Fidelity and Adaptation

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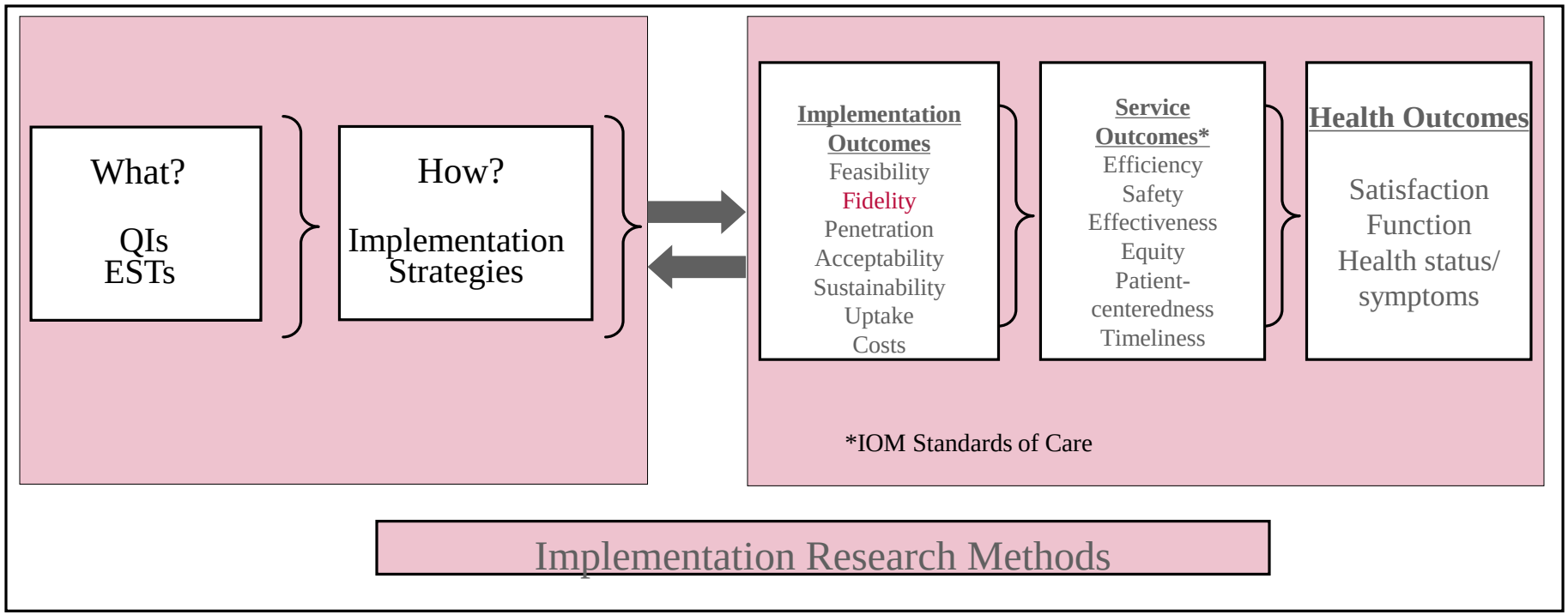
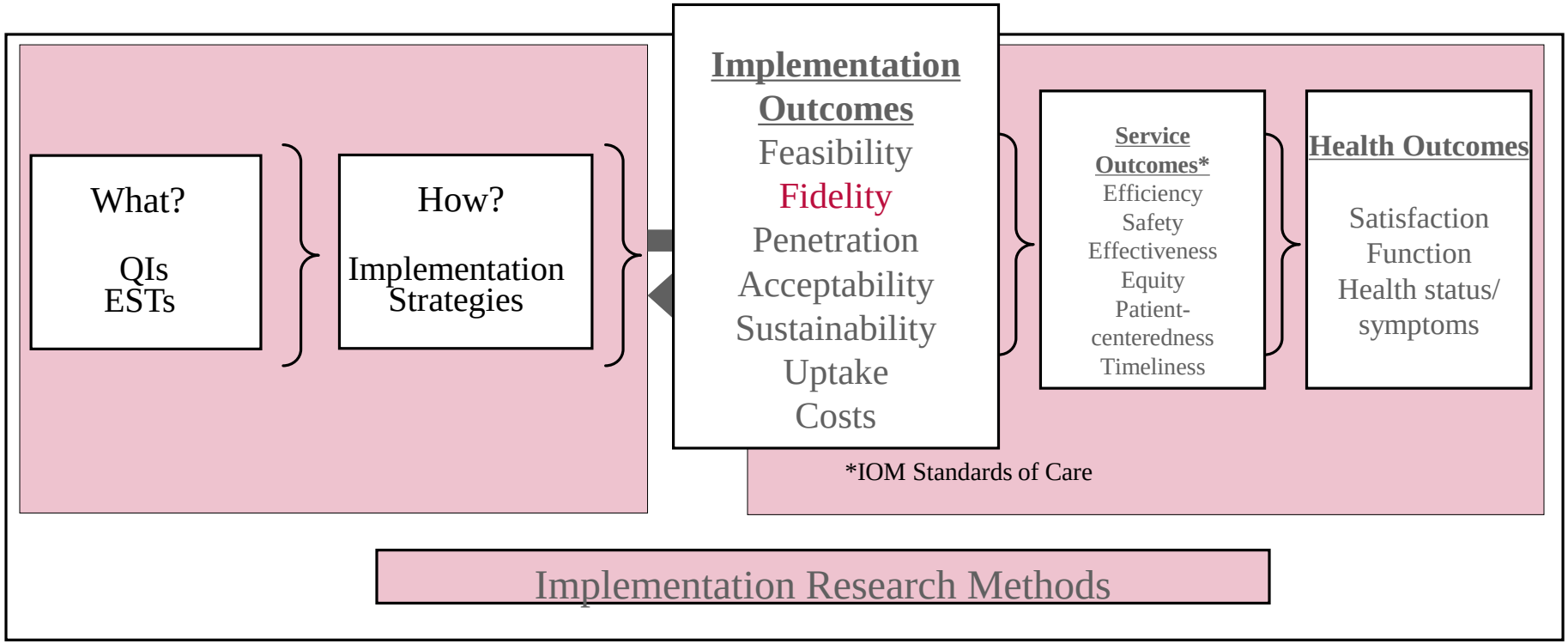
Studying Implementation



Proctor et al, 2009, *APMH&MHSR*

Studying Implementation



Proctor et al, 2009, *APMH&MHSR*

Fidelity

- *Fidelity* can be defined as the "extent to which the intervention was delivered as planned. It represents the quality and integrity of the intervention as conceived by developers."

- "Implementation fidelity is the degree to which programs are implemented as intended by the program developers."

- Implementation fidelity is a potential moderator of the effect of the intervention on targeted health outcomes.

Carroll et al., 2007; Brownson et al., 2012; Dusenburg et al., 2003

Rationale for Fidelity

- Evidence-based interventions, practices and programs need to be delivered as intended

- If an intervention is changed significantly, it may or may not have the same impact on patient/client/individual-level outcomes as it did in original efficacy and/or effectiveness trial(s)

- Maintaining appropriate level of intervention fidelity increases likelihood that intervention will have impact

Carroll et al., 2007; Brownson et al., 2012; Dusenburg et al., 2003

Fidelity Measurement

- Different ways of measuring implementation fidelity
- Benefits and drawbacks of one method *vs*. another

- **Cost**—Expense of collecting, coding, interpreting data

- **Time**—Amount of time needed to collect and interpret

- **Validity**—Accuracy of method may differ

- **Skill Level**—Different methods may require different level of skill for data collection and interpretation

Breitenstein et al. 2012

Fidelity Measurement: *Self-Report*

- Data on implementation fidelity collected from practitioner and/or patient/participant (in-person or online survey)

- Data collected from practitioner:
  - "To what extent did you deliver the intervention with fidelity?"
    - *1 = Not at all, 5 = Completely*
  - "Which of the following components of the intervention did you deliver in this session?"
    - *Select all that apply*

