# New Developments in the Use of Mixed Methods in Implementation Research

*Lawrence A. Palinkas, PhD*

*Albert G. and Frances Lomas Feldman Professor of Social Policy and Health*

USC School of Social Work

University of Southern California

# Presentation Objectives

- Describe research on three interrelated facets of EBP implementation
  - Provider social networks
  - Use of research evidence
  - Perceptions of implementation barriers and facilitators
- Focus on EBP implementation in public youth-serving systems
  - Child welfare
  - Specialty child mental health
  - Juvenile justice
- Illustrate use of mixed method designs in implementation research

# What are Mixed Methods?

- A methodology that focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies.
- Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone.

(Cresswell & Plano Clark, 2007)

# Mixed Method Designs

- Combine the qualitative and quantitative approaches into the research methodology of a single study or multi-phased study.
  - Not merely parallel play
  - A model of and for interdisciplinary research
- Simultaneously answer confirmatory and exploratory questions, and therefore verify and generate theory in the same study (Teddlie & Tashakkori, 2003).

# Reasons for using mixed method designs in intervention research

- Quantitative methods to measure intervention and/or implementation outcomes and qualitative methods to measure process.
- Qualitative methods to explore a phenomenon and generate a conceptual model along with testable hypotheses and quantitative methods to confirm the validity of the model by testing the hypotheses.
- Quantitative methods to examine intervention content and qualitative methods to examine context.
- Quantitative methods to incorporate research perspectives and qualitative methods to incorporate consumer perspectives into research.
- Use one set of methods to address limitations of the other.

# Social Networks and Implementation of Evidence-Based Practice in Public Youth-Serving Systems

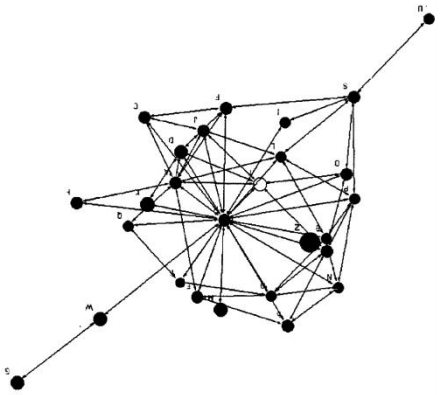
PI: Lawrence A. Palinkas, Ph.D.
University of Southern California
Co-PI: Patricia Chamberlain, Ph.D.
Oregon Social Learning Center

Funded by the William T. Grant Foundation, #9493

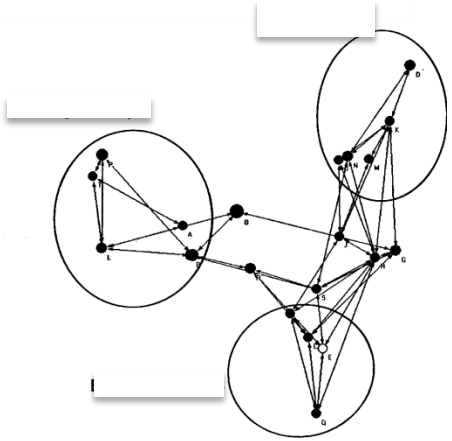
# Background

- Interpersonal contacts within and between organizations and communities are important influences on the adoption of new behaviors (Rogers, 2003; Palinkas, Allred, & Landsverk, 2005; Brekke, Ell, & Palinkas, 2007).
- Both the influence of trusted others in one's personal network and having access and exposure to external information are important influences on rates of adoption of innovative practices (Valente, 2010; Valente et al., 2007; Valente et al., 2011 ).

Agency A
Centralized
network



Agency B
Decentralized network



# The CAL-OH Study

- Objective: Determine whether community development teams (CDTs) are more effective than services as usual in “scaling up” implementation of MTFC
  - MTFC: EBP for youth who otherwise would be in congregate care and are placed in well supported foster homes
  - CDTs: Key stakeholders from multiple levels (system leaders, organizations/agencies, practitioners, consumers) who are provided with peer-to-peer exchanges, Locally informed planning (including financing), needs-benefit analysis, monitoring and support, fidelity focus, and technical assistance
- Design:  Adaptive or rolling RCT in which 40 California and 11 Ohio counties are randomized into two conditions (CDT vs SU)
  - Matched into 4 equivalent cohorts to deal with feasibility (8 equivalent groups)
  - Then randomized to 2 conditions (CDT or IS)
  - Wait-list feature

# Study Specific Aims

- Describe the structure and operation of influence networks of public-youth-serving systems participating in the first cohort of the CAL-OH Study.
- Determine the influence of these networks on decisions related to participation in the CAL-OH Study during the pre-implementation and implementation phases.
- Identify the personal and contextual factors that influenced the operation of these networks within the context of the CAL-OH Study.

# Methods

- Semi-structured interviews with 38 agency directors and senior administrators in 12 California counties (MTFC Cohort 1)
  - County response rate (12/13 = 92.3%)
  - Individual response rate (38/45 = 84%)
- Web-based survey of social network structure (n=30) in which each participant was asked to identify up to 10 people for whom they relied for advice on whether and how to use evidence-based practices for meeting the mental health needs of youth served by their agency
  - Examination of Network characteristics of 176 person network using UCINet
- Stage of Implementation Checklist (SIC: Chamberlain et al., 2010) to measure progress made in implementation from engagement to sustainability

# Stages of Implementation Completion (SIC)

