Toward Efficient and Sustainable Delivery of Interventions: The Stages of Implementation Completion

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Innovations in Design and Utilization of Measurement Systems to Promote Children's Cognitive, Affective, and Behavioral Health

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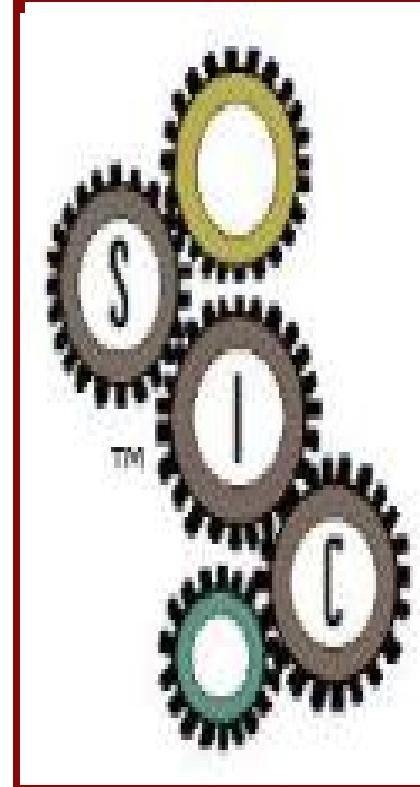
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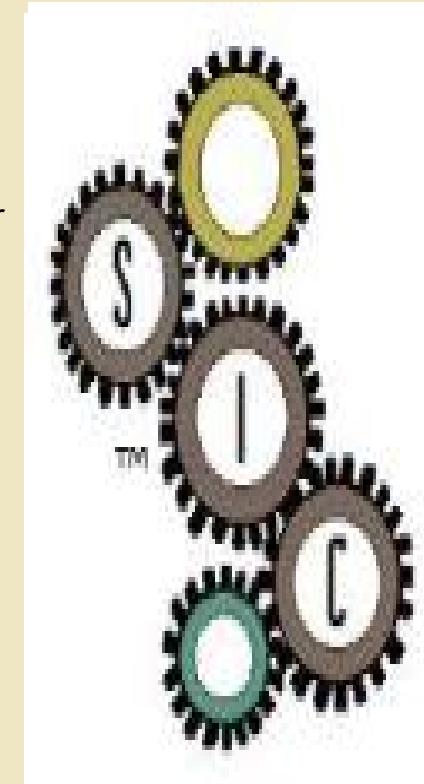
IMPLEMENTATION MEASUREMENT

Growing Body of Measures Targeting Key Aspects of Implementation

- Organizational Culture and Climate
    - e.g. Glisson, Aarons, Steckler
- Organizational Readiness
    - e.g., Simpson, Weiner, Lehman, Helfrich
- Leadership
    - e.g., Aarons, Kivipõld
- Attitudes Toward EBPs
    - e.g., Aarons, Melnyk, Upton
- Research Evidence Use
    - e.g., Palinkas, Stomski

MEASUREMENT GAP

- Measure of Implementation Process
    - Rate of Implementation
    - Implementation Activities
    - Patterns of Implementation Behavior
- Measure of Implementation Outcomes
   - Implementation Milestones
    - Penetration

CHALLENGES IN MEASURING IMPLEMENTATION

- Implementation of EBP entails extensive planning, training, and quality assurance
- Involves a complex set of interactions between developers, system leaders, front line staff, and consumers
- Recursive process of well defined stages or steps that are not necessarily linear

