Adaptation of behavioral interventions and use of the FRAME to document adaptations and modifications

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Associate Professor of Psychiatry and Behavioral Sciences
National Center for PTSD & Stanford University

Housekeeping

- All participants will be muted
- Enter **all questions** in the Zoom **Q&A/chat box** and send to Everyone
- Moderator will review questions from chat box and ask them at the end
- Want to continue the discussion? Associated podcast released about 2 weeks after Grand Rounds
- Visit impactcollaboratory.org
- Follow us on Twitter & LinkedIN:

https://www.linkedin.com/company/65346172

Learning Objectives

Upon completion of this presentation, you should be able to:

- Discuss factors that should be considered when adapting behavioral interventions
- Describe how the FRAME can be used to document adaptations
- Provide examples of study designs to investigate the impact of adaptations

Definitions and Distinctions

Fidelity: the skilled/appropriate delivery of core intervention components

Modification: changes (proactive or reactive) made to the intervention/program

Adaptation: proactive, planned modifications

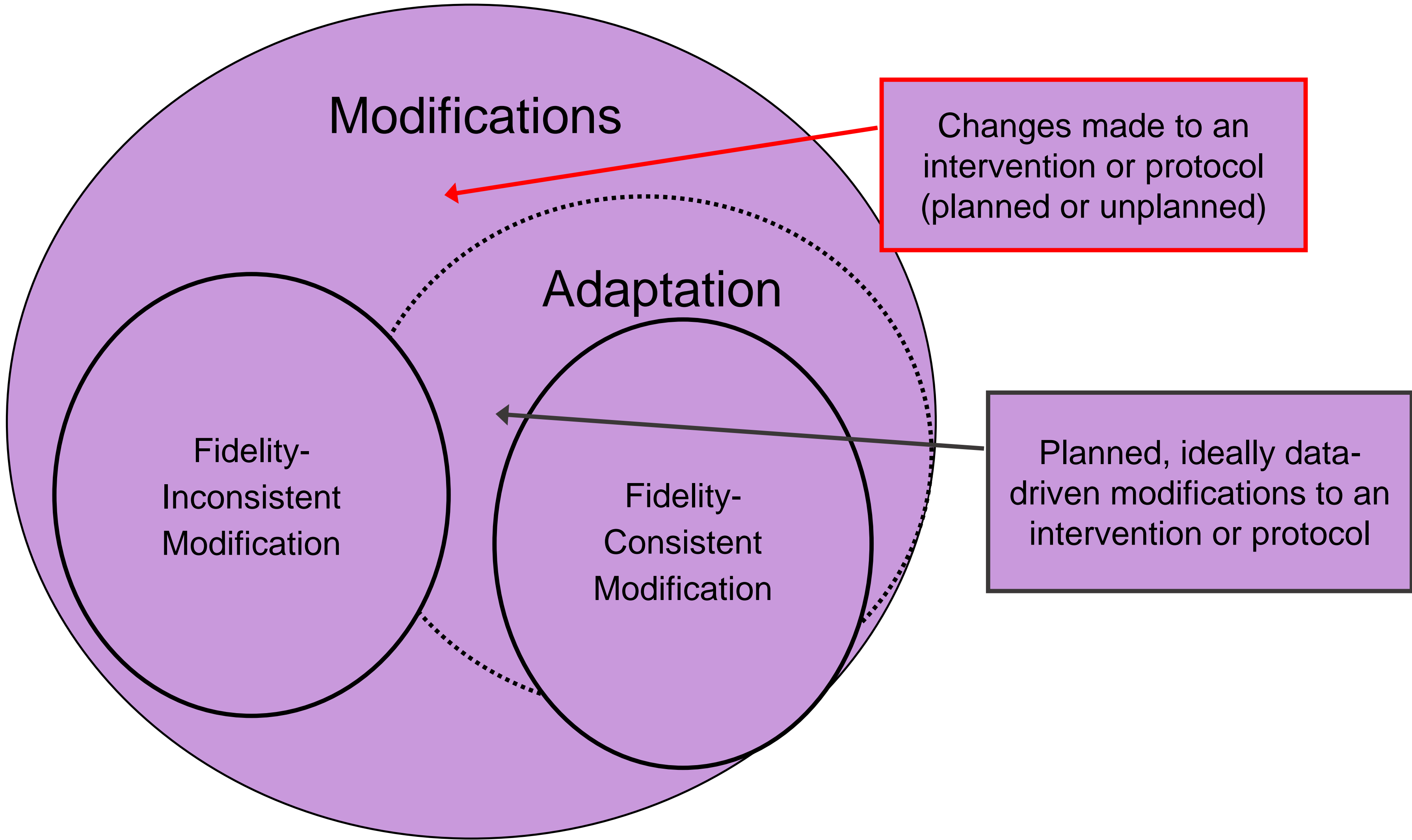
Stirman, S. W., Baumann, A. A., & Miller, C. J. (2019). The FRAME: an expanded framework for reporting adaptations and modifications to evidence-based interventions. *Implementation Science*, *14*(1), 1-10.

What is adaptation in implementation science? It depends!

- ***Process or mechanism*** associated with successful implementation (Stirman et al., 2012; Iwelunmor et al., 2016)
- An implementation ***strategy*** (Aarons et al., 2012; Powell et al., 2015)
- ***Adaptability*** as a quality or characteristic of an intervention (e.g. with modular interventions being inherently adaptable) (Damschroder et al., 2009)
- Adaptation as an implementation ***outcome*** (similar to fidelity) (Proctor et al., 2011)

Miller, C. J., Wiltsey-Stirman, S., & Baumann, A. A. (2020). Iterative Decision-making for Evaluation of Adaptations (IDEA): A decision tree for balancing adaptation, fidelity, and intervention impact. *Journal of Community Psychology*, *48*(4), 1163-1177.

Modification, Adaptation, Fidelity



Stirman, S. W., Gutner, C. A., Crits-Christoph, P., Edmunds, J., Evans, A. C., & Beidas, R. S. (2015). Relationships between clinician-level attributes and fidelity-consistent and fidelity-inconsistent modifications to an evidence-based psychotherapy. *Implementation Science*, *10*(1), 1-10.

Adaptation is inherent in implementation

- Adaptation is inherent – perhaps crucial – to the implementation process
- If we view local adaptations, cultural adaptation, and other efforts to improve fit as flaws in implementation fidelity:
  - we are at best missing opportunities to learn
  - at worst, setting ourselves up for implementation failure

