



Models, Measures and Mixed Methods in Implementation Science

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Vulnerable youth need evidence-based services



- One in five youth in the United States are in need of mental health services (New Freedom Commission, 2003).
- There are currently 415,000 youth in child welfare in the United States today (Admin Child Fam., 2015).
- 50% of these youth need mental health services (Burns et al., 2004).





Evidence-Based Practices in Child Welfare and Child Mental Health

- Coping Cat (Kendall & Hedtke, 2006)
- Incredible Years (Webster-Stratton et al, 2014)
- Multisystemic Therapy (Henggler et al., 1998)
- Parent Child Interaction Therapy (Eyberg et al., 1995)
- SafeCare (Gaura-Edwards et al., 2011)
- Trauma-Focused Cognitive Behavioral Therapy (Cohen & Mannarino, 2004)
- Triple – P Positive Parenting Program (Sanders, 2012)
- Treatment Foster Care Oregon (Chamberlain et al., 2007)
- www.cebc.org



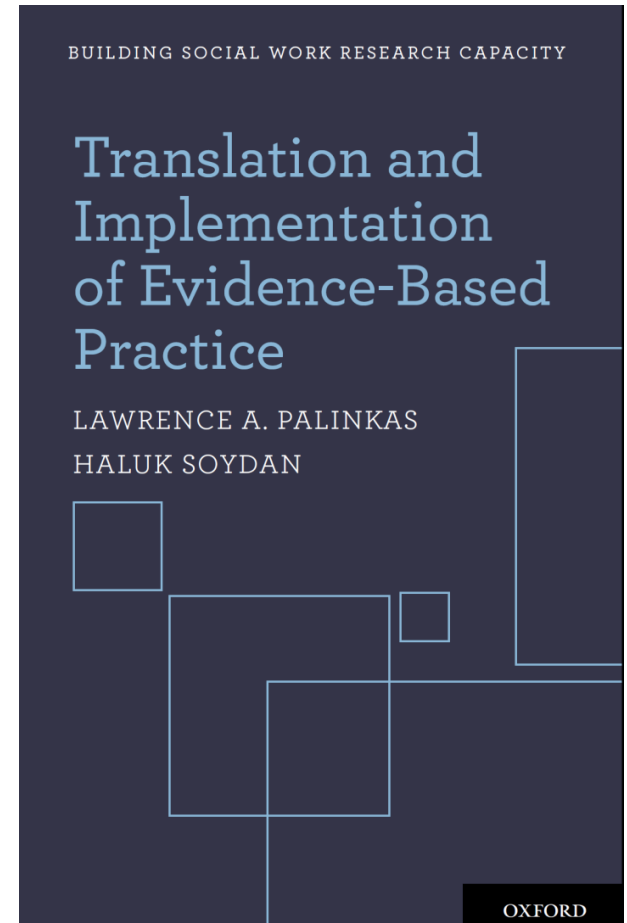
These youth are not getting the services they need

- Only 20% of youth who need mental health services get the services they need (Kataoka et al., 2002).
- 90% of publicly-funded child welfare, mental health and juvenile justice systems do not use evidence-based practices (Hoagwood & Olin, 2002).
- Only half of all children in child welfare receive care consistent with any one national standard and less than 10% receive care consistent with all 10 national standards (Raghavan et al, 2010).

Implementation Science

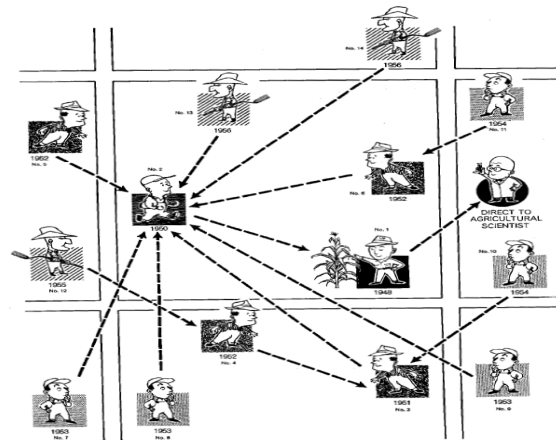
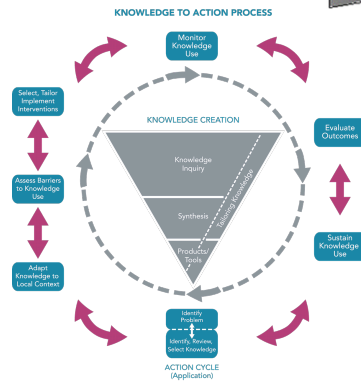
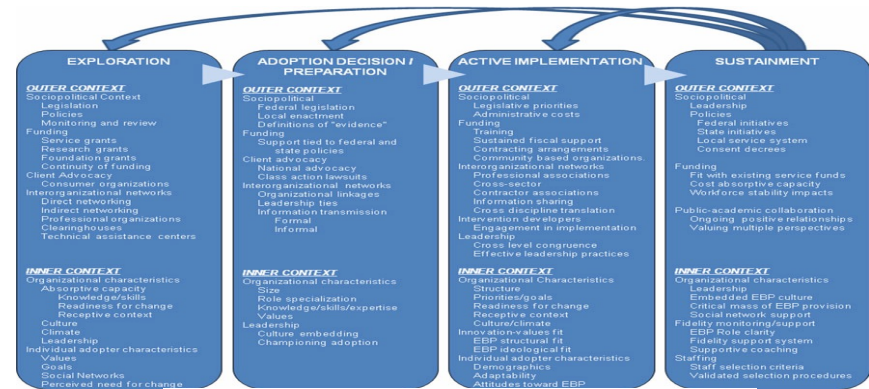
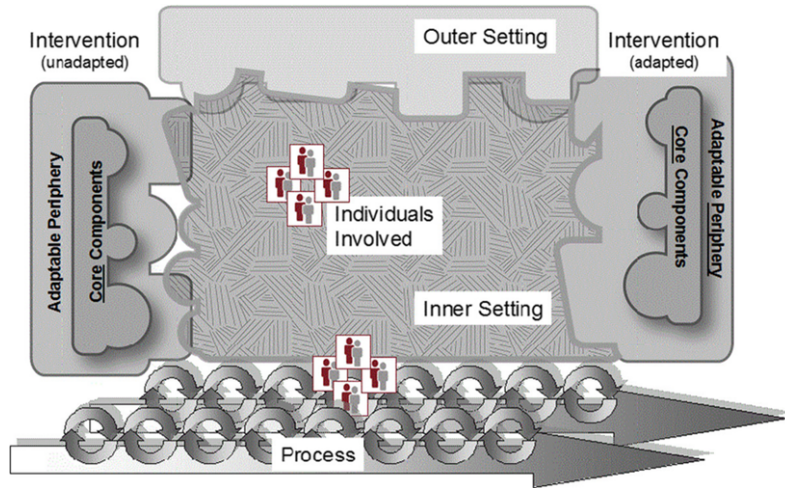


The scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services (Eccles/Mittman, 2006)





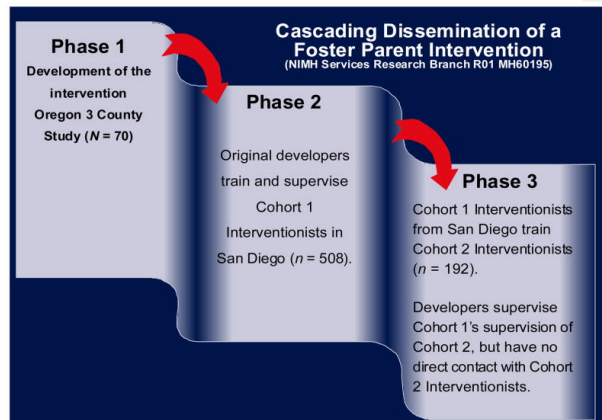
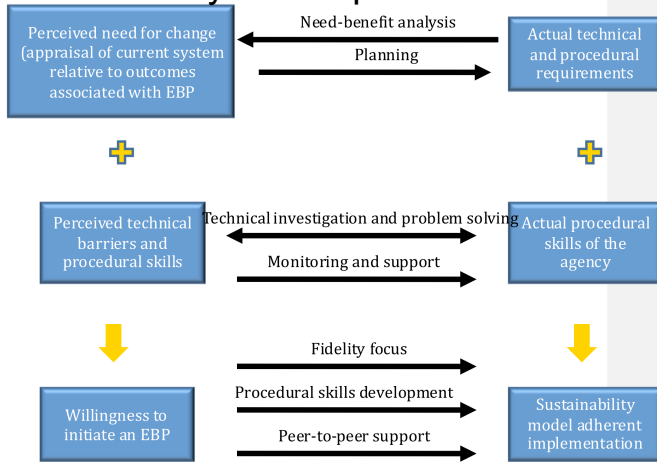
Implementation models and frameworks





Implementation strategies

Community Development Team Model

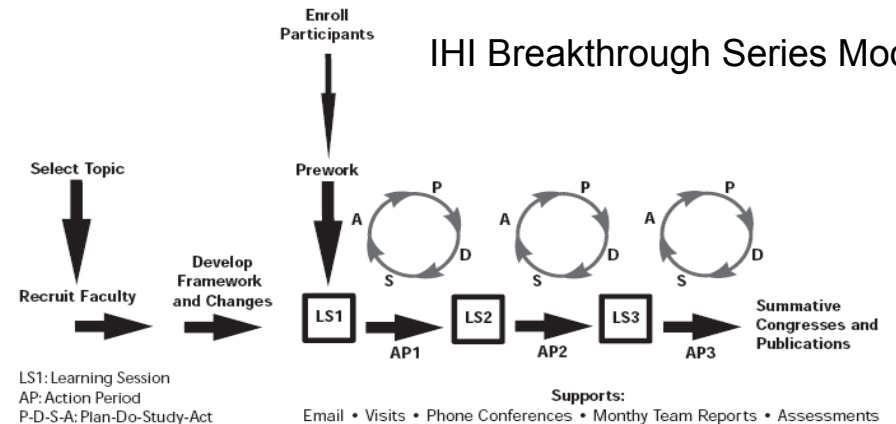


Availability, Responsiveness, Continuity (ARC) model

Stage	Component	Phase			
		I Problem Identification	II Direction Setting	III Implementation	IV Stabilization
Collaboration	1. Organizational leadership	■			
	2. Personal relationships				
	3. Network Development				
Participation	4. Team building			■	
	5. Information and assessment				
	6. Feedback				
	7. Participatory decisionmaking				
	8. Conflict resolution				
Innovation	9. Goal setting				■
	10. Continuous improvement				
	11. Job redesign				
	12. Self regulation				

Figure 2. Breakthrough Series Model

IHI Breakthrough Series Model



Implementation measures

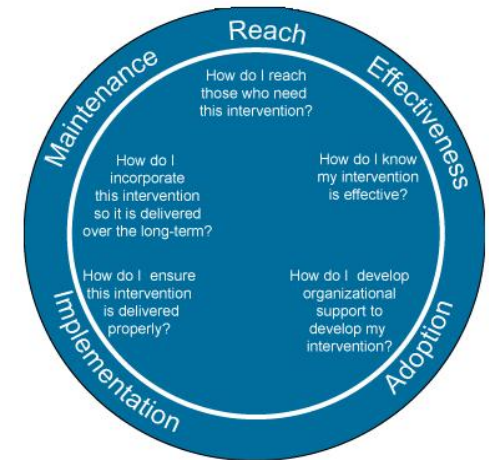


8 Stages:

1. Engagement
2. Consideration of Feasibility
3. Readiness Planning
4. Staff Hired and Trained
5. Adherence Monitoring Established
6. Services and Consultation begin
7. Ongoing Services, Consultation, Fidelity Monitoring, Feedback
8. Competency (certification)

Involvement:

System Leader
System Leader, Agency
System, Agency
Agency, Practitioner
Practitioner, Client
Practitioner, Client
Practitioner, Client
System Leader, Agency,
Practitioner, Client