IMPLEMENTATION PROCESS HAS BEEN ASSUMED TO BE EBP SPECIFIC

- Little is known about which methods and interactions are most important for successful implementation
- Little is known about how and if the process influences successful outcomes
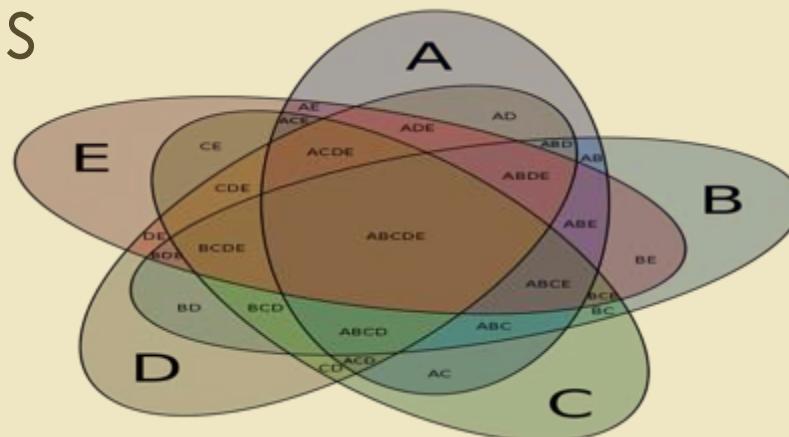
THE STAGES OF IMPLEMENTATION COMPLETION (SIC)

Developed as part of an implementation trial focused on scale-up of MTFC to fill the gap in the lack of measures available

Developed out of necessity while also addressing the challenges of measuring implementation process

Chamberlain, P., Brown, C.H., & Saldana, L. (2011). Observational measure of implementation progress: The Stages of Implementation Completion (SIC). *Implementation Science*, 6, 116.

OBSERVATIONAL OPPORTUNITY: CAL-OH STUDY
(PI: CHAMBERLAIN)

- 53 Sites observed from Engagement - Competency
- Span 3 Phases of Implementation
   - Pre-Implementation, Implementation, Sustainment
- Developed a Measurement Tool to measure
   - Rate of Implementation (Duration)
   - Thoroughness of Implementation (Proportion)
- Date Driven
- Stages of Implementation Completion
   - 8 Stages from Engagement to Competency
   - Activities within Stages

SIC BASICS: THE SCIENCE OF MEASURE DEVELOPMENT

- Developed through an iterative process
- Designed to target the general process and steps of implementation
- Involves assessment of implementation behavior of different levels of agents
- Initially designed to assess implementation activities specific to MTFC

STAGES OF IMPLEMENTATION COMPLETION (SIC)

8 Stages: Involvement:

Pre
1. Engagement   System Leader
2. Consideration of Feasibility   System Leader, Agency
3. Readiness Planning   System Leader, Agency

Imp
4. Staff Hired and Trained   Agency, Practitioner
5. Adherence Monitoring   Practitioner, Client
   Established
6. Services and Consultation   Practitioner, Client
7. Ongoing Services,   Practitioner, Client
   Consultation, Fidelity, Feedback