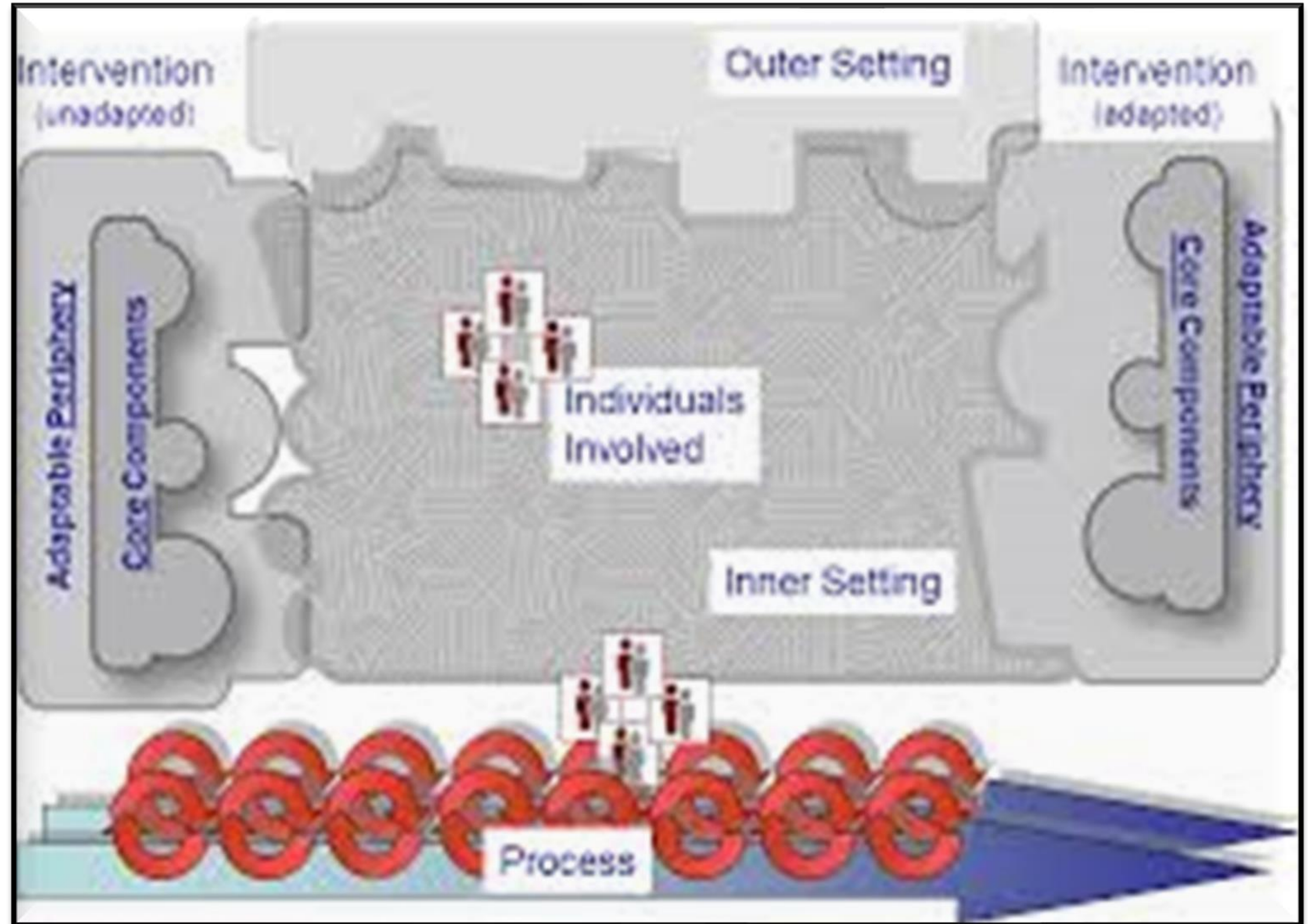
NIA IMPACT COLLABORATORY
TRANSFORMING DEMENTIA CARE

Baumann, A. A., Cabassa, L. J., & Stirman, S. W. (2017). Adaptation in dissemination and implementation science. *Dissemination and implementation research in health: translating science to practice*, *2*, 286-300.
Baumann, A., Mejia, A., Lachman, J., Parra-Cardona, R., Lopez-Zeron, G., Amador Buenabad, N. G., ... & Domenech Rodrigeuz, M. M. (2018). Parenting programs for underserved populations: Issues of scientific integrity and social justice. *Global Social Welfare*.
Parra-Cardona, R., Leijten, P., Lachman, J. M., Mejía, A., Baumann, A. A., Buenabad, N. G. A., ... & Ward, C. L. (2018). Strengthening a culture of prevention in low-and middle-income countries: Balancing scientific expectations and contextual realities. *Prevention Science*, 1-11.

Context

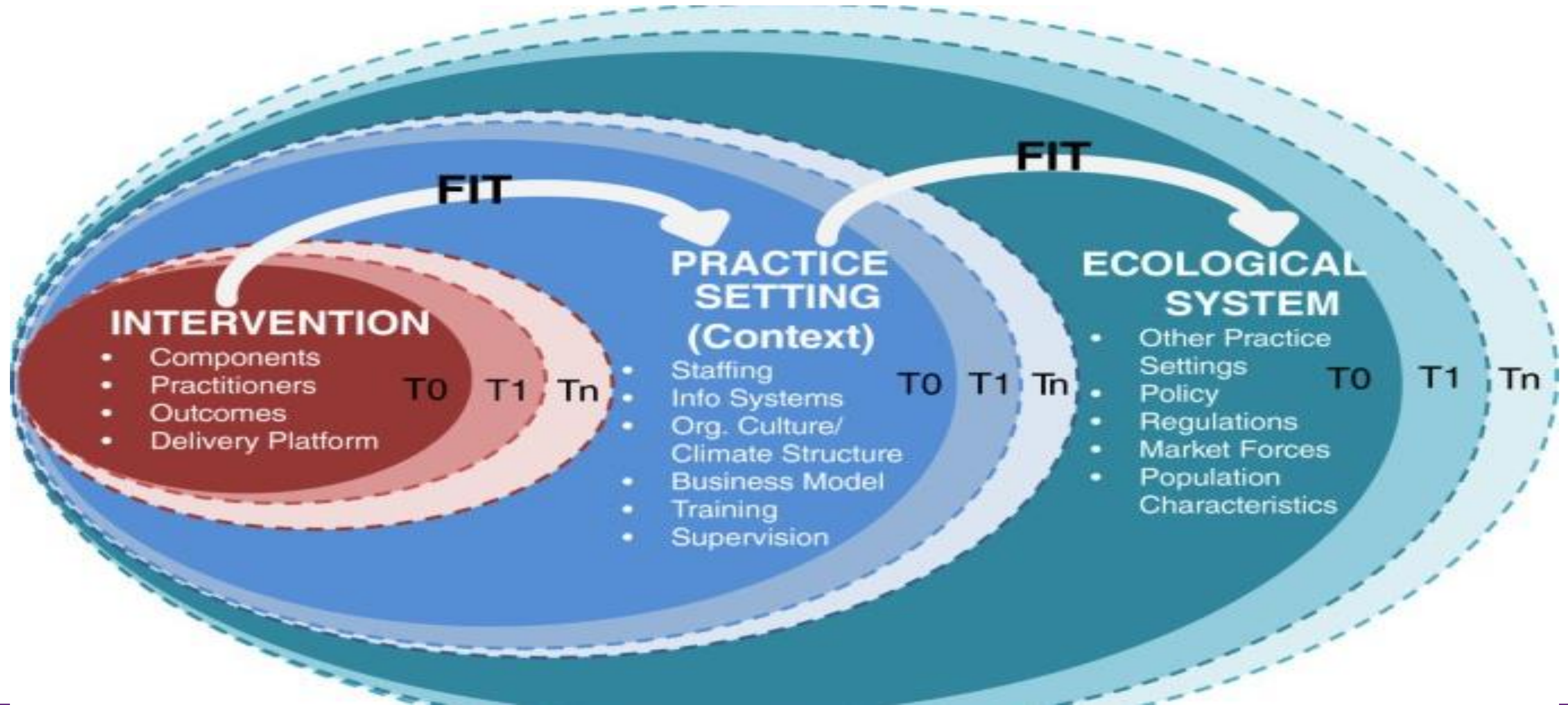
Even if you have the most successful intervention, context can affect how it is implemented

Consolidated Framework of Implementation Research (CFIR)



Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implementation science*, *4*(1), 1-15.