Breitenstein et al. 2012

Fidelity Measurement: *Self-Report*

- Data collected from client/patient/participant:
  - "Which of the following elements did the practitioner go over with you today?"
    - *Select all that apply*
  - "How well do you think the practitioner communicated information about _____ today?"
    - *1 = Not very well, 5 = Extremely well*

Breitenstein et al. 2012

Fidelity Measurement: *Observation*

- Data on implementation fidelity collected by trained observers (e.g., research staff, supervisors)
- Trained observer watches and codes the extent to which the intervention is being delivered with fidelity by practitioner to patient/participant
- Fidelity instrument used by observer to code degree to which intervention is being delivered as designed
- Trained observers can be research staff, supervisors, or peers

Breitenstein et al. 2012

Fidelity Measurement: *Observation*

- Different modes of observation measurement

- **In vivo**—Trained observer watches practitioner use intervention with client/patient in real time and codes for fidelity

- **Video recording**—Trained observer watches practitioner use intervention with client/patient from video and codes for fidelity

- **Audio recording**—Trained observer listens to audio recording of session and codes for fidelity

Breitenstein et al. 2012

Fidelity Measurement: *Self-Report vs. Observation*

Data Collection Method	Definition	Advantages	Limitations
Self-report	Information collected from practitioner or intervention participants	Time and cost efficient Clinical information from perspective of practitioners and participants	Validity and accuracy of data unknown Potential for self- desirability bias
Observation	Independent observer rates the intervention session	Objective assessment for valid and accurate data	Cost Time consuming
In Vivo	Live observations of the intervention session	Overall assessment of external environment and contextual factors Assess non-verbal communication	Feasibility of scheduling observers Reactivity effects due to observer
Video recording	Intervention session is video recorded and viewed for fidelity assessment by independent raters	Review of sessions multiple times Reliability and accuracy checks of data	May not capture nonverbal or other occurrences outside camera range Cost Reactivity effects due to camera Loss of participant anonymity
Audio recording	Intervention session is audio recorded and reviewed for fidelity assessment by independent raters	Less costly than observation Able to review sessions multiple times Reliability and accuracy checks of data Less likely to produce reactivity effects	May not capture nonverbal or other occurrences not amenable to audio recording No assessment of environment

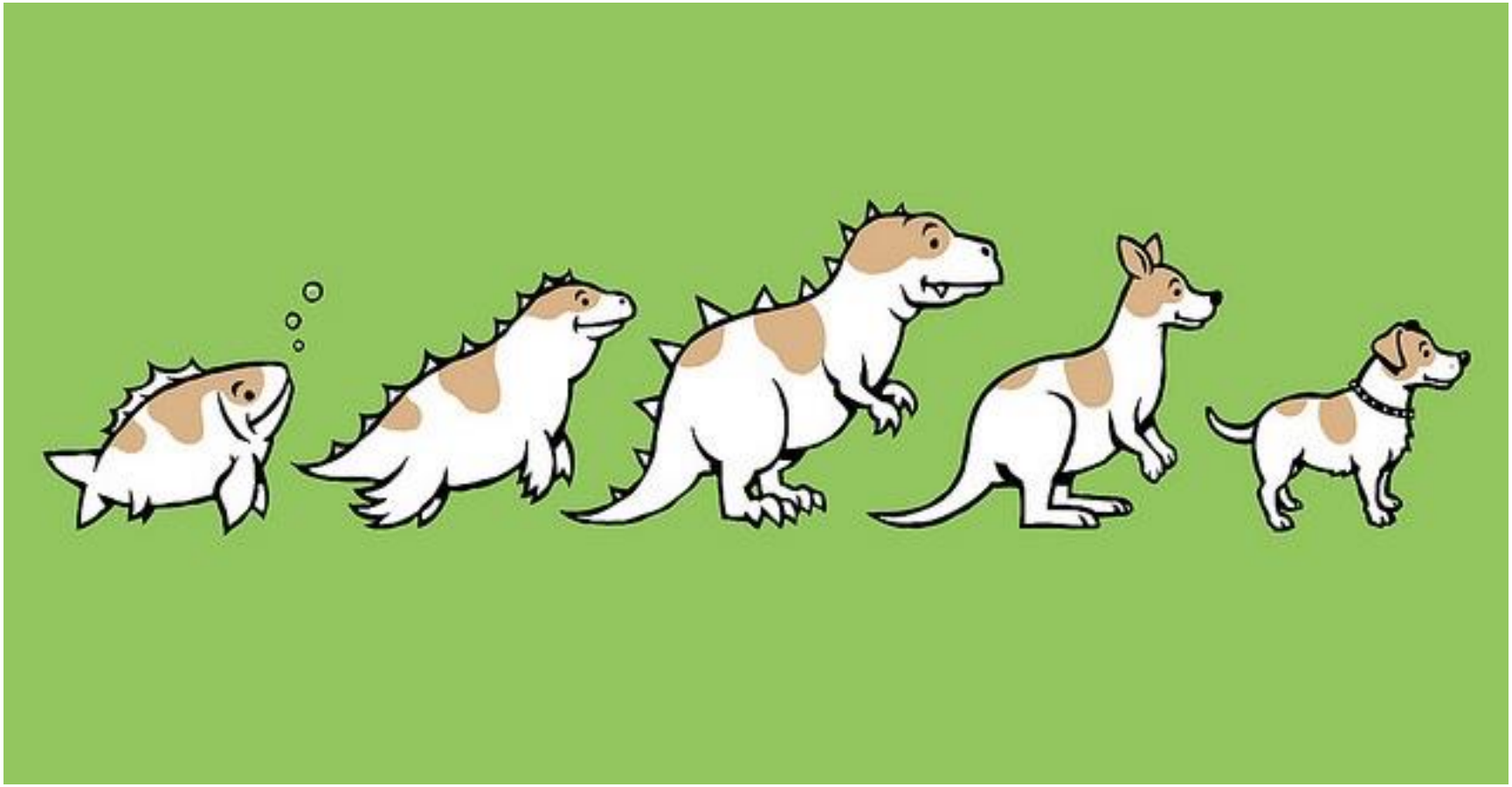
Breitenstein et al. 2012

Fidelity: *Implications for Research*

- What measures might you want to use to monitor and evaluate program/intervention fidelity over time?
  - Are measures currently available? Do you need to develop and evaluate your own?
  - How much does it cost (e.g., materials, personnel time) to monitor and evaluate program fidelity?
  - How might that influence your selection of fidelity measures?

- What components of your program/intervention should be assessed for fidelity?
  - Do you need to assess fidelity for all intervention components or only some? Why or why not?

What about Adaptation…?



http://kinooze.com/the-constant-change-adaptation/

Traditional Assumptions

- Evidence and Evidence-based practices are static
- System is static
- Implementation proceeds one practice or test at a time
- Consumers/Patients are homogeneous
- Choosing to not implement is irrational

How well do these relate to the implementation of evidence-based programs?

Fidelity vs Adaptation?