Sus
8. Competency (certification)   System Leader, Agency, Practitioner, Client

WITHIN STAGE ACTIVITIES

1. Engagement
    Date agreed to consider implementation

2. Consideration of Feasibility
    Date of stakeholder meeting #1

3. Readiness Planning
    Date of cost calculator/funding plan review

4. Staff Hired and Trained
    Date of initial supervisor training

5. Adherence Monitoring Established
    Date fidelity technology set-up

6. Services and Consultation Begin
    Date of first client served

7. Ongoing Services, Consultation, Fidelity, Feedback
    Date of Implementation Review #1

8. Competency (certification)
   Date of first certification application submitted

YIELDS THREE SCORES

- Duration

- Proportion
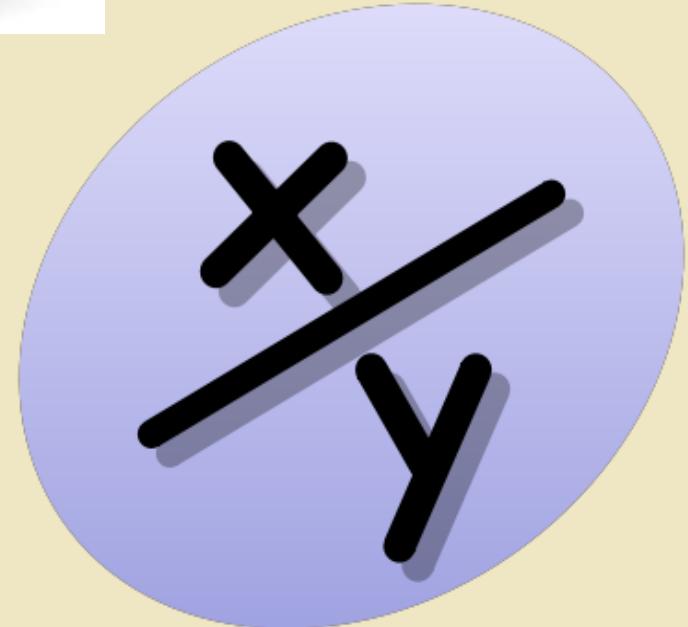
- Stage Score

SCORING AND PSYCHOMETRICS

- Challenges related to challenges of measuring implementation

- Recursive Nature Means Scoring is not Linear

- Not Possible to total Duration ACROSS Stages

- Rasch Based Modeling Helps Account for Challenges

MTFC-SIC: PSYCHOMETRICS

Demonstrated Reliability Using Rasch Modeling Across All 8 Stages

- Activity Reliability (Proportion) = .77
- Site Reliability (Proportion) = .92
- Activity Reliability (Duration) = .91
- Site Reliability (Duration) = .67

Demonstrated Face Validity

3 distinct clusters of sites based on Pre-Implementation Behavior

Cluster 1: High Proportion-Relatively Fast (23 Sites)
Cluster 2: Low Proportion-Relatively Slow (22 Sites)
Cluster 3: Non-Completers (8 Sites)

Demonstrated Predictive Validity

- Sites that both took longer to complete each stage and completed fewer activities had significantly lower hazard of successful program start-up during the study period
$HR = 0.090$, $p < 0.001$
(Cox Proportional Hazard Survival Model)

UTILITY: REAL-WORLD SITES

- 75 most real-world teams

- Sites were successfully clustered

- Failed Sites spent significantly longer in pre-implementation than successful sites

- Sites that took longer to complete Stages 1-3 significantly lower hazard of successful program start-up

$$HR = 26.50, p < 0.002$$
(Cox Proportional Hazard Survival Model)

MTFC-SIC UTILITY:
REGARDLESS OF IMPLEMENTATION STRATEGY

- Reliably distinguish good from poor performers
- Reliability distinguishes between implementation strategies
- Meaningful prediction of implementation milestones
- Pre-implementation SIC behavior predicts successful program start-up
- Pre-implementation SIC behavior predicts discontinuing program
- Pre-implementation and implementation behavior combined predict development of Competency (Stage 8)

ADAPTATION

- Can the SIC be adapted to other treatments and service sectors?
- Will similar utility be found?
- Is there a universality in implementation?

ADDITIONAL EBPS

SCHOOLS:
- Camp-Cope-A lot: Computer Assisted Version of Coping Cat
- CBITS (trauma in the schools)
- Source of Strength (suicide prevention)

CHILD WELFARE:
- KEEP
- Safe Care
- PTC
- Linked EBPs
- MTFC (Original)

JUVENILE JUSTICE
- MST

SUSTANCE ABUSE/JJ
- MDFT
- BSFT

Additional Services

HIV Prevention- Mujer Segura
Adult Services-Collaborative Care
Integration of Services— Housing First
Medical Interventions— perinatal care

MORE SIMILARITIES THAN DIFFERENCES IN IMPLEMENTATION ACTIVITIES

ADAPTATION PROCESS

- Iterative Process

    Collaborative with Developers and End Users
- Retrospective Data Collection

    Does the adaptation match reality?

    Modification

- Prospective Data Collection

    Assessment of Utilization
- INFORMING IMPLEMENTATION STRATEGIES

    Modification to Existing Practice

UNI-SIC PSYCHOMETRICS

- **Evidence of Dimensionality**

    Item Bi-factor suggests distinct pre-implementation, implementation, and sustainability phases

- **Site Distinction**

    Can distinguish 3 "types" of sites

- **Items Demonstrate Order Effects**

    Easier items early on, harder items in later stages

- **Reliability– Taking into account EBP, site, and phase**

    Indication of high reliability (0.91)

- **Noisiness**

    Out of 45 items, 4 appear to be noisy.

    These are with purpose

PRELIMINARY

WHERE DO WE GO FROM HERE?

- Standardization of Measuring Implementation Process and Milestones

- Detection of Sites that are "at risk" for Implementation Failure and targeted intervention

- Evaluation of Implementation Strategies (e.g., CDT vs IND)

- COINS

THANK YOU

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