The Dynamic Sustainability Framework

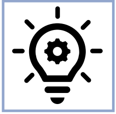


Chambers, D. A., Glasgow, R. E., & Stange, K. C. (2013). The dynamic sustainability framework: addressing the paradox of sustainment amid ongoing change. Implementation Science, 8(1), 117.

@sws_fastlab @BaumannAna

Fidelity-Adaptation Tension

What do we mean by core elements?



Parts of the intervention that are empirically or theoretically associated with desired outcomes/impact

Parts of the intervention that are effective and necessary

Might mean attending to *function*, rather than *form* in complex settings and interventions (c.f., Perez Jolles, 2019)

These may not be the same in all contexts

Core elements vs. Core functions

NIA IMPACT COLLABORATORY
TRANSFORMING DEMENTIA CARE

Jolles, M. P., Lengnick-Hall, R., & Mittman, B. S. (2019). Core functions and forms of complex health interventions: a patient-centered medical home illustration. *Journal of general internal medicine*, *34*(6), 1032-1038.

May lead to refinement or confirmation of core elements (with good measurement)

Planned

Theoretically Optimal

Fidelity Inconsistent

Fidelity Consistent

Occasionally unavoidable, opportunities for learning

Unplanned (Reactive)

Theoretically ideal in unexpected circumstances

Miller, C. J., Wiltsey-Stirman, S., & Baumann, A. A. (2020). Iterative Decision-making for Evaluation of Adaptations (IDEA): A decision tree for balancing adaptation, fidelity, and intervention impact. *Journal of Community Psychology*, *48*(4), 1163-1177.

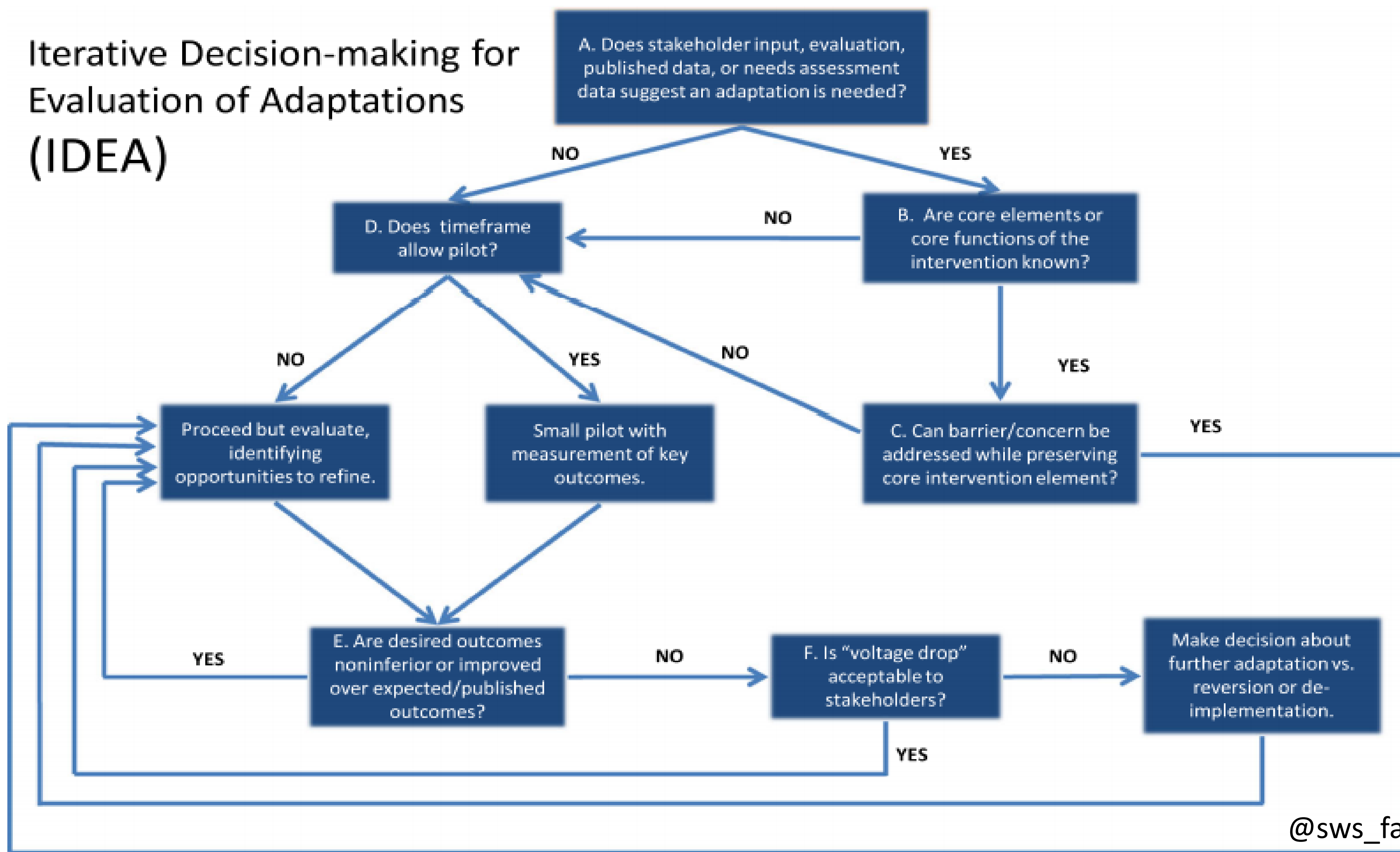
Adaptation Process: Decision Frameworks

Iterative Decision Tree for Evaluation of Adaptations (IDEA)

Model for Adaptation Design & Impact (MADI)

Miller, C. J., Wiltsey-Stirman, S., & Baumann, A. A. (2020). Iterative Decision-making for Evaluation of Adaptations (IDEA): A decision tree for balancing adaptation, fidelity, and intervention impact. *Journal of Community Psychology*, *48*(4), 1163-1177.

Kirk, M. A., Moore, J. E., Stirman, S. W., & Birken, S. A. (2020). Towards a comprehensive model for understanding adaptations' impact: the model for adaptation design and impact (MADI). *Implementation Science*, *15*(1), 1-15.



Miller, C. J., Wiltsey-Stirman, S., & Baumann, A. A. (2020). Iterative Decision-making for Evaluation of Adaptations (IDEA): A decision tree for balancing adaptation, fidelity, and intervention impact. *Journal of Community Psychology*, *48*(4), 1163-1177.