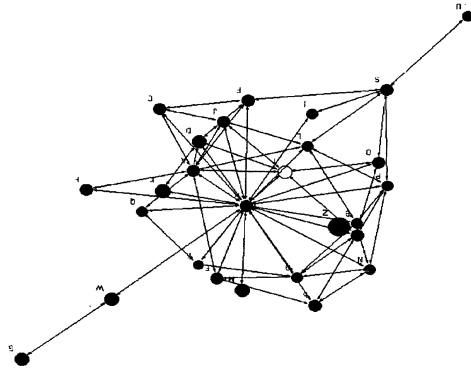
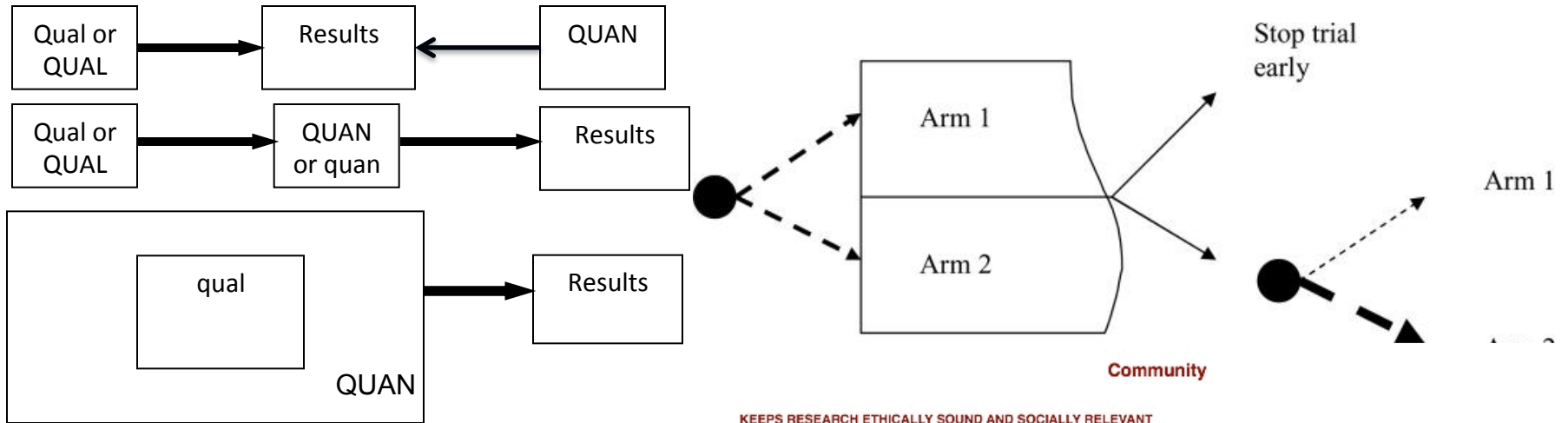


SIC
Chamberlain et al, 2012

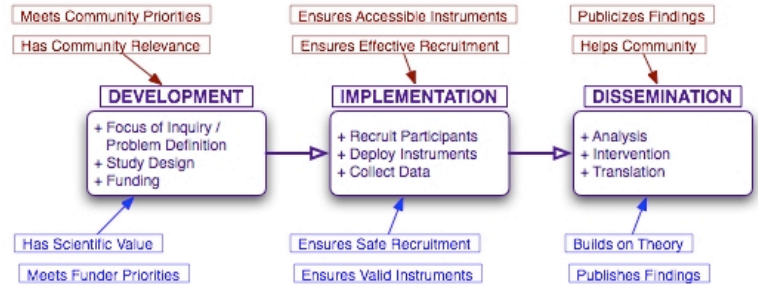
RE-AIM
(Glasgow, 2009)



Implementation methods



KEEPS RESEARCH ETHICALLY SOUND AND SOCIALLY RELEVANT



KEEPS RESEARCH SCIENTIFICALLY SOUND AND ACADEMICALLY RELEVANT

Researchers

Mixed Methods and Models

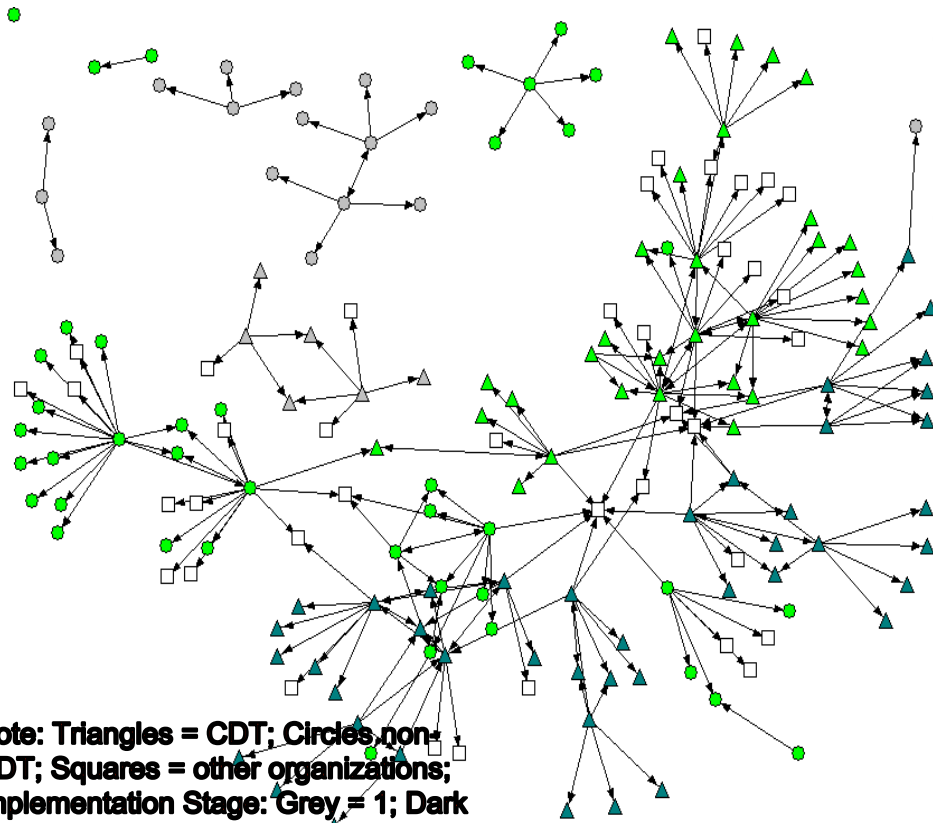


- EBP Implementation in Child-Serving Systems
 - Social Networks
 - Use of Research Evidence
 - Systems Leaders Models
 - Research-Practice-Policy Partnerships
 - Cultural Exchange

Social networks and implementation



Social network members by intervention condition and implementation stage



Note: Triangles = CDT; Circles, non-CDT; Squares = other organizations; Implementation Stage: Grey = 1; Dark green = 2; Bright green = 3.