Variable use for variable populations, settings, and purposes…

Valuing Consistency

ITV Development → Efficacy → Effectiveness → Implementation

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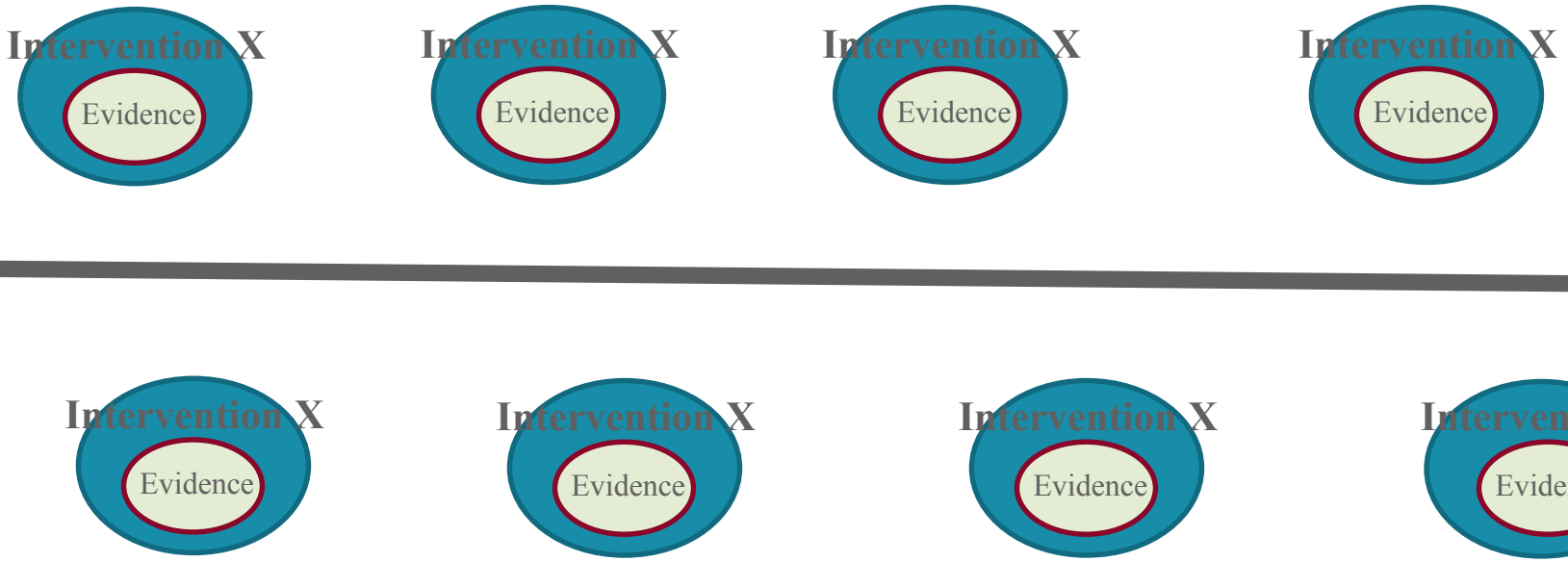
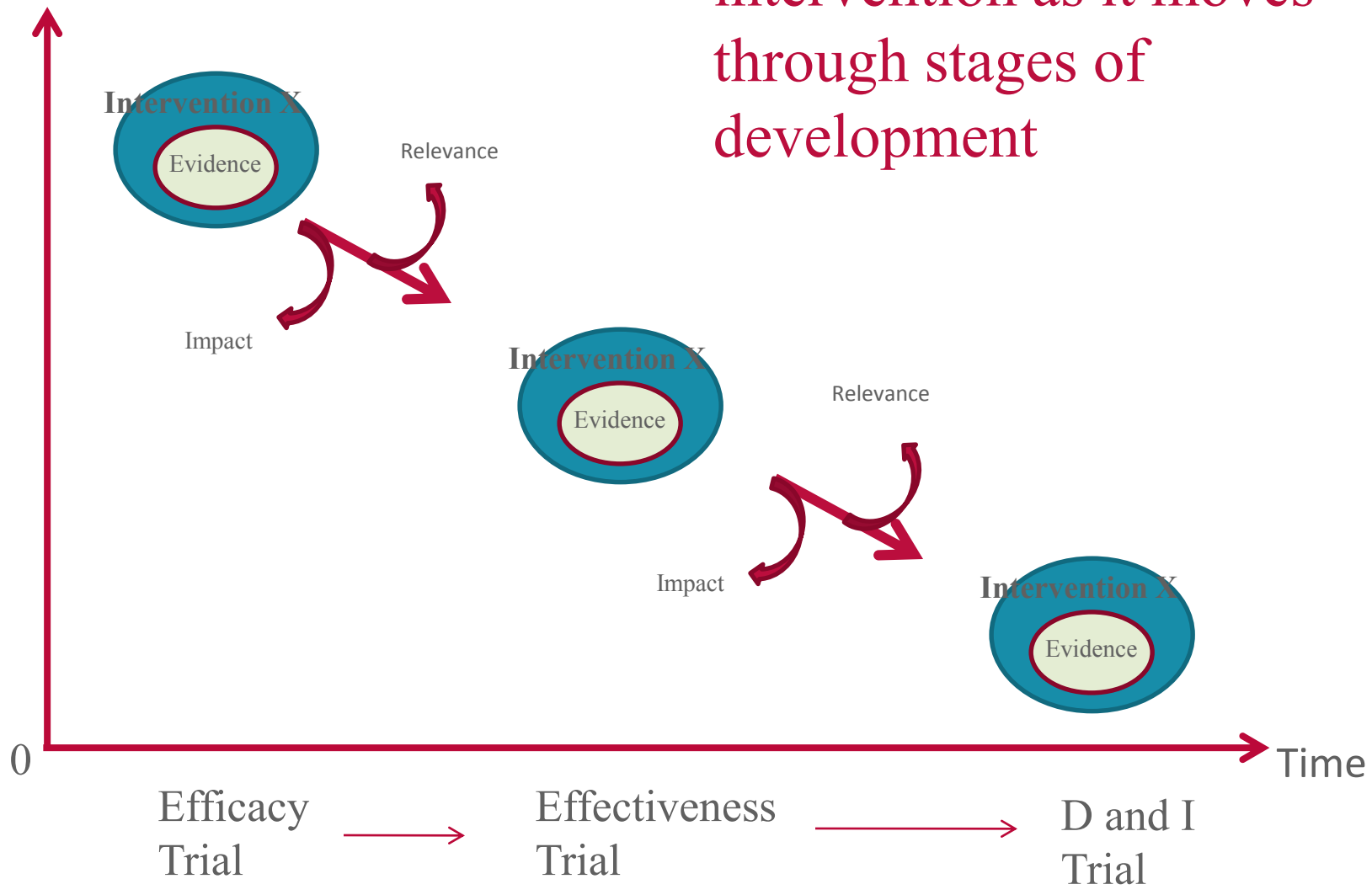
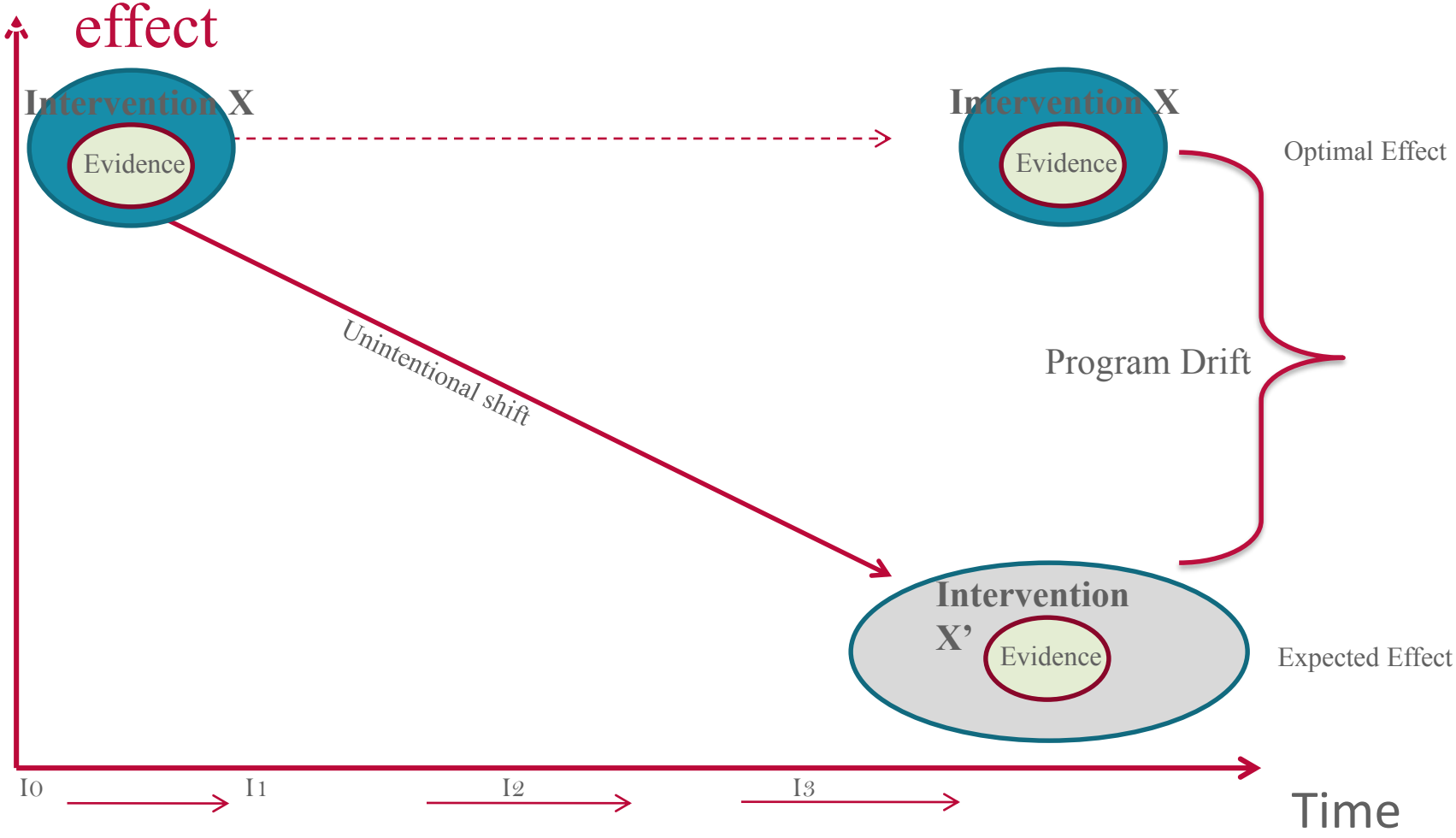


Chambers, Glasgow, Stange (2013), The Dynamic Sustainability Framework. *Implementation Science*

"Voltage Drop" of an intervention as it moves through stages of development

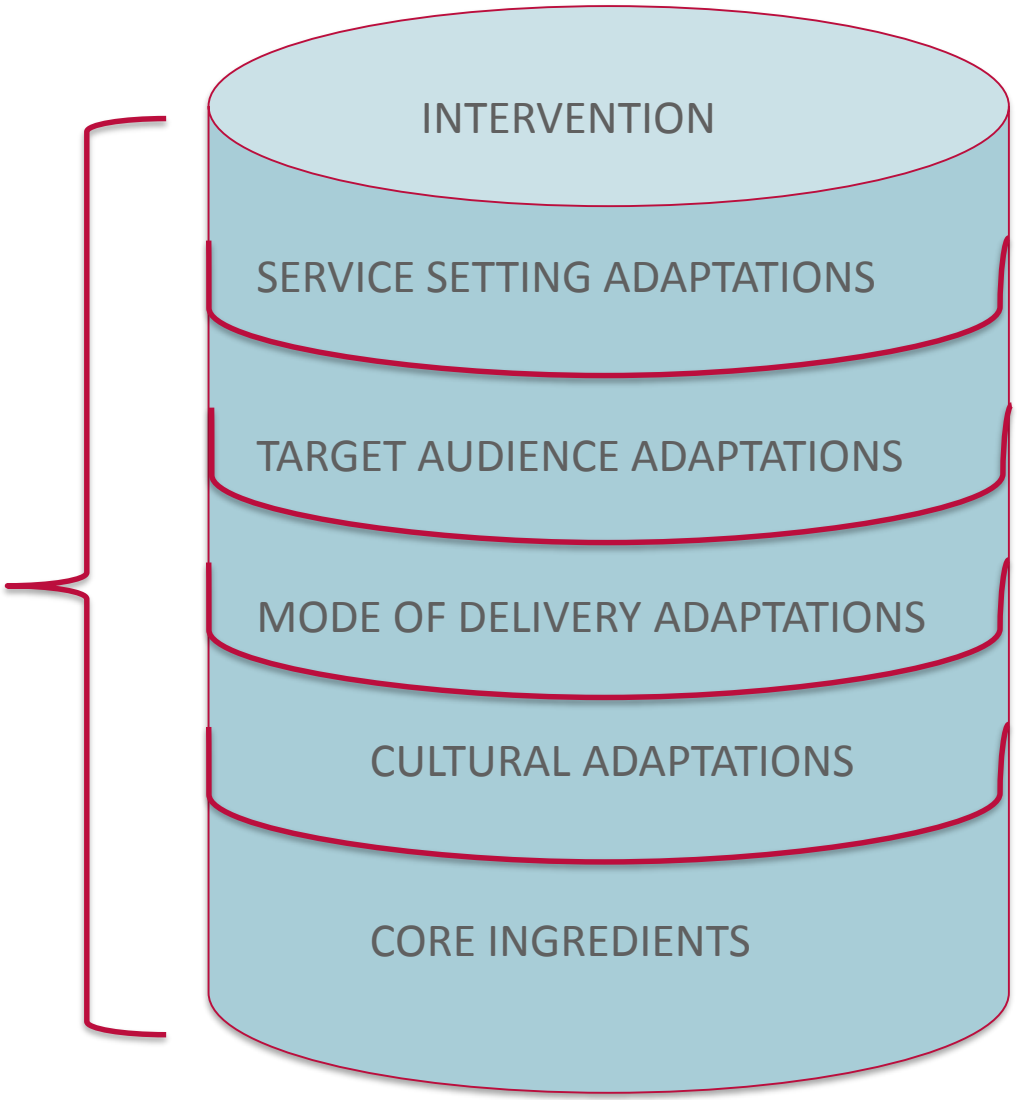


"Program Drift" of a fielded intervention (ITV) over time, with expected decrease of effect