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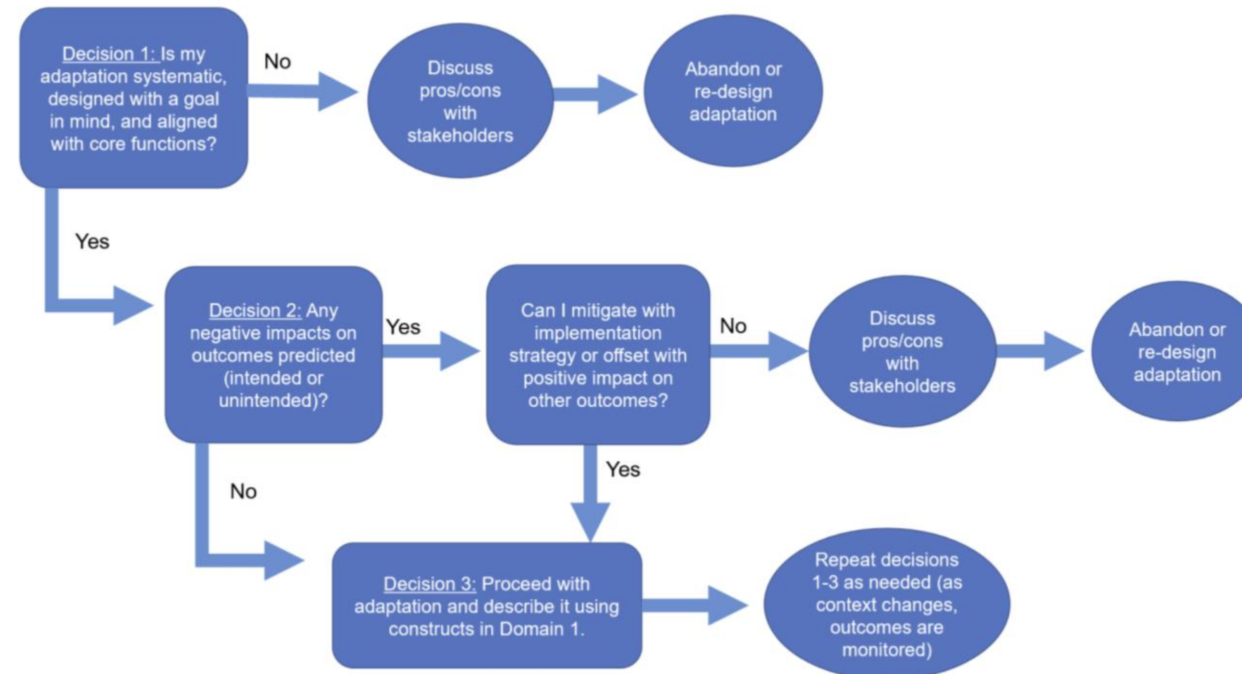
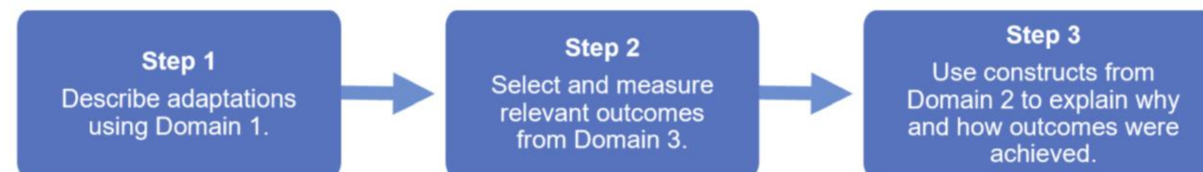
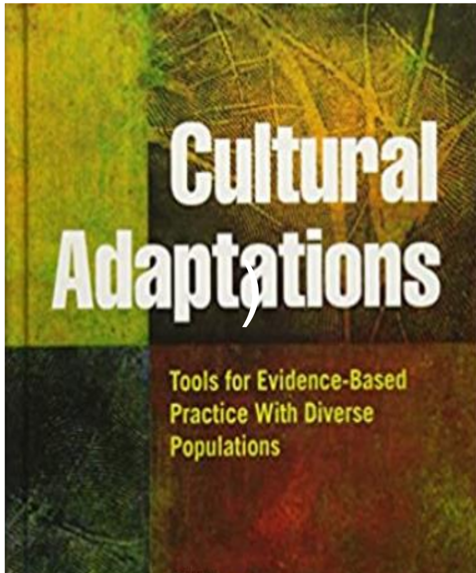
MADI as a Decision Aid





Adaptation Process



Bernal, G., & Domenech Rodríguez, M. M. (Eds.). (2012). *Cultural adaptations: Tools for evidence-based practice with diverse populations.* American Psychological Association. https://doi.org/10.1037/13752-000

A scoping study of frameworks for adapting public health evidence-based interventions

Cam Escoffery,[1] Erin Lebow-Skelley,[1] Hallie Udelson,[1] Elaine A. Böing,[1] Richard Wood,[2] Maria E. Fernandez,[2] Patricia D. Mullen[2]

CLINICAL PSYCHOLOGY SCIENCE AND PRACTICE

Parent Management Training-Oregon Model (PMTO™) in Mexico City: Integrating Cultural Adaptation Activities in an Implementation Model

Ana A. Baumann, Brown School of Social Work, Washington University in St. Louis
Melanie M. Domenech Rodríguez, Utah State University
Nancy G. Amador, Instituto Mexicano de Psiquiatría Ramón de la Fuente Muñiz
Marion S. Forgatch, Oregon Social Learning Center
J. Rubén Parra-Cardona, Michigan State University

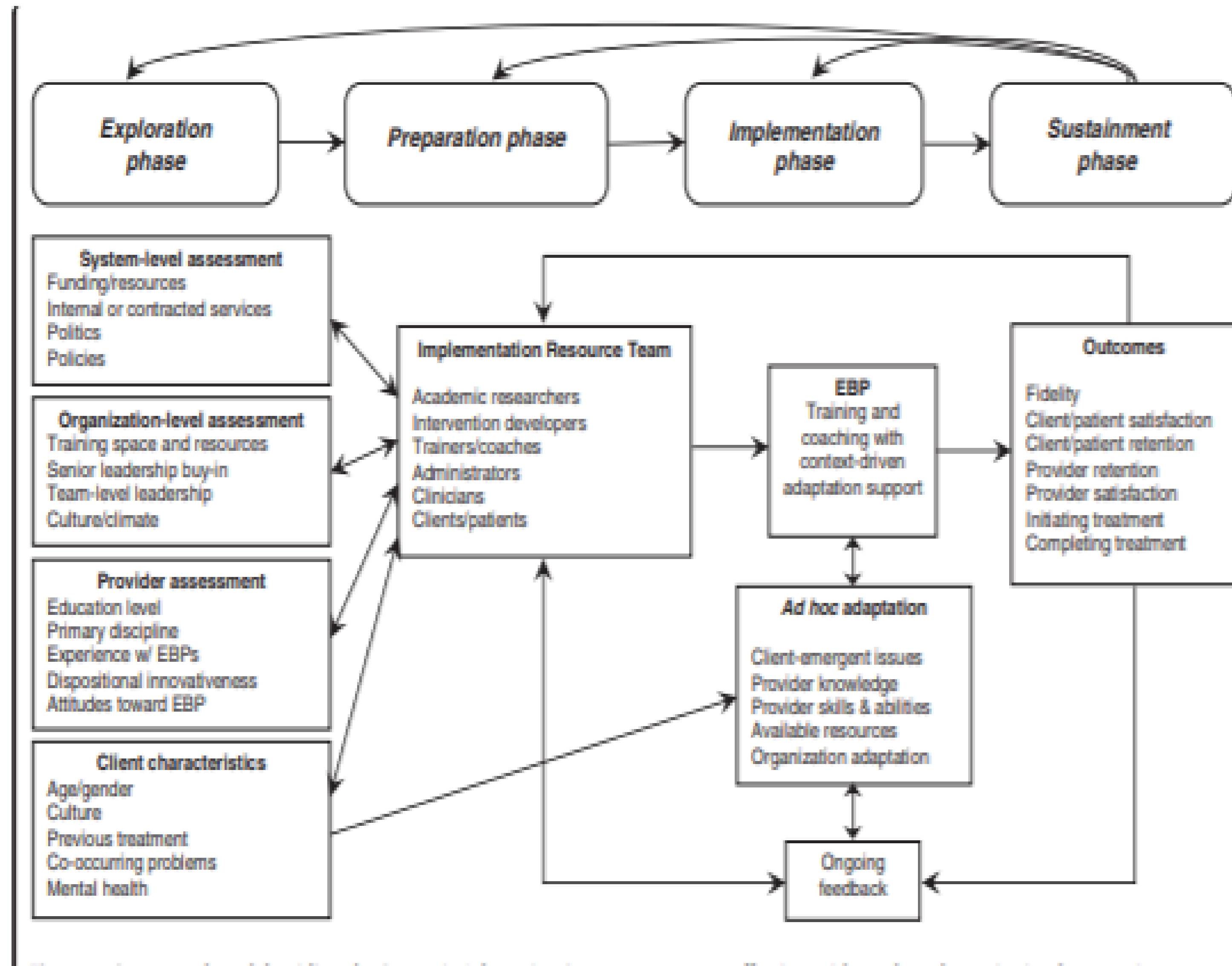
Cabassa et al. Implementation Science 2014, 9:178
http://www.implementationscience.com/content/9/1/178

RESEARCH Open Access

Using the collaborative intervention planning framework to adapt a health-care manager intervention to a new population and provider group to improve the health of people with serious mental illness

Leopoldo J Cabassa[1,2*], Arminda P Gomes[1], Quisqueya Meyreles[2], Lucia Capitelli[2], Richard Younge[3], Dianna Dragatsi[2], Juana Alvarez[2], Yamira Manrique[1] and Roberto Lewis-Fernández[2,3]

Adaptation as a Strategy



Aarons, G. A., Green, A. E., Palinkas, L. A., Self-Brown, S., Whitaker, D. J., Lutzker, J. R., ... & Chaffin, M. J. (2012). Dynamic adaptation process to implement an evidence-based child maltreatment intervention. *Implementation Science*, *7*(1), 1-9.

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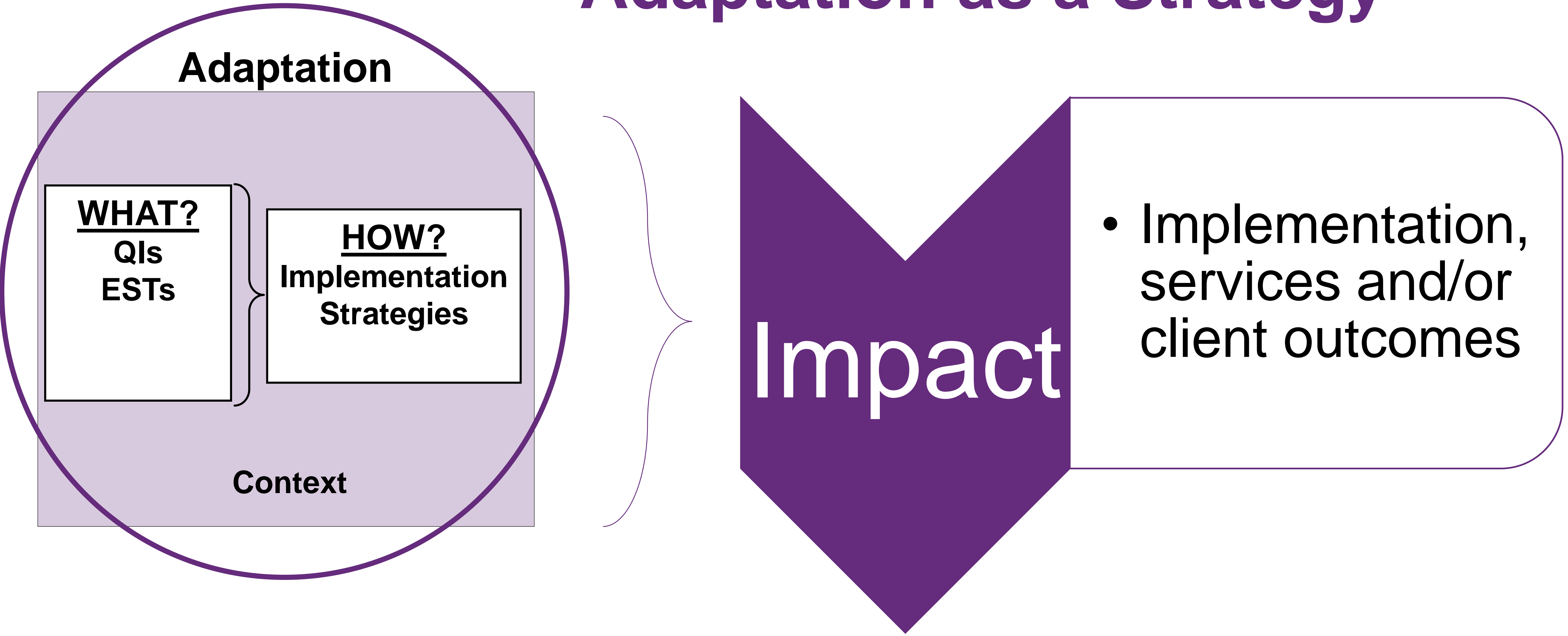
Adaptation as a Strategy



NIA IMPACT COLLABORATORY
TRANSFORMING DEMENTIA CARE

Baumann, A. A., & Cabassa, L. J. (2020). Reframing implementation science to address inequities in healthcare delivery. *BMC Health Services Research*, *20*(1), 1-9.
Rabin, B. A., McCreight, M., Battaglia, C., Ayele, R., Burke, R. E., Hess, P. L., ... & Glasgow, R. E. (2018). Systematic, multimethod assessment of adaptations across four diverse health systems interventions. *Frontiers in public health*, *6*, 102.
Cabassa, L. J., & Baumann, A. A. (2013). A two-way street: bridging implementation science and cultural adaptations of mental health treatments. *Implementation*
Wiltsey Stirman, S., Gamarra, J. M., Bartlett, B. A., Calloway, A., & Gutner, C. A. (2017). Empirical examinations of modifications and adaptations to evidence-based psychotherapies: Methodologies, impact, and future directions. *Clinical Psychology: Science and Practice*, *24*(4), 396-420. *Science*, *8*(1), 90.

Documenting adaptations

Goals of documenting adaptations during implementation

- Create an **organized list of adaptations** that future implementers can consider for success
- Provide **contextual process data** to interpret outcomes (i.e., how adaptations contribute to outcomes)
- **Link adaptations to outcomes** (what kind of outcomes can be expected when specific adaptations are made?)
- **Consider refinements** to the recommended intervention & implementation strategies based on observed changes
- Propose **refinements** to the existing methodologies and frameworks and develop a replicable, easy-to-use documentation method for adaptations/ modifications

Self Report

COMPLETE ONE OF THESE CHECKLISTS FOR EACH THERAPY VISIT / WEEK

Please check the box next to any modifications or adaptations that you observed during your review of the session (see next page for code definitions).

Type of Modification	Check Here
1. Tailoring/tweaking/refining (e.g., changing terminology or language, modifying worksheets in minor ways) Describe:	
2. Integrating components of the intervention into another framework (e.g., selecting elements to use but not using the whole protocol) Describe:	
3. Integrating another treatment into the EBP (e.g., integrating other techniques into the intervention) Describe:	
4. Removing/skipping core modules or components of the treatment Describe:	
5a Pacing/Timing-Decelerating--Lengthening/extending time spent during therapy visit covering a CPT session	
5b. Pacing/Timing-Decelerating--Lengthening/extending number of weeks	
6a. Pacing/Timing-Accelerating--Shortening/condensing time spent during therapy visit covering a CPT session	
6b. Pacing/Timing-Accelerating--Shortening/condensing number of weeks	
7. Adjusting other order of intervention modules, topics, or segments Describe:	
8. Adding modules or topics to the intervention Describe:	
9. Departing from the protocol starting to use another treatment strategy Describe:	
10. Loosening the session structure Describe:	
11. Repeating elements or modules (e.g., repeating a concept or activity covered in a previous session that was not intended for another session) Describe:	
12. Substituting elements or modules Describe:	

Interview

In the past [time period] /Since implementing [intervention], have you made any changes?

How have you changed it?

Probe with the codebook handy, ask enough questions to be able to determine which form of adaptation(s) they've made?

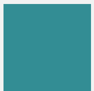
Do you make that change for everyone, or just some people?

Probe/who, how often

What led you to make that change?

Assess for therapist preference, recipient need/constraint, setting constraint/need, other factors

Who was involved in the decision?



Does it seem to be working? How do you determine if it's working?

Observation

Requires time and resources, including trained observers who know the FRAME and intervention well

Some adaptations (e.g., sequencing, spreading, adding sessions) might not be evident from a single observation

Practically and conceptually, it can make sense to assess fidelity and adaptation simultaneously

Observing the full protocol can have implications for fidelity assessments

Assessment strategies

Self-report

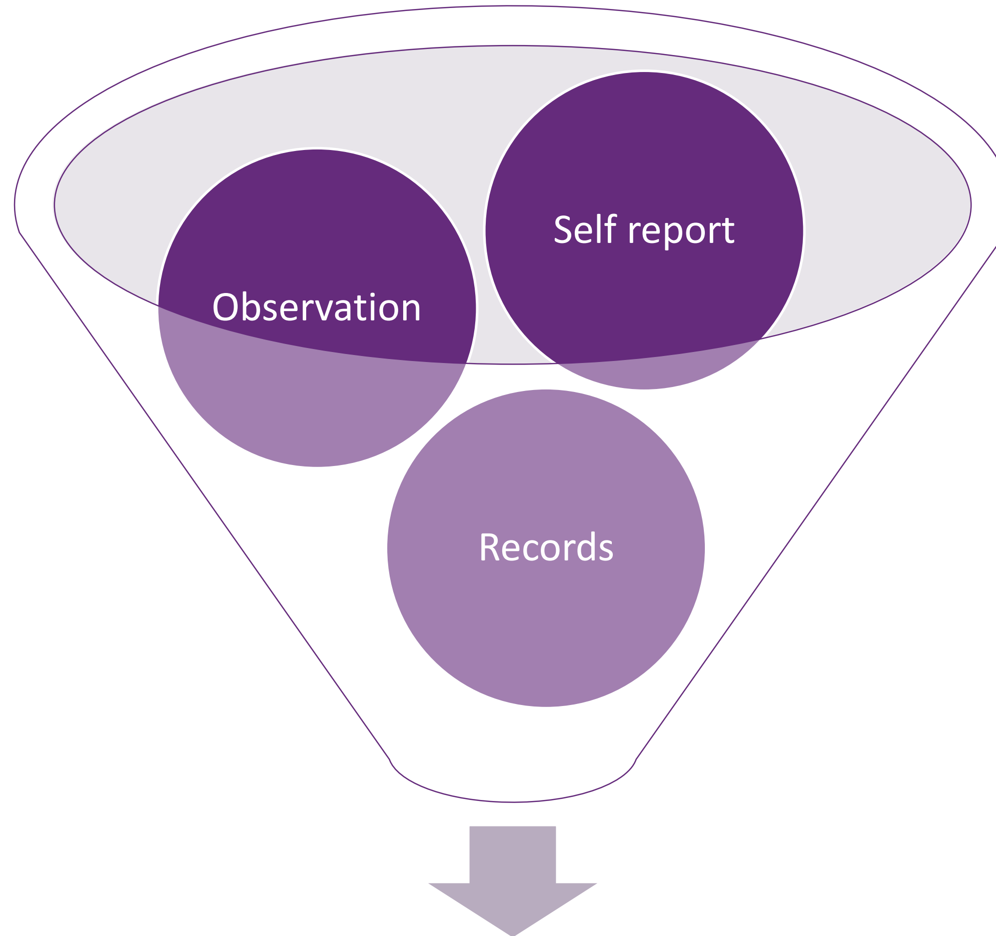
- Recall
- Accuracy
- Record keeping
- Provider burden

Observation

- Time and resources
- Some modifications (e.g. changing session sequence) may require longitudinal observation
- Hawthorne Effect

May require multimethod assessment and triangulation

Triangulation



Full Picture of Adaptations

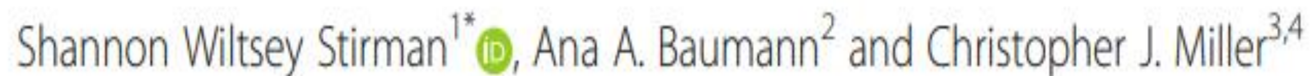
Adaptation: Documenting

Wiltsey Stirman *et al. Implementation Science* (2019) 14:58
https://doi.org/10.1186/s13012-019-0898-y

Implementation Science

DEBATE — Open Access

The FRAME: an expanded framework for reporting adaptations and modifications to evidence-based interventions


Shannon Wiltsey Stirman[1*], Ana A. Baumann[2] and Christopher J. Miller[3,4]

Framework for Reporting Adaptations and Modifications-Expanded*

PROCESS

WHEN did the modification occur?
- Pre-implementation/planning/pilot
- Implementation
- Scale up
- Maintenance/Sustainment

Were adaptations planned?
- Planned/Proactive (proactive adaptation)
- Planned/Reactive (reactive adaptation)
- Unplanned/Reactive (modification)

WHO participated in the decision to modify?
- **Political leaders**
- **Program Leader**
- **Funder**
- **Administrator**
- **Program manager**
- Intervention developer/purveyor
- Researcher
- Treatment/Intervention team
- Individual Practitioners (those who deliver it)
- **Community members**
- **Recipients**

Optional: Indicate who made the ultimate decision.

WHAT is modified?

Content
- Modifications made to content itself, or that impact how aspects of the treatment are delivered

Contextual
- 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

Implementation and scale-up activities
- **Modifications to the strategies used to implement or spread the intervention**

At what _LEVEL OF DELIVERY_ (for whom/what is the modification made ?)
- Individual
- Target Intervention Group
- Cohort/individuals that share a particular characteristic
- Individual practitioner
- Clinic/unit level
- Organization
- Network System/Community

Contextual modifications are made to which of the following?
- Format
- Setting
- Personnel
- Population

What is the _NATURE_ of the content modification?
- Tailoring/tweaking/refining
- Changes in packaging or materials
- Adding elements
- Removing/skipping elements
- Shortening/condensing (pacing/timing)
- Lengthening/ extending (pacing/timing)
- Substituting
- Reordering of intervention modules or segments
- **Spreading (breaking up session content over multiple sessions)**
- Integrating parts of the intervention into another framework (e.g., selecting elements)
- Integrating another treatment into EBP (not using the whole protocol and integrating other techniques into a general EBP approach)
- Repeating elements or modules
- Loosening structure
- **Departing from the intervention ("drift") followed by a return to protocol within the encounter**
- **Drift from protocol without returning**

Relationship fidelity/core elements?
- Fidelity Consistent/Core elements or functions preserved
- Fidelity Inconsistent/Core elements or functions changed
- Unknown

REASONS

What was the goal?
- Increase reach or engagement
- Increase retention
- Improve feasibility
- Improve fit with recipients
- To address cultural factors
- Improve effectiveness/outcomes
- Reduce cost
- Increase satisfaction
- To reduce disparities or promote equity