Regression of implementation stage on centrality, county size and urban/rural classification (n = 137)

Variable	B	SE	t-value	p-value
In-degree Centrality	0.16	0.07	2.26	0.03
Out-degree centrality	0.01	0.02	0.61	0.54
Large county	0.43	0.14	3.14	0.00
Urban county	0.47	0.15	3.24	0.00

(Source: Palinkas et al., 2011)



Model of inter-organizational EBP implementation collaboration

Outer Context

Availability of funds
Govt. mandates
County size
Same clients

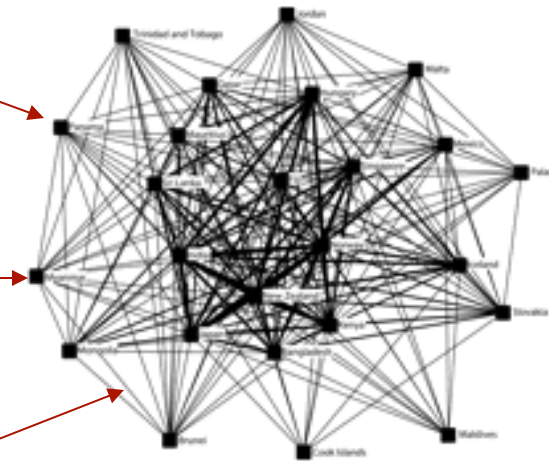
Collaboration characteristics

Focus
Formality
Frequency

Inner context

Intra-organizational culture
Extra-organizational culture
Characteristics of individual actors

Stage of
implementation



Use of research evidence and implementation

Implementation outcomes				
Cluster mean SIEU scores	Furthest SIC Stage	Proportion of activities		
		Pre- implementation	Implementation	Sustainment
	B (SE)	B (SE)	B (SE)	B (SE)
Input	3.16 (1.50)*	0.17 (0.16)	0.53 (0.24)*	5.14 (2.33)**
Process	2.60 (1.60)	0.30 (0.16) [§]	0.43 (0.26) [§]	2.22 (2.26)
Output	1.41 (1.43)	0.04 (0.15)	0.25 (0.23)	2.18 (2.10)
Total	4.18 (1.82)*	0.29 (0.19)	0.70 (0.30)*	5.98 (3.09)*
Total CEI score	0.13 (0.04)***	0.01 (0.004)*	0.03 (0.01)***	0.04 (0.06)

[§] p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001

^a Controlling for county, year, state, and treatment condition

^b Controlling for county, year, state, treatment condition, and collaborator



Lessons Learned from Semi-structured Interviews

- Systems leaders use three other types of evidence when considering whether to seek and apply research evidence in making decisions:
 - evidence of resources necessary and available for making use of research evidence (supply),
 - evidence of the need for research evidence, usually obtained from local conditions of client and service needs (demand), and
 - personalized evidence gained from experience (i.e., is the research evidence consistent with practice experience).

(Source: Palinkas et al., 2015)

Barriers to and facilitators of adoption of innovative and evidence-based practices in state-supported mental health clinics



Barriers

Costs	Capacity	Acceptability
<ul style="list-style-type: none">• Financial – costs• Financial – loss of staff• Lost productivity• Time for training• Organizational impacts• EBP requirements	<ul style="list-style-type: none">• Financial - reimbursement• Organizational• Lack of staff• Leadership• Environmental constraints• Lack of technical support	<ul style="list-style-type: none">• Staff buy-in• Client fit and buy-in• Organizational fit and buy-in

Facilitators

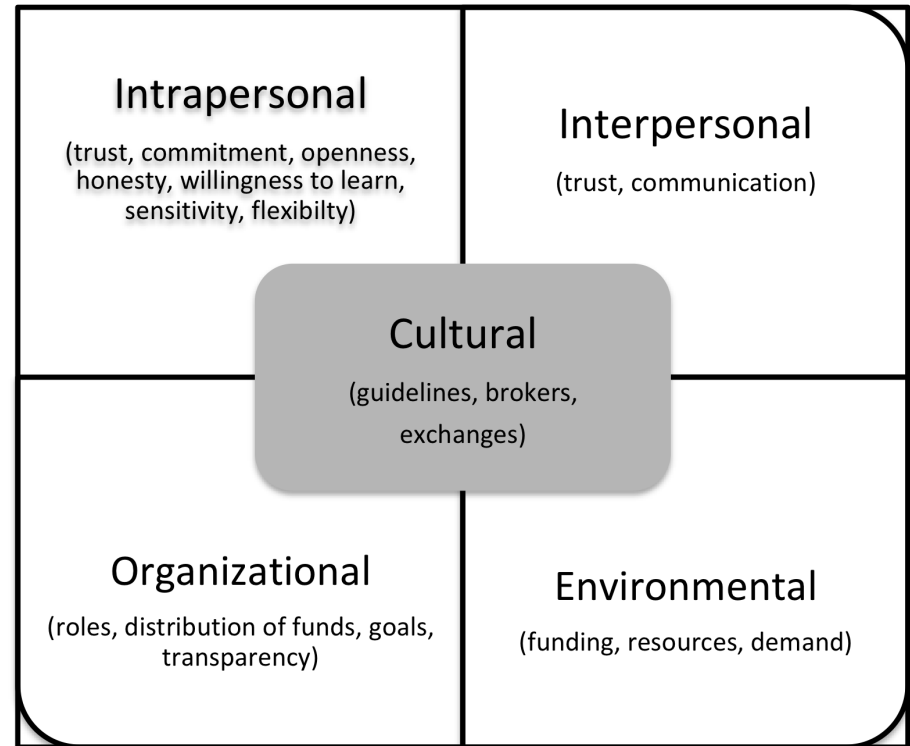
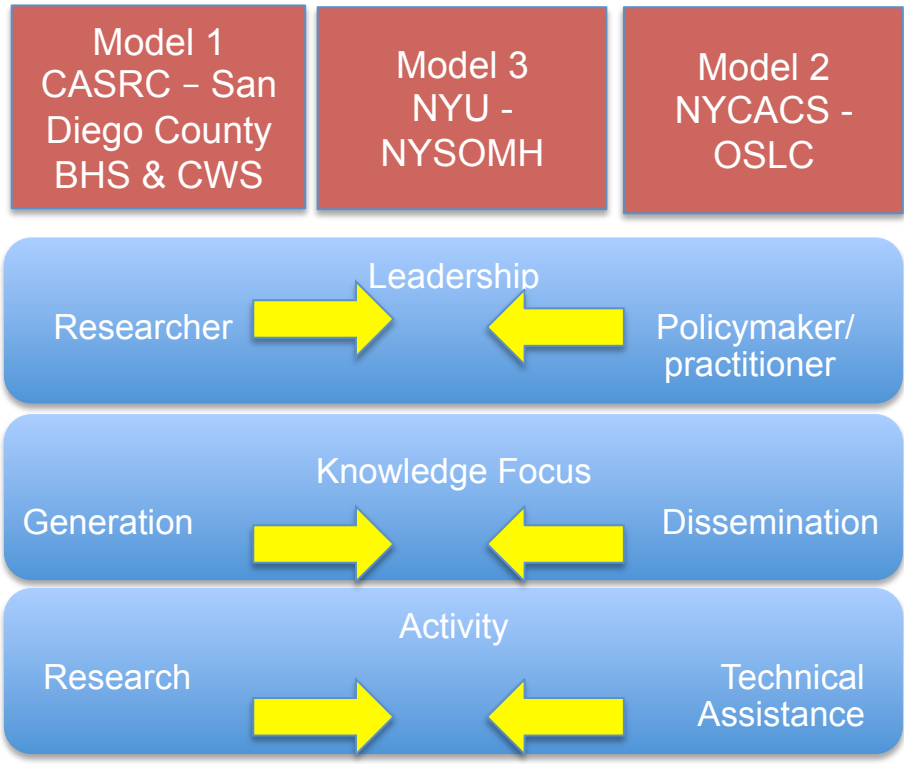
Costs	Capacity	Acceptability
<ul style="list-style-type: none">• Free/low cost• Little impact on organization	<ul style="list-style-type: none">• Available training• Money/financial support• Leadership support• Evidence of positive outcomes• Available trained staff• Organizational capacity and resources• EBP flexibility• Available supervision• Regulatory mandate	<ul style="list-style-type: none">• Staff motivation to change• Client need• Supportive organizational culture and fit

Principles of Behavioral Economics



1. People tend to be overly oriented to the present rather than the future (**temporal discounting**); they are more concerned about losing something they have than about gaining something they have not yet experienced (**loss aversion**); and they are very sensitive to **monitory incentives**, especially those that are most tangible.
2. People are cognitively limited, **using heuristics** or rules of thumbs to make complex decisions rather than going through all possible choices; they exhibit **decision fatigue**, which accounts for a preference for less rather than more choice; and they are influenced by how choices are framed (**framing**).
3. People's preferences are influenced greatly by the environment and can be **manipulated**, especially through advertising.

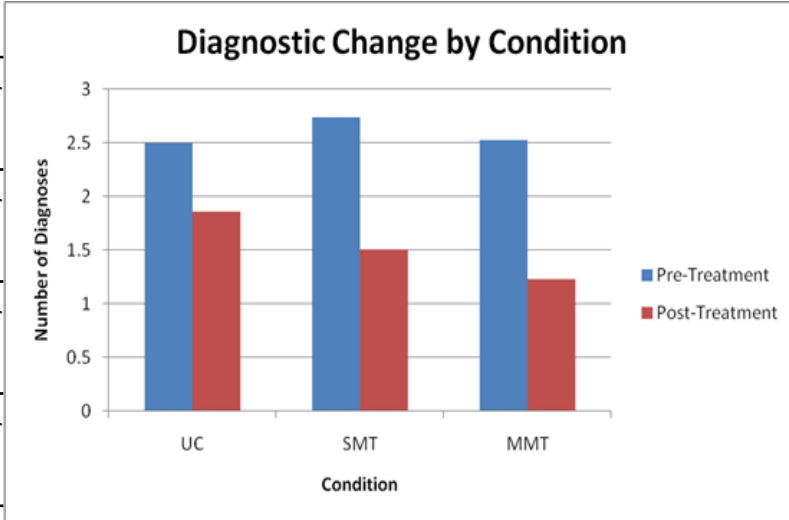
A new model of research-practice-policy partnerships





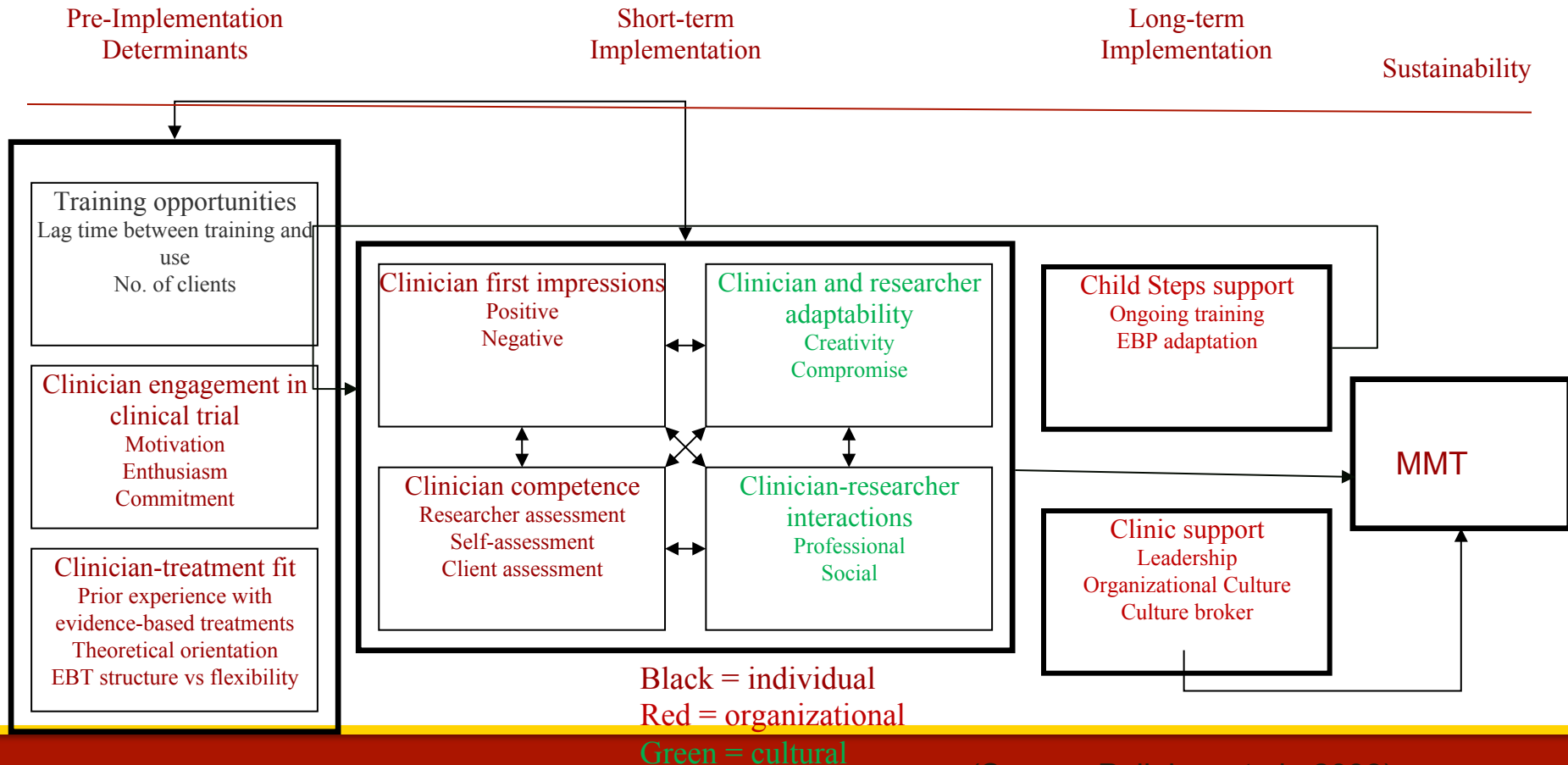
Coefficient Estimates for Group by Log-day for Overall Scores (Youth + Parent-report Random Effects Analyses; N=174 for Each Analysis) and Diagnostic change from pre- to post-treatment by study condition

Rater	SMT vs UC			MMT vs UC	
	Interaction	p-value	ES	Interaction ¹	p-value ES ²
Brief Problem Checklist Internalizing Score	0.014	.852	.04 51	-0.179	.014
Brief Problem Checklist Externalizing Score	0.059	.424	.17 48	-0.164	.023
Brief Problem Checklist Total Score	0.070	.569	.12 59	-0.346	.004
Mean Severity Rating on Top Three Problems	-0.043	.578	.12 62	-0.226	.003





Model of EBP Implementation in Randomized Clinical Effectiveness Trials



(Source: Palinkas et al., 2008)

Cultural exchange and implementation



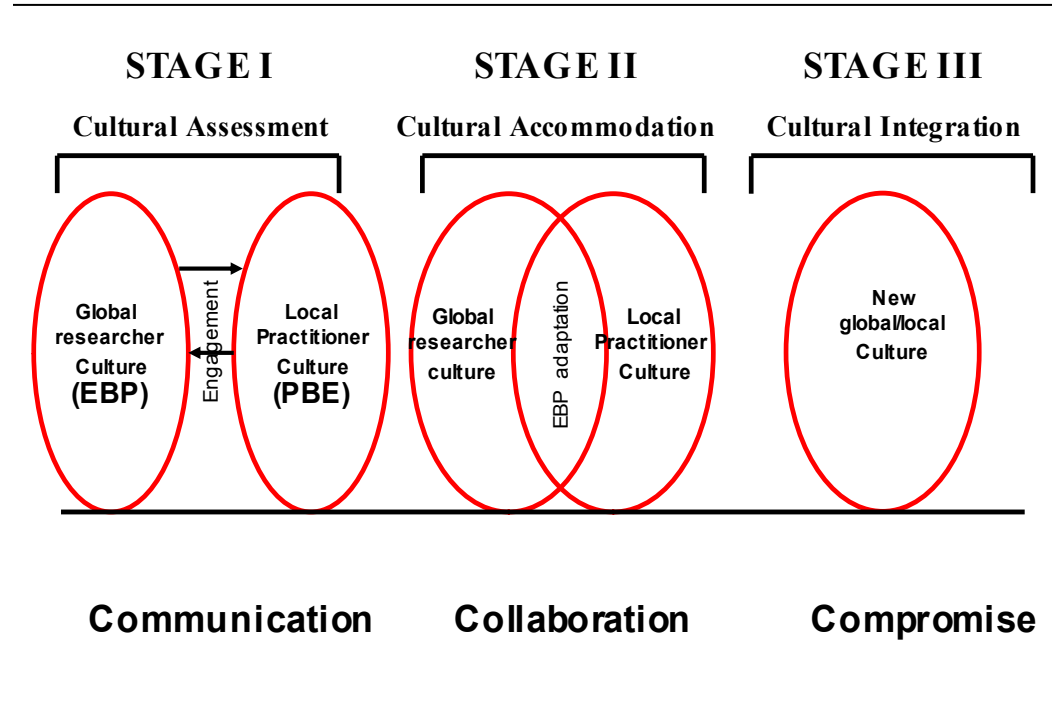
Regression of Stages of Implementation Completion Outcomes on Cultural Exchanges by Type of Collaborations

CEI mean score	Implementation outcomes			
	Furthest SIC Stage	Proportion of activities completed		
		Pre-implementation	Implementation	Sustainment
B (SE)	B (SE)	B (SE)	B (SE)	
Exchange Process				
Intermediary organizations ^a	0.33 (0.11)**	0.043(0.01)*	0.05 (0.02)**	0.20 (0.15)
Treatment developer ^a	0.24 (0.06)**	0.02 (0.01)*	0.05 (0.01)**	0.02 (0.10)
Agencies in same county ^a	0.20 (0.12)	0.03 (0.01)*	0.03 (0.02)	-0.17 (0.17)
Agencies in other counties ^a	0.13 (0.07)	0.01 (0.01)	0.03 (0.01)*	-0.12 (0.11)
All collaborations ^b	0.14 (0.03)***	0.01 (0.004)**	0.03 (0.01)***	-0.02 (0.05)
Exchange Outcomes				
Intermediary organizations ^a	0.32 (0.13)*	0.04 (0.01)*	0.05 (0.02)*	0.19 (0.17)
Treatment developer ^a	0.29 (0.08)**	0.02 (0.01)*	0.06 (0.01)**	0.13 (0.12)
Agencies in same county ^a	0.12 (0.12)	0.01 (0.01)	0.02 (0.02)	0.15 (0.21)
Agencies in other counties ^a	0.15 (0.08)	0.02 (0.01)	0.03 (0.01)*	-0.12 (0.12)
All collaborations ^b	0.13 (0.04)**	0.01 (0.004)*	0.03 (0.01)**	0.04 (0.06)

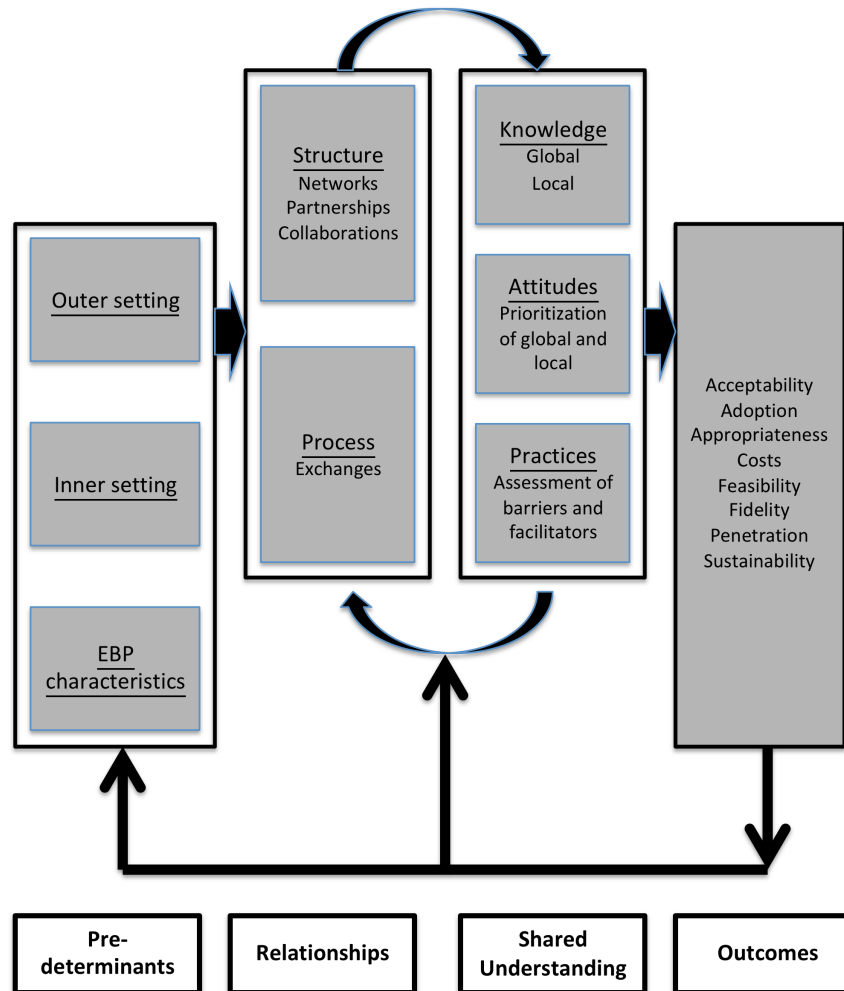
* p < 0.05, ** p < 0.001

a. Controlling for county, year, state, and treatment condition

b. Controlling for county, year, state, treatment condition, and type of collaboration



Transactional Model of EBP Implementation



Mixed Methods and Measures



- Identify core components and their interrelationships across time for sustainability of prevention programs and their support infrastructures.
- Design a measurement system for monitoring and providing feedback regarding sustainment.
- Pilot test the predictability of the Sustainment Measurement System (SMS) and the feasibility and acceptability of this system to evaluate and improve sustainment likelihood.

SAMHSA Ce-PIM Partnership



- Four SAMHSA Prevention Programs:
 - Strategic Prevention Framework State Initiative Program (SPF-SIG) (3 grantees, 17 staff, 2 GPOs)
 - Drug-Free Communities Support Program (DFC)/ Sober Truth on Preventing Underage Drinking (STOP ACT) (2 grantees, 7 staff, 3 GPOs)
 - Garrett Lee Smith State and Tribal Youth Suicide Prevention (GLS) (3 grantees, 10 staff, 2 GPOs)
 - Implementing Evidence-Based Prevention Practices in Schools (PPS) (2 grantees, 6 staff, 2 GPOs)



Methods

• Data Collection

- Open-ended questions about experience with implementation and sustainment and identification of barriers and facilitators to sustainment.
- Free list exercise to elicit participant conceptions of what is meant by the term sustainment, what elements of their program they wish to see sustained, and what it will take to sustain those program elements.
- Checklist of domain elements from the Consolidated Framework for Implementation Research (CFIR: Damschroder et al., 2009).



Methods

• Data Analysis

- Inductive thematic analysis based on coding, consensus, co-occurrence and comparison (Willms et al, 1992)
- Enumeration and categorizations of weighted free list items using constant comparison.
- Percent of informants citing CFIR domain as high or very high importance.
- Mean domain score (0 = not important, 1 = yes/no, 2 = important, 3 = very important).

Table 1.1 Themes and subthemes identified from semi-structured interview questions



Theme	Examples
Requirements	
Funding	<p>"Funding. Let's just be very clear. Funding is very important. Continued funding."(STOP-ACT grantee)</p> <p>"Well, I think that in order to sustain human resources, capital people working on it full time, I'd say it absolutely takes money." (SPF-SIG grantee)</p>
Consistency with organizational culture	"I think that one of the... I don't know if it would make or break the continuation but I think its impactful is agency culture for lack of a better expression." (GLS grantee)
Coalition/collaborator	"We built a sustainability team, to look at their authorizing environment, to look at the value they're producing in the community ... those people who give you authority to do the good things you want to do in your community; and help them think through sustainability through that lens." (SPF-SIG grantee)
Positive Outcomes	<p>"We saw a decrease of unwanted behaviors of students in the classrooms that had the consistency with implementation of the Good Behavior Game" (PPS grantee)</p> <p>"If the outcomes were comparable with modes of service delivery in terms of preventing hospitalization for re-attempts or serious episodes of suicide ideation, then... I think you have an evaluation that is really designed to learn about the compared effectiveness of mode of service delivery within which you would not only contribute to the evidence base for what works, but also trying to make a compelling case for these services to become fundable outside of the grant stream" (GLS grantee)</p>
Evaluation	"Set up a monitoring instrument and an evaluative tool initially as you start out and set and look for milestones and periodic benchmarks. To make sure it's moving in the right direction."
Planning	"If they submitted a community readiness plan, I am a firm believer that doing one is going to give us a glimpse of existing efforts in community, is leadership on board, is there knowledge in the community, do they have resources. Do they have a word for suicide? Usually, when grant begins, folks are off running. Spend your money, spend your money. They are not being very strategic. What I am doing with folks I am working with, I say stop, don't do that. Let's be more strategic. (GLS GPO)
Champion	"...a full-time person...to oversee the program. That doesn't mean that the process itself is gone just because a full time person isn't there. But it does mean that you don't have that dedication. You may not have that resource capital that you need to do things with the intensity that you want to have them done. So, when you got a full time person, that's someone that's devoted to providing that program constantly, beginning with the social norms campaign now or getting the word out constantly." (SPF-SIG grantee)
Infrastructure/capacity	"Because we are funded right now, we can...we have the capacity to essentially have enough staff to manage that kind of volume"
Institutionalization	"For me, it becomes how does it start to become institutionalized. In some ways, you create this blueprint, this plan and while in these first couple of years, we don't meet everything, that's still there. That's still the goal. How do we move it forward so those things continue to happen." (SPF-SIG grantee)

Percent of free list nominations of definition of sustainment, recommendations for what should be sustained, and requirements to sustainment



	GLS N=11	PPS N=5	SPF- SIG N=18	STOP- Act N=7	Total N = 39
	%	%	%	%	%
Definition of sustainability					
Funding	18.2	60.0	55.6	42.8	46.1
Partnership	27.3	20.0	27.8	28.6	28.2
Capacity/infrastructure	18.2	20.0	27.8	28.6	25.6
Coalitions/collaboration/networking	9.1	20.0	44.4	0.0	25.6**
Continuity	18.2	40.0	33.3	0.0	25.6
Positive outcomes	27.3	20.0	27.8	0.0	23.1
Utility/translation/value	18.2	20.0	22.2	28.6	23.1
Support	9.1	20.0	27.8	0.0	17.9
Resources	0.0	20.0	33.3	0.0	17.9*
Evaluation/monitoring/data collection	9.1	60.0	16.7	0.0	17.9**
Community support	18.2	0.0	27.8	0.0	17.9

CFIR Domain Percent of Importance by SAMHSA Program



Topic/Description	GLS	PPS	SPF- SIG	STOP- Act	Total
	%	%	%	%	%
III. INNER SETTING					
Access to knowledge and information about the program	83.3	100.0	93.8	100.0	92.3
Nature and quality of networks and communications between organizations	100.0	60.0	87.5	83.3	89.5
Perception of current situation as intolerable or needing change	91.7	80.0	100.0	60.0	89.5**
Goals and feedback	91.7	80.0	87.5	100.0	89.7
Engagement of leaders in implementing and sustaining program	72.7	100.0	93.8	100.0	89.5
Available resources dedicated for implementing and sustaining program	66.7	100.0	87.5	100.0	84.6*
Shared perception of program importance	58.3	80.0	87.5	83.3	76.9
Norms, values and guiding principles of these organizations	50.0	100.0	81.3	50.0	69.2
Structural characteristics of organizations responsible for implementing program	50.0	80.0	66.7	83.3	65.8

The Sustainment Measurement System



RESPONSIVENESS TO COMMUNITY NEEDS AND VALUES (n = 7)

The project delivered meets the needs of the intended target populations.	1	2	3	4	5
The project addresses the behavioral health needs of the communities/populations being served.	1	2	3	4	5
The project can be adapted to meet the needs of the communities or populations being served.	1	2	3	4	5
The project is consistent with the norms, values and guiding principles of participating organizations.	1	2	3	4	5
The project fits well with the values of the organization(s) responsible for sustaining it and the communities where it is being sustained.	1	2	3	4	5
Participating organizations have a shared perception of the importance of the project.	1	2	3	4	5
The current social or health issue addressed by the project is perceived as intolerable or unacceptable to the community.	1	2	3	4	5



Thank You

Questions?

For more information, contact
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