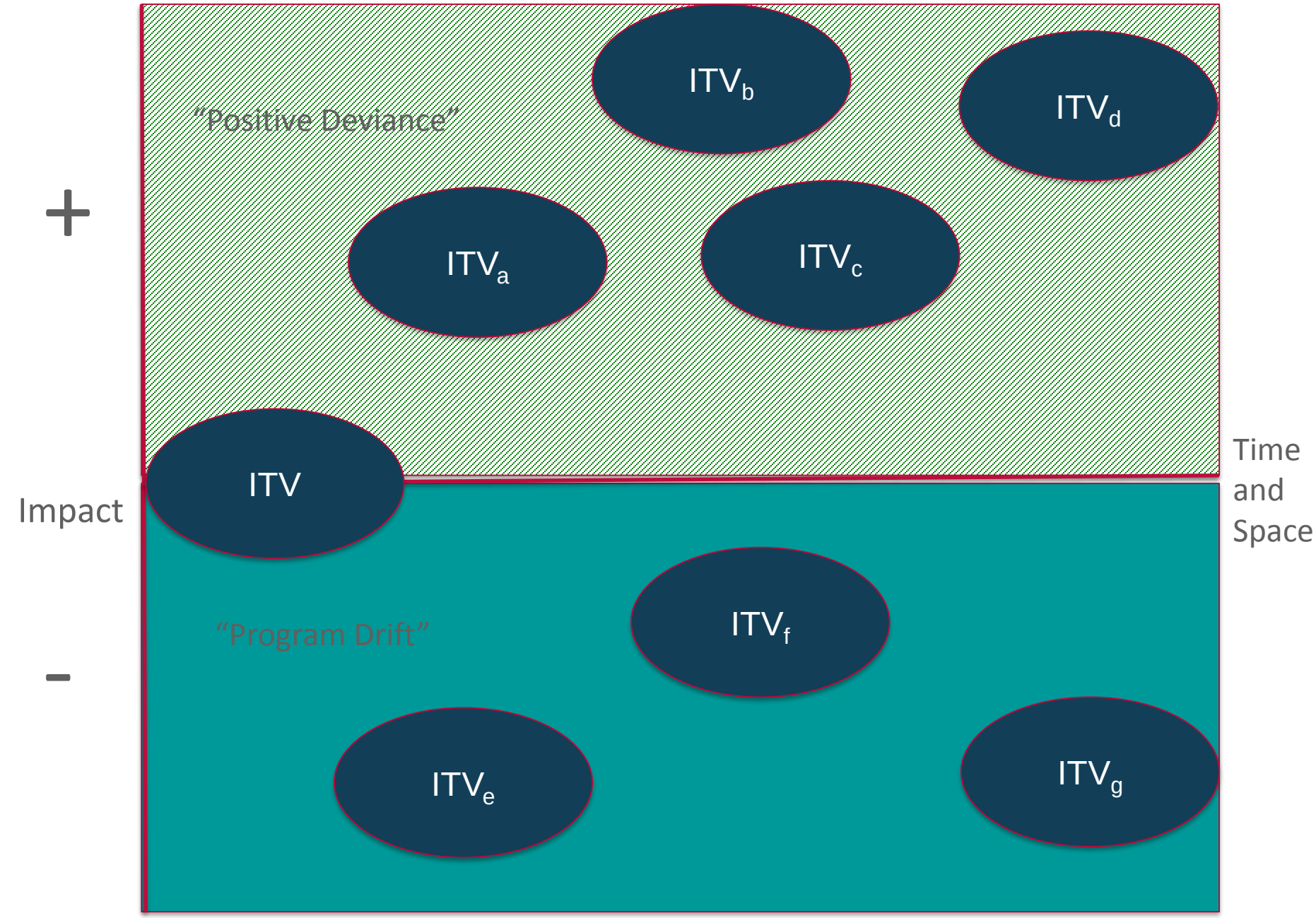


Chambers, Glasgow, Stange (2013), The Dynamic Sustainability Framework. *Implementation Science*

Sources Of Intervention Adaptation



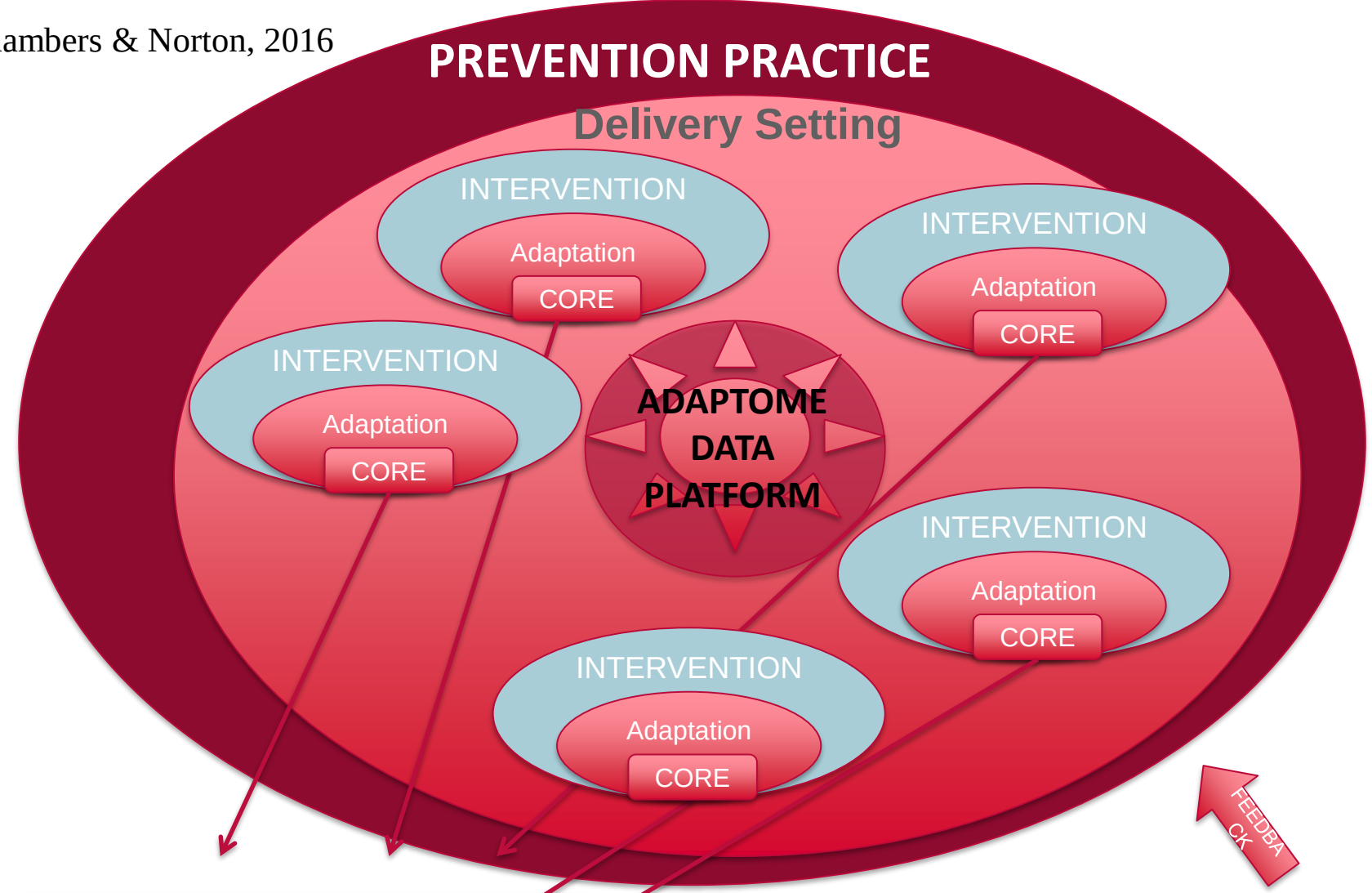
Chambers & Norton, 2016



KEY: ITV = Intervention, Time and Space = variability of intervention characteristics over time and setting

Chambers & Norton, 2016

Chambers & Norton, 2016



Common Data Capture

- Taxonomy of Adaptations
- Intervention Core Components
- Outcomes Data Capture
- Analytical Strategies

EVIDENCE

INFLUENCE

Knowledge Development

- Science of Adaptation
- Science of Implementation
- Intervention Development
- Designing for Evolution

Guidance for Intervention Adaptations

- How to adapt elements
  - Purposeful, planned, and informed by theory/frameworks
  - Pilot test with target population, implementers, delivery setting, and/or context
  - Monitor over time to improve or increase fit with target population, delivery setting, or context

- *What* elements to adapt…

Stirman *et al. Implementation Science* 2013, **8**:65
http://www.implementationscience.com/content/8/1/65

IMPLEMENTATION SCIENCE

RESEARCH Open Access

Development of a framework and coding system for modifications and adaptations of evidence-based interventions

Shannon Wiltsey Stirman[1,2,3*], Christopher J Miller[2,5], Katherine Toder[4] and Amber Calloway[6]

Wiltsey-Stirman et al., 2013

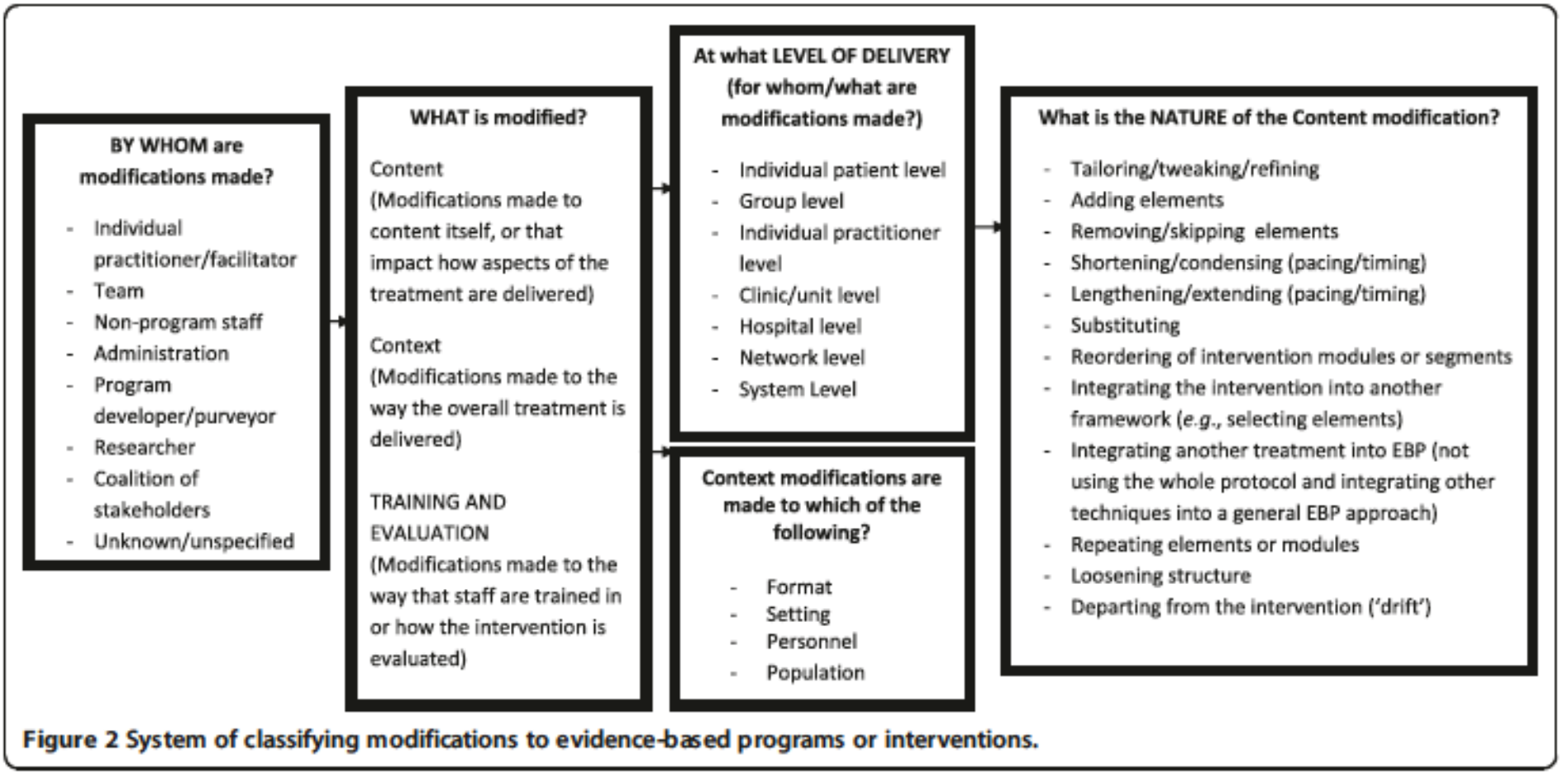


Figure 2 System of classifying modifications to evidence-based programs or interventions.

Wiltsey-Stirman et al., 2013

By WHOM are modifications made?

- Individual practitioner/facilitator
- Team
- Non-program staff
- Administration
- Program developer
- Researcher
- Coalition of stakeholders
- Unknown/unspecified

Wiltsey-Stirman et al., 2013

WHAT is modified?

- **Content**—Modifications made to content itself, or that impact how aspects of the treatment are delivered
- **Context**—Modifications made to the way the overall treatment is delivered
- **Training and Evaluation**—Modifications made to the way that staff are trained in or how the intervention is evaluated

Wiltsey-Stirman et al., 2013

At what LEVEL of DELIVERY?

- For whom/what are modifications made?

- Individual patient level
- Group level
- Individual practitioner level
- Clinic/unit level
- Hospital level
- Network level
- System level

Wiltsey-Stirman et al., 2013

Context Modifications

- **Context**—Modifications made to how the program is delivered
- Format—Changes made to the format or channel of delivery (e.g., individual vs. group delivery format)
- Setting—Intervention delivered in different setting or location (e.g., delivered in public health department vs. community-based organization)
- Personnel—Intervention delivered by personnel with different characteristics (e.g., delivered by therapist vs. peer educator)
- Population—Intervention delivered to different population (e.g., delivered to patients with cancer vs. HIV/AIDS)

Wiltsey-Stirman et al., 2013

What is the NATURE of the Content Modification?

- Tailoring/tweaking/refining
- Adding elements
- Removing/skipping elements
- Shortening/condensing (pacing/timing)
- Lengthening/extending (pacing/timing)
- Substituting
- Reordering of intervention modules or segments
- Integrating the intervention into another framework
- Integrating another treatment into evidence-based practice (i.e., not using the whole protocol and integrating other techniques into a general evidence-based approach)
- Repeating elements or modules
- Loosening structure
- Departing from the intervention (‘drift’)

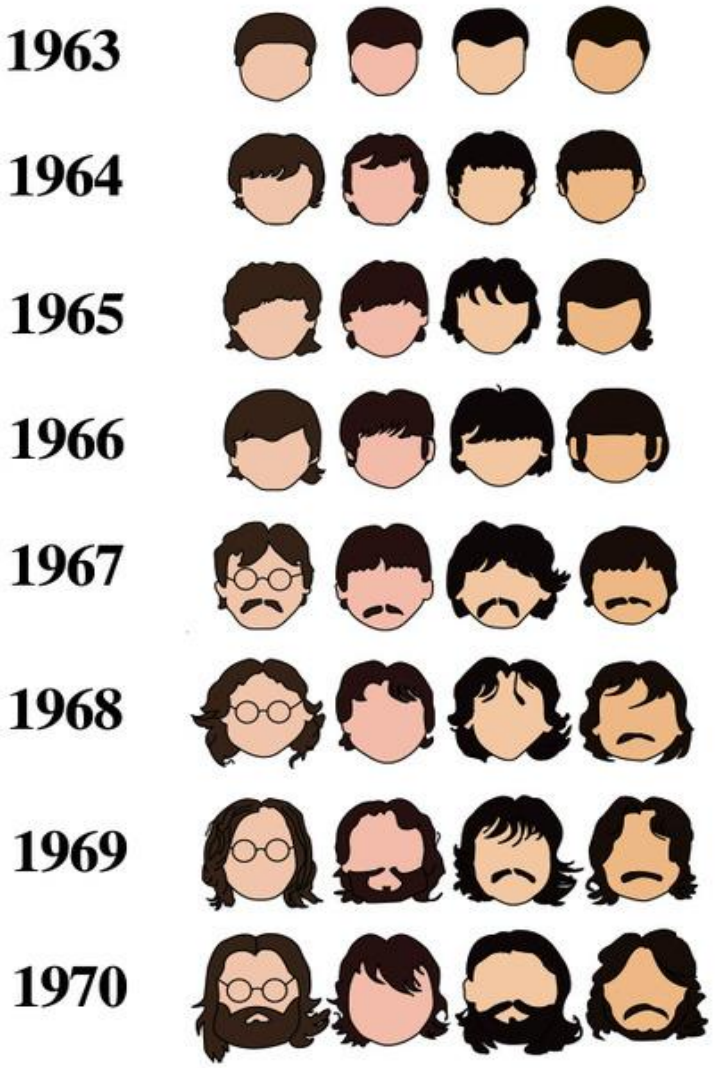
Wiltsey-Stirman et al., 2013

Measuring Adaptation

- What is being adapted?
- Why is it being adapted?
- Who is receiving the adapted intervention?
- What are the outcomes?

Embracing Dynamism

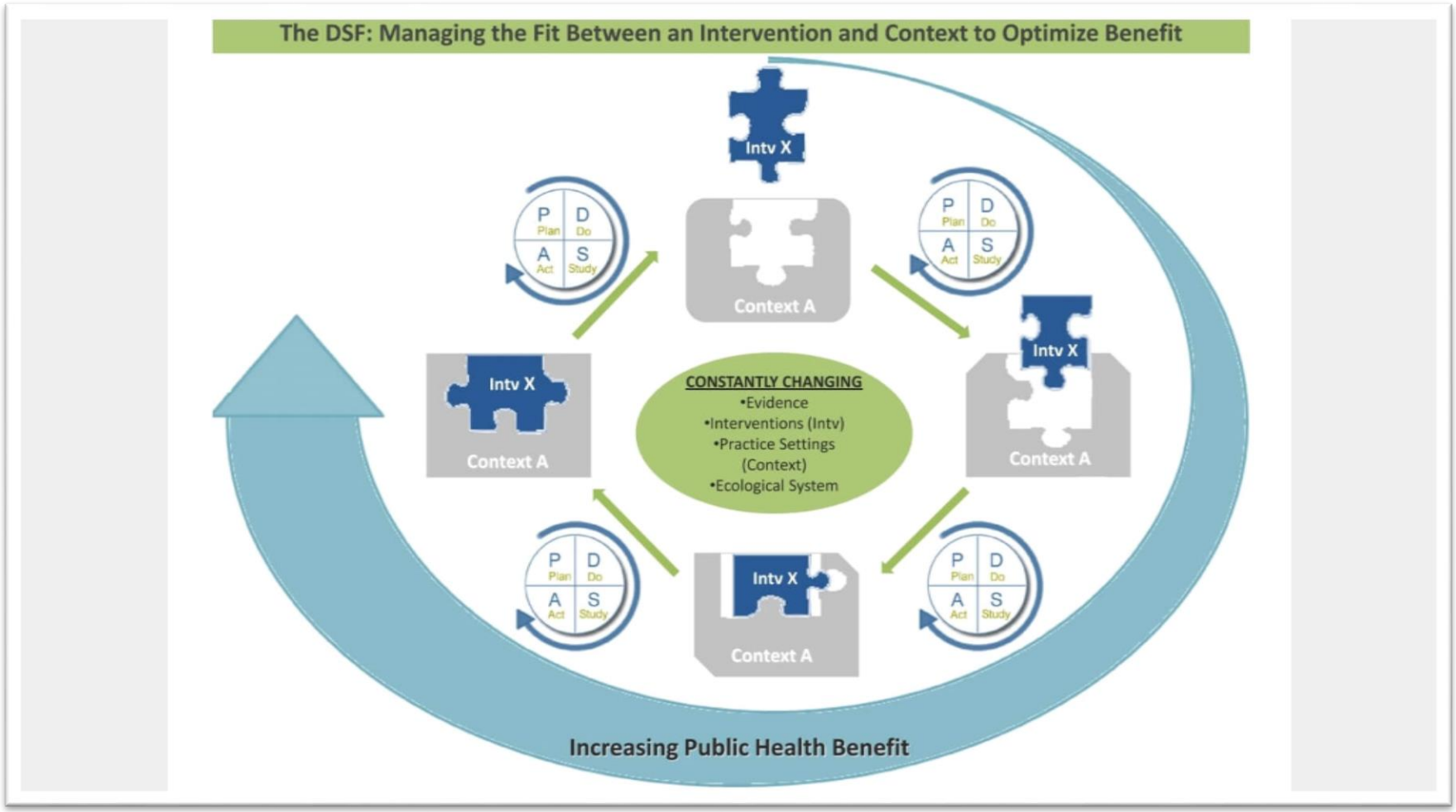
Sustainability or Evolution?



- IF EBPs CONTINUE TO EVOLVE, SHOULD EXISTING INTERVENTIONS BE SUSTAINED IN THE SAME FORM THAT WE'VE CREATED THEM?
- HOW DOES THE SYSTEM COPE WITH A DYNAMIC FIELD THAT IS CONSTANTLY CHANGING?
- WHERE DO WE GO FROM HERE?

http://www.thestrut.com/2012/12/19/the-evolution-of-the-beatles-hair/

A Dynamic Approach to Sustainability…



Chambers, Stange, & Glasgow, *Implementation Science,* 2013

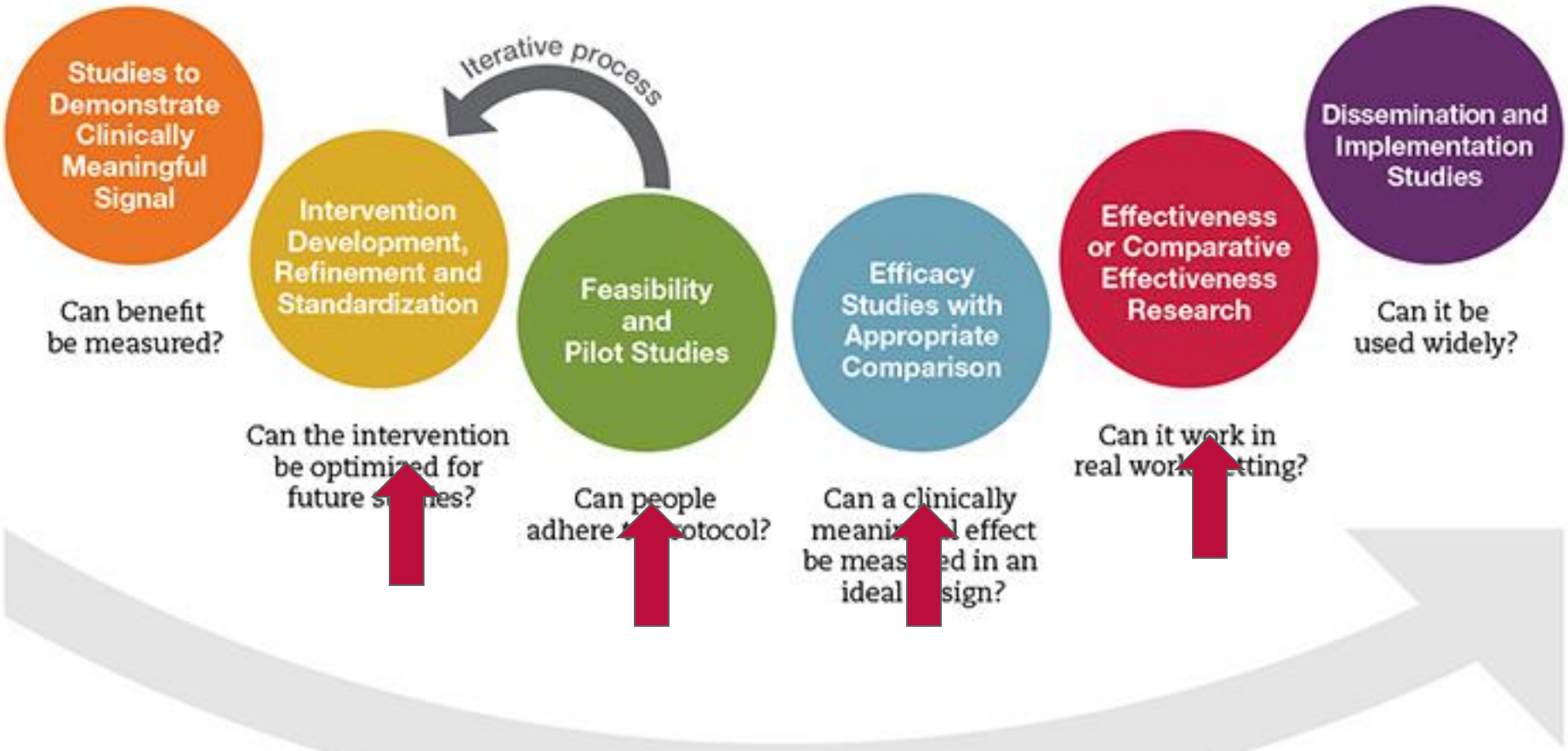

OPPORTUNITY

Priority Areas for D&I PARs

- Studies of the local adaptation of evidence-based practices in the context of implementation
- Longitudinal and follow-up studies on the factors that contribute to the sustainability of evidence-based interventions
- Scaling up health care interventions across health plans, systems, and networks
- De-Implementation of ineffective or suboptimal care

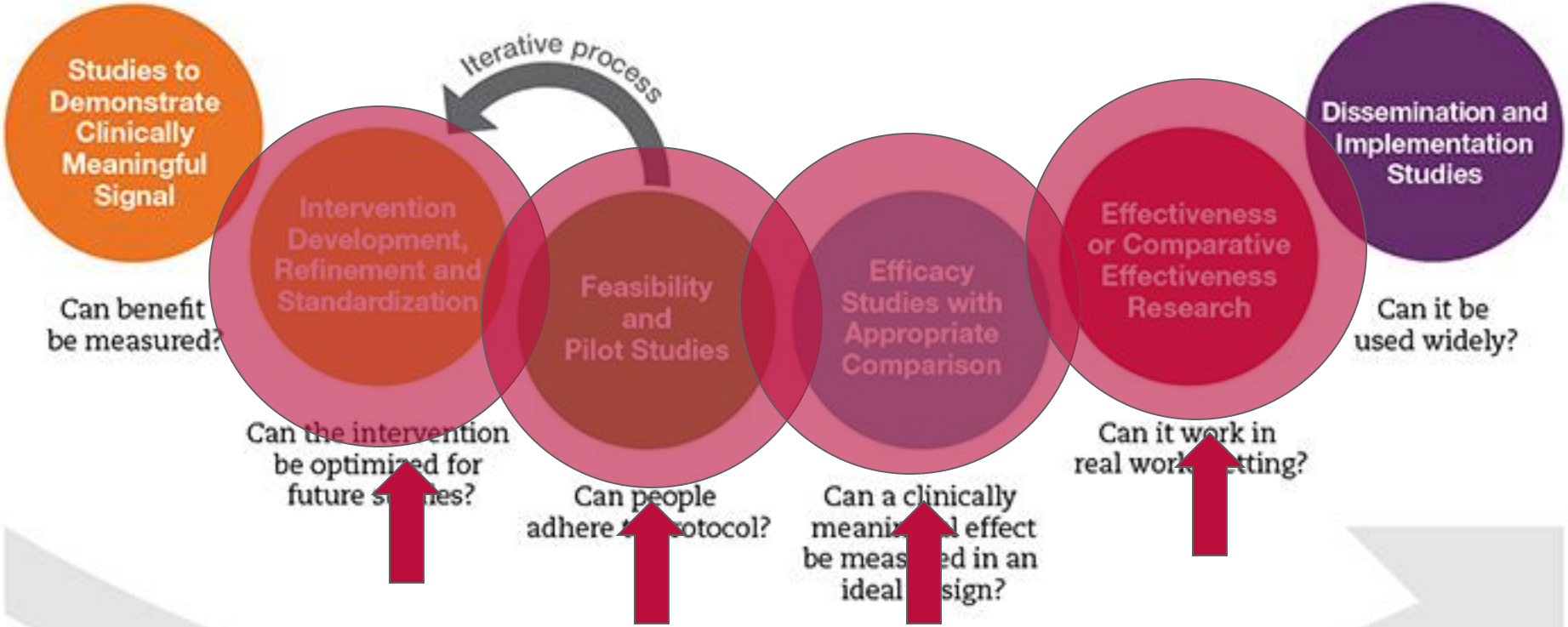
PAR-18-017; PAR-18-017; PAR-16-237

Considering Adaptation earlier



https://nccih.nih.gov/grants/mindbody/framework

Considering Adaptation earlier



https://nccih

An earlier focus on…

- Who's going to deliver it?
- Fit with ultimate patient population
- Building in tests of variable versions of the intervention
- Hybrid designs

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Search All RTIPs

Research-Tested Intervention Programs (RTIPs)

Moving from Research to Programs for People

Search from 187 Evidence-Based Intervention Programs

RTIPs is a searchable database of evidence-based cancer control interventions and program materials and is designed to provide program planners and public health practitioners easy and immediate access to research-tested materials.

SEARCH CURRENT PROGRAMS

New programs on RTIPs

HPV Vaccination
Making Effective HPV Vaccine Recommendations
Post date: December, 2017

Obesity
Exercise and Nutrition to Enhance Recovery and Good Health for You (ENERGY)
Post date: November, 2017

Diet/Nutrition
SIPsmartER
Post date: October, 2017

New evidence-based programs are released periodically. Please check for updates.

News and Announcements

RTIPs Highlighted at University of Kentucky

Program Submission

We are interested in continuing to add to the current listing of the evidence-based programs on the RTIPs website and appreciate your

Research to Reality

Search Research to Reality (R2R), NCI's online

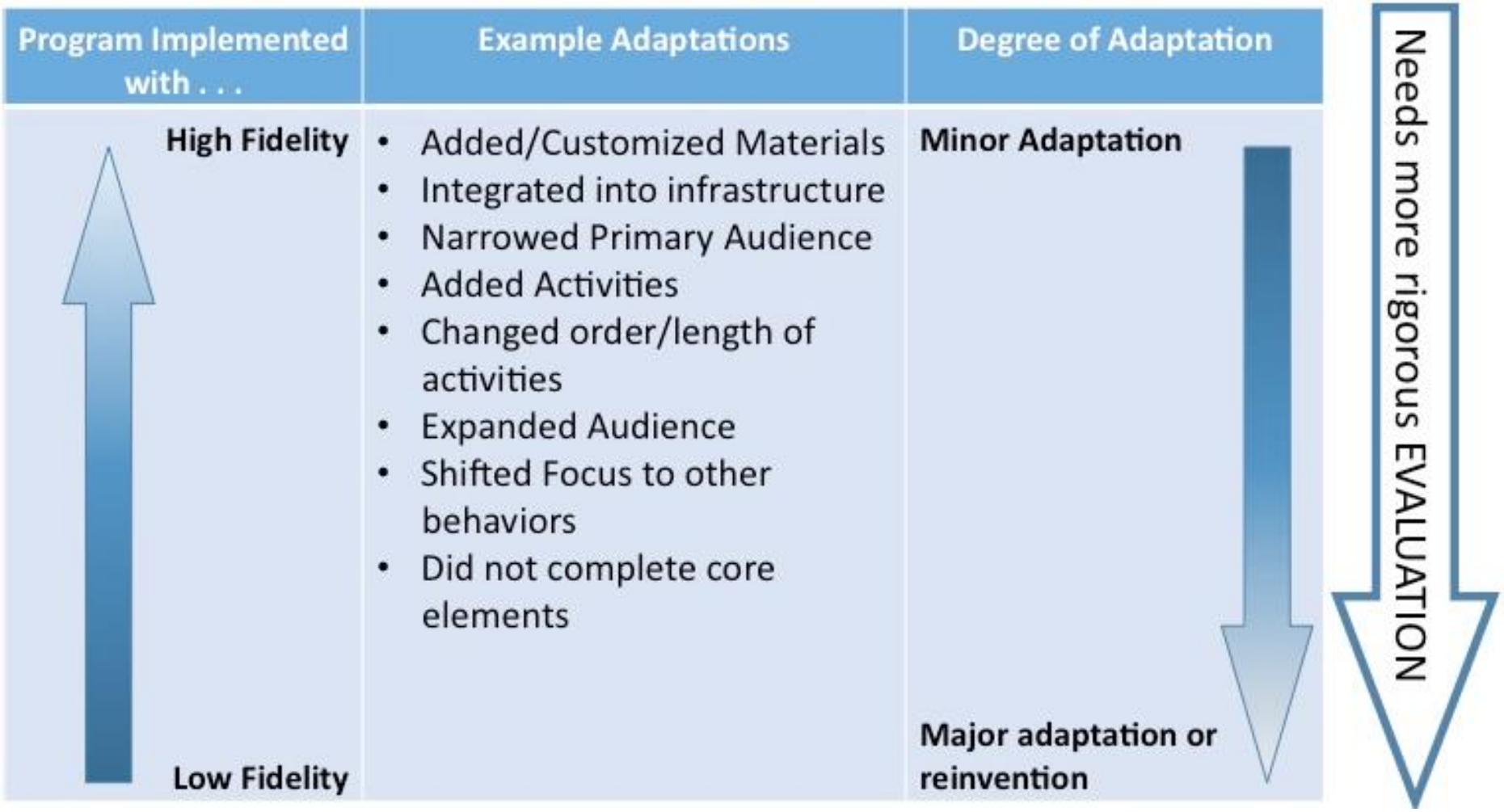
RTIPs Connects with Research Reviews

The Guide to Community Preventive

Resource for Adaptation and Implementation

Putting Public Health Evidence in

Fidelity-Adaptation Continuum



Reproduced from Carvalho et al., 2013 with permission from B. Rabin (2016)

Summary

- Balancing fidelity and adaptation is important
  - Improve fit with context
  - Maintain intervention impact

- Intervention adaptations should be made deliberatively, informed by relevant theory, and with input from researchers and stakeholders

- Consider including fidelity measures in your research studies

References & Recommended Readings

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