SOCIOPOLITICAL
- Existing Laws
- Existing Mandates
- Existing Policies
- Existing Regulations
- Political Climate
- Funding Policies
- Historical Context
- Societal/Cultural Norms
- Funding or Resource Allocation/Availability

ORGANIZATION/SETTING
- Available resources (funds, staffing, technology, space)
- Competing demands or mandates
- Time constraints
- Service structure
- Location/accessibility
- Regulatory/compliance
- Billing constraints
- Social context (culture, climate, leadership support)
- Mission
- Cultural or religious norms

PROVIDER
- Race
- Ethnicity
- Sexual/gender identity
- First/spoken languages
- Previous Training and Skills
- Preferences
- Clinical Judgement
- Cultural norms, competency
- Perception of intervention
- Comfort with Technology

RECIPIENT
- Race; Ethnicity
- Gender identity
- Sexual Orientation
- Access to resources
- Cognitive capacity
- Physical capacity
- Literacy and education level
- First/spoken languages
- Motivation and readiness
- Comfort with technology
- Legal status
- Cultural or religious norms
- Comorbidity/Multimorbidity
- Immigration Status
- Crisis or emergent circumstances

How?

Framework for Reporting Adaptations and Modifications-Expanded*

WHEN did the modification occur?

-Pre-implementation/
planning/pilot
-Implementation
-Scale up
-Maintenance/
Sustainment

WHO made the decision to modify?

Individual practitioner/ facilitator

- Team
- Non-program staff
- Administration
- Program developer/ purveyor
- Researcher
- Coalition of stakeholders
- Unknown/unspecified

At what *LEVEL OF DELIVERY* (for whom/what is the modification made ?)

- Individual
- Target Intervention Group
- Cohort/individuals that share a particular characteristic
- Individual practitioner
- Clinic/unit level
- Organization
- Network System/Community

Were adaptations planned?

-Planned/Proactive (proactive adaptation)
-Planned/Reactive (reactive adaptation)
-Unplanned/Reactive (modification)

Adapted from Stirman, Miller, Toder & Calloway 2013. and Baumann, Cabassa, & Stirman, 2017 *Suggested individual, sociopolitical, and structural factors were not refined using the coding process used for the 2013 framework.

What?

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

What is the relationship to fidelity*?

-Fidelity Consistent
-Fidelity Inconsistent
-Unknown
**preservation of essential elements*

Context modifications are made to which of the following?

- Format
- Setting
- Personnel
- Population

What is the *NATURE* of the content modification?

- Tailoring/tweaking/refining
- Changes in packaging or materials
- Adding elements
- Removing/skipping elements
- Shortening/condensing (pacing/timing)
- Lengthening/ extending (pacing/timing)
- Substituting
- Reordering of intervention modules or segments
- Spreading (breaking up session content over multiple sessions)
- Integrating
- Repeating elements or modules
- Loosening structure
- Departing from the intervention ("drift") followed by a return to protocol within the encounter
- Drift from protocol without returning

Why?

WHY was the adaptation made?

What was the goal?

- Increase reach or engagement
- Increase retention
- Improve feasibility
- Improve fit with recipients
- To address cultural factors
- Improve effectiveness/outcomes
- Reduce cost
- Increase satisfaction
- To reduce disparities or promote equity

What factors influenced the decision?

SOCIOPOLITICAL
- Existing Laws, Mandates, and Policies
- Political climate
- Funding Policies
- Socio-historical context

ORGANIZATION/SETTING
- Available resources (funds, staffing, technology, space)
- Competing demands or mandates
- Service structure
- Location
- Regulatory/compliance
- Billing constraints
- Social context (culture, leadership support,)
- Mission or values

PROVIDER
- Race
- Ethnicity
- Sexual/gender identity
- First/spoken languages
- Previous Training and Skills
- Preferences
- Clinical Judgement
- Cultural competency
- Perception of intervention

RECIPIENT
- Race; Ethnicity
- Sexual/gender identity
- Access to resources
- Cognitive capacity; Physical capacity
- Access to resources
- Literacy and education level
- First/spoken languages
- Legal status
- Cultural or religious norms
- Comorbidity/Multimorbidity
- Comfort with Technology

Using the FRAME and Medical Records to Document Adaptations

frontiers | Frontiers in Public Health

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SPECIALTY SECTION
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Public Health Education and
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a section of the journal
Frontiers in Public Health

Assessment of modifications to evidence-based psychotherapies using administrative and chart note data from the US department of veterans affairs health care system

Shannon Wiltsey Stirman[1,2]*, Heidi La Bash[1], David Nelson[3,4], Robert Orazem[3], Abigail Klein and Nina A. Sayer[3,5]

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TABLE 4 Estimated variance components for random effects for CPT and PE. *7,297 EBP sessions for 1,257 patients seen by 182 thera

Modification type	Estimate	SE	LRT p-value	Proportion of var
Tailoring/Tweaking				
Therapist effects	0.123	0.186	0.241	0.025
Patient effects	1.506	0.288	<0.0001	0.306
Switching CPT type				
Therapist effects	0.247	0.400	0.259	0.052
Patient effects	1.194	0.470	0.002	0.252
Integrating another treatment				
Therapist effects	0.429	0.393	0.116	0.090
Patient effects	1.028	0.543	0.017	0.217
Session lengthening/extending				
Therapist effects	1.612	0.314	<0.0001	0.261
Patient effects	1.276	0.187	<0.0001	0.207
Protocol lengthening/extending				
Therapist effects	1.287	0.445	<0.0001	0.281
Patient effects	NA (Scored at patient level across all sessions)			
Session shortening/condensing				
Therapist effects	0.498	0.102	<0.0001	0.084
Patient effects	2.116	0.133	<0.0001	0.358

Session shortening/condensing				
Therapist effects	0.498	0.102	<0.0001	0.084
Patient effects	2.116	0.133	<0.0001	0.358
Repeating				
Therapist effects	0.671	0.122	<0.0001	0.169
Patient effects	0.017	0.058	0.380	0.004
Reordering				
NA (very rare event)				
Spreading				
Therapist effects	0.479	0.115	<0.0001	0.116
Patient effects	0.367	0.097	<0.0001	0.089
Drift				
Therapist effects	0.433	0.159	0.0002	0.098
Patient effects	0.698	0.218	<0.0001	0.159
Removing				
Therapist effects	0.580	0.088	<0.0001	0.148
Patient effects	0.040	0.039	0.133	0.010

[a] All modifications except protocol extending were based on EBP sessions 1 through 7.
CPT, Cognitive Processing Therapy; PE, Prolonged Exposure.

*7,297 EBP sessions for 1,257 patients seen by 182 therapists.

How does adaptation impact outcomes?

What outcomes matter to stakeholders?

Engagement

Feasibility

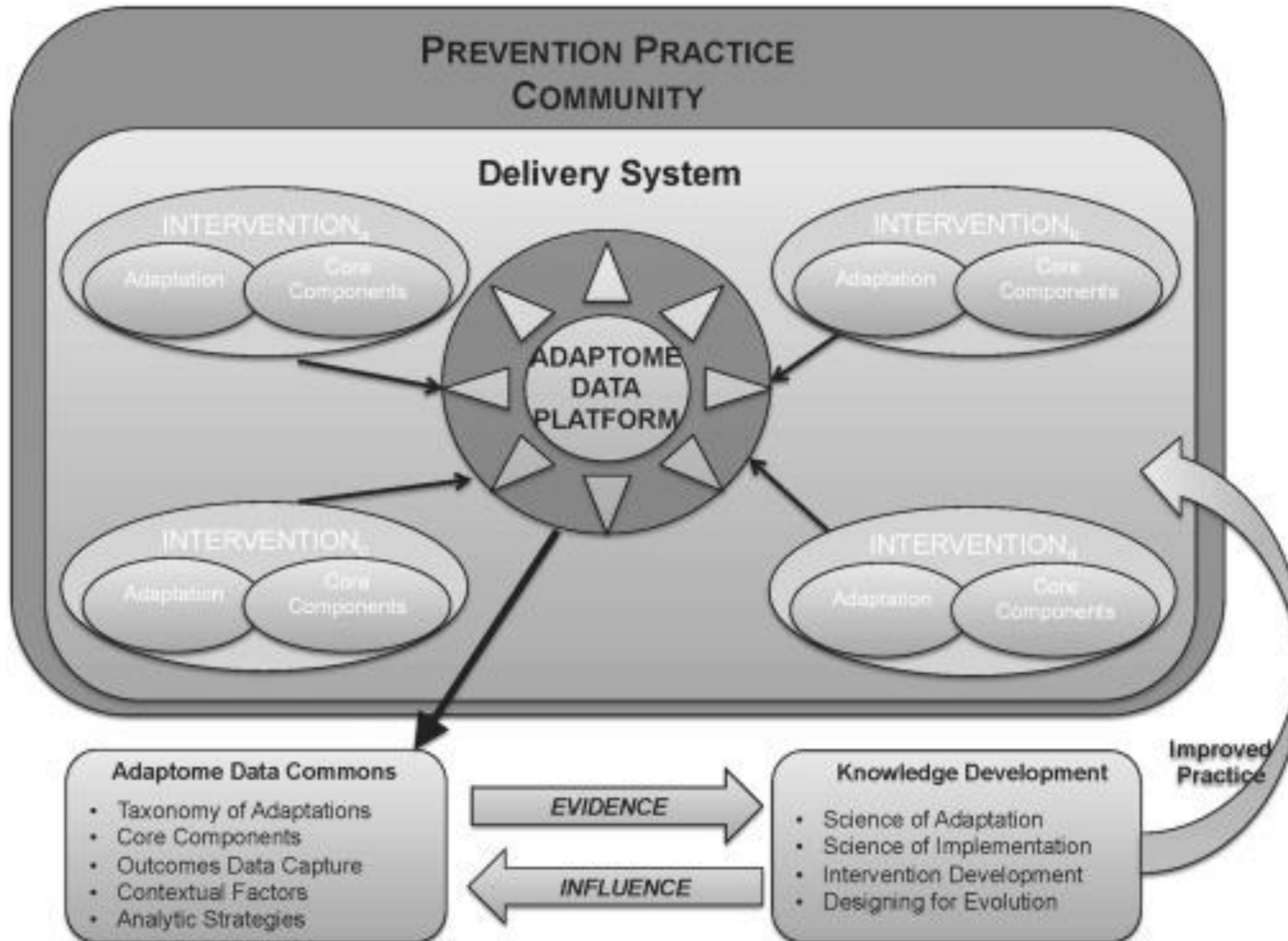
Acceptability

Perception of fit

Satisfaction

Clinical Change

Chambers & Norton- The Adaptome



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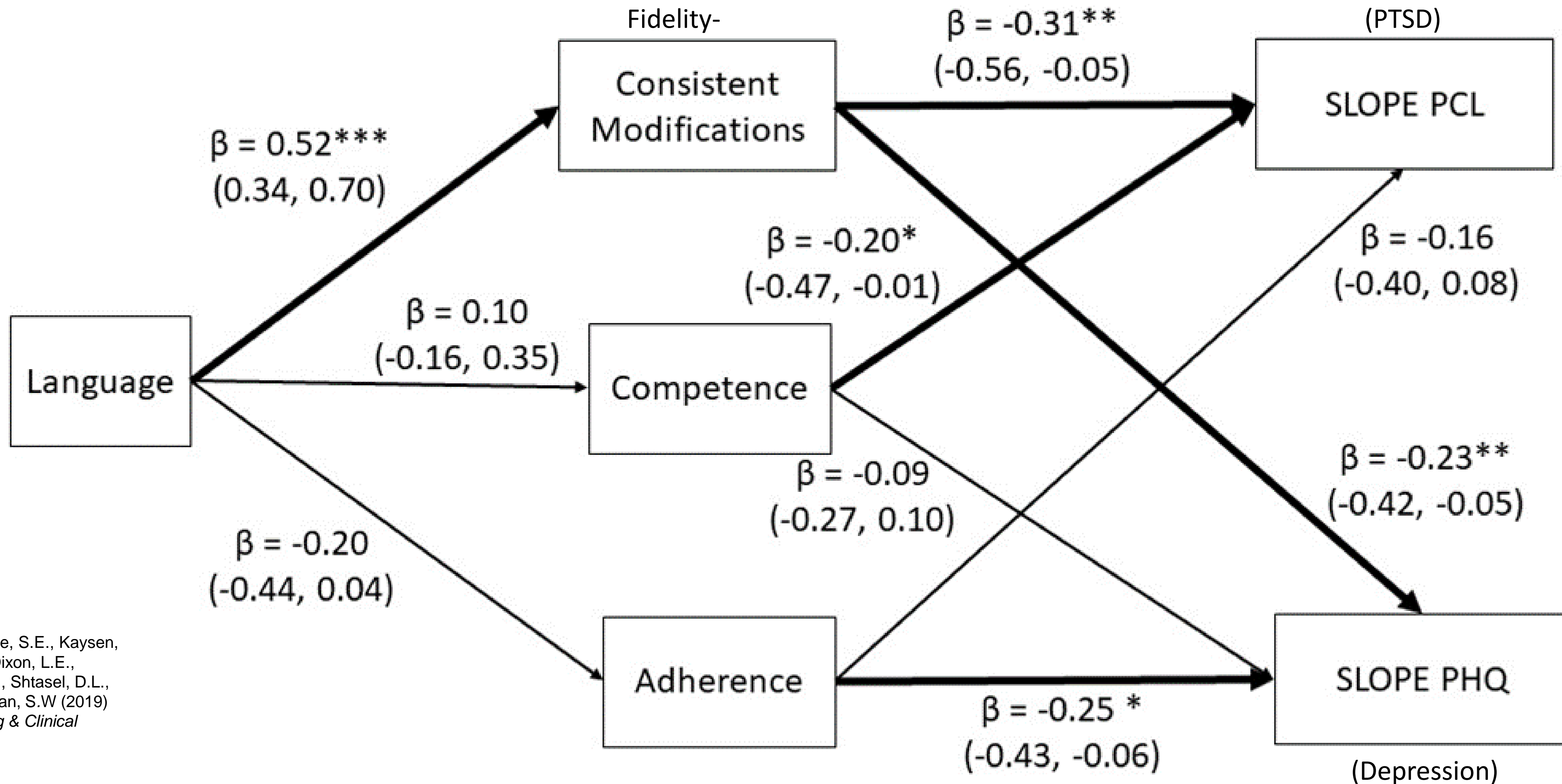
Fidelity, Modifications, and Outcomes in CPT for PTSD in a Community Setting



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In summary

Adaptation happens. So:

- Plan
- Track
- Work to understand relationships with outcomes
  - Especially those that matter most to your partners!

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Questions?

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http://med.stanford.edu/fastlab/research/adaptation.html