veterans who were offered the program	the villages where the interventions were implemented	the patients who were offered IPPC

	Damschroder & Lowery (2013)	Barwick et al. (2015)	Varsi et al. (2015)
Characteristics of the Individuals Involved	regional and local facility MOVE! Coordinators (n= 24)	a) NGO staff, government staff and community health workers delivering the intervention (n = 67) b) mothers who received the intervention (n = 53)	the nurses, physicians and the nutritionist who operated the IPPC service (n = 17)
Process	the process of implementing MOVE!	the process of implementing he EBF intervention	the process through which IPPC was implemented
Implementation Success	operationalized as the proportion of candidate Veterans participating in the programs as well as program components actually implemented: 2 high implementers, 2 low implementers, and one in transition	operationalized as changes in EBF rates from pre- to post-implementation of the EBF program: could not meaningfully distinguish between a high and a low implementer	operationalized as the proportion of available patients who were offered information about IPPC: 4 high implementers and 1 low implementer

Analytic Approach

A deductive approach against the CFIR Constructs

A comparative qualitative analysis

Details forthcoming in edited Implementation Science book by Springer (EDs, Robyn Mildon, Aron Shlonsky, Bianca Albers)

Details also in the individual sources

- Damschroder & Lowery 2013
- Barwick, Barac, & Zlotkin, 2015
- Varsi, Ekstedt, Gammon, & Ruland, 2015

Table 5. Qualitative associations between CFIR constructs and implementation success

CFIR Domains and Constructs	Damschroder & Lowery (2013)	Varsi et al. (2015)	Barwick et al. (2015)
	constructs distinguishing between high and		*constructs associated with implementation*
	low implementers		*success*
1. INTERVENTION CHARACTERISTICS			
Relative advantage**	yes	yes	yes
Trialability		yes	
Adaptability			yes
Complexity			yes
2. OUTER SETTING			
Patient needs and resources**	yes	yes	yes
Cosmopolitanism			yes
External policies & incentives	yes		yes

Healthier Children. A Better World.

SickKids RESEARCH INSTITUTE

Table 5. Qualitative associations between CFIR constructs and implementation success

CFIR Domains and Constructs	Damschroder & Lowery (2013)	Varsi et al. (2015)	Barwick et al. (2015)
	constructs distinguishing between high and		*constructs associated with implementation*
Structural characteristics		yes	
Networks & communications	yes		
Culture		yes	
Implementation Climate			
Tension for change**	yes	yes	yes
Compatibility		yes	
Relative priority	yes	yes	
Goals & feedback	yes		
Learning climate	yes		
Readiness for Implementation			
Leadership engagement	yes		
Available resources	yes	yes	
Access to information and knowledge			yes

Table 5. Qualitative associations between CFIR constructs and implementation success

CFIR Domains and Constructs	Damschroder & Lowery (2013)	Varsi et al. (2015)	Barwick et al. (2015)
	constructs distinguishing between high and		*constructs associated with implementation*
4. CHARACTERISTICS OF INDIVIDUALS			
Knowledge and beliefs about the intervention		yes	yes
5. PROCESS			
Planning	yes	yes	
Planning for sustainability*			yes
Formally appointed internal implementation leaders		yes	
Champions			yes
Reflecting & evaluating	yes		

1) Demonstrated the advantage of using conceptual frameworks to inform research & practice
2) Identified key factors strongly associated with implementation success across a diverse array of settings and interventions
3) Identified three factors strongly associated with implementation success across diverse contexts: **Relative Advantage, Tension for Change** and **Patient Needs and Resources.**

Relative Advantage
Tension for Change
Patient Needs and Resources

These three constructs appear to matter most for implementation effectiveness, transcending all differences among studies related to intervention type and settings.

In practical terms, these constructs appear to have a high priority status when it comes to implementation and should be taken into account in planning, delivery of strategies and evaluation

In two of the studies (Damschroder & Lowery, 2013; Varsi et al., 2015), both conducted in high-income settings, CFIR-based coding identified three additional factors that strongly distinguished between high and low implementers:

Relative Priority

Available Resources

Planning

Two of these factors (Relative Priority; Available Resources) are associated with the internal world of the organizations suggesting that the Inner Setting is highly salient for preparing the stage for successful implementation and central to success in the practice change endeavor.

This synthesis contributes to our understanding of the circumstances under which some constructs play a significant role in influencing implementation and clinical outcomes.

These can be used by implementers for predictive and planning purposes.

Larger systematic review planned.

Acknowledgements

Raluca Barac PhD
Research Associate
Research Institute
The Hospital for Sick Children

SickKids RESEARCH INSTITUTE

Laura Damschroder, MPH MS
VA Center for Clinical Management Research
VA Medical Centre
Ann Arbor, Michigan USA

VA | U.S. Department of Veterans Affairs

Healthier Children. A Better World.

SickKids RESEARCH INSTITUTE

Fundamental Considerations for Implementation of Evidence

https://melaniebarwick.wordpress.com

StaRI Reporting Standards

"Standards for Reporting Implementation Studies (StaRI). Explanation and Elaboration document" BMJ Open

"Standards for Reporting Implementation Studies (StaRI) Statement" BMJ

GIC Global Implementation Conference

SickKids | PETER GILGAN CENTRE FOR RESEARCH AND LEARNING

Sheraton Centre Toronto HOTEL

June 19 2017
PRE-CONFERENCE ACADEMY

June 20 - 21 2017
MAIN CONFERENCE

www.gic.globalimplementation.org

EXPANDING IMPLEMENTATION PERSPECTIVES: ENGAGING SYSTEMS

Toronto, Canada
June 2017

Melanie Barwick, PhD,CPsych

Senior Scientist, Child Health Evaluative Sciences, Research Institute
Head, Child and Youth Mental Health Research Unit, Psychiatry
The Hospital for Sick Children
Associate Professor, Department of Psychiatry
Associate Professor, Dalla Lana School of Public Health
University of Toronto

Email: melanie.barwick@sickkids.ca
Web: www.melaniebarwick.com
twitter.com/MelanieBarwick
WordPress: melaniebarwick.wordpress.com
PH: 416-813-1085

Scientist Knowledge Translation Training course (SKTT) http://tinyurl.com/3uaqob7
Knowledge Translation Professional Certificate (KTPC) http://tinyurl.com/7zrvbq4
Knowledge Translation Planning Template (KTPT) www.melaniebarwick/training.php

Scientist Knowledge Translation Training™ Australia

Scientist Knowledge Translation Training™

Knowledge Translation Professional Certificate™

UNIVERSITY OF TORONTO

Healthier Children. A Better World.

SickKids RESEARCH INSTITUTE


implementation
Mental
education
boards
segments
segment
evaluate
Health
consumer
effective
growth
study
identified
best
objectives
KT
ADAPTE
EBP
model
evidence
Team
quality
3a/b
curve
field
METHODS
use
influence
different
across
change
modeling
sectors
evidence-based
methodology
quantitative
attributes
children's
readiness
practitioners
high
practice
examine
specific
approach
Translation
transfer
informed
organizational
Emerging
CYMHAs
school
new
Project
agencies
trajectories
Projects
based
research
comparing
adoption
develop
uptake
together
impact
2a/b
Child
exchange
program
TeachADHD
identify
innovative
preferences
Knowledge
EBPs
science
preference
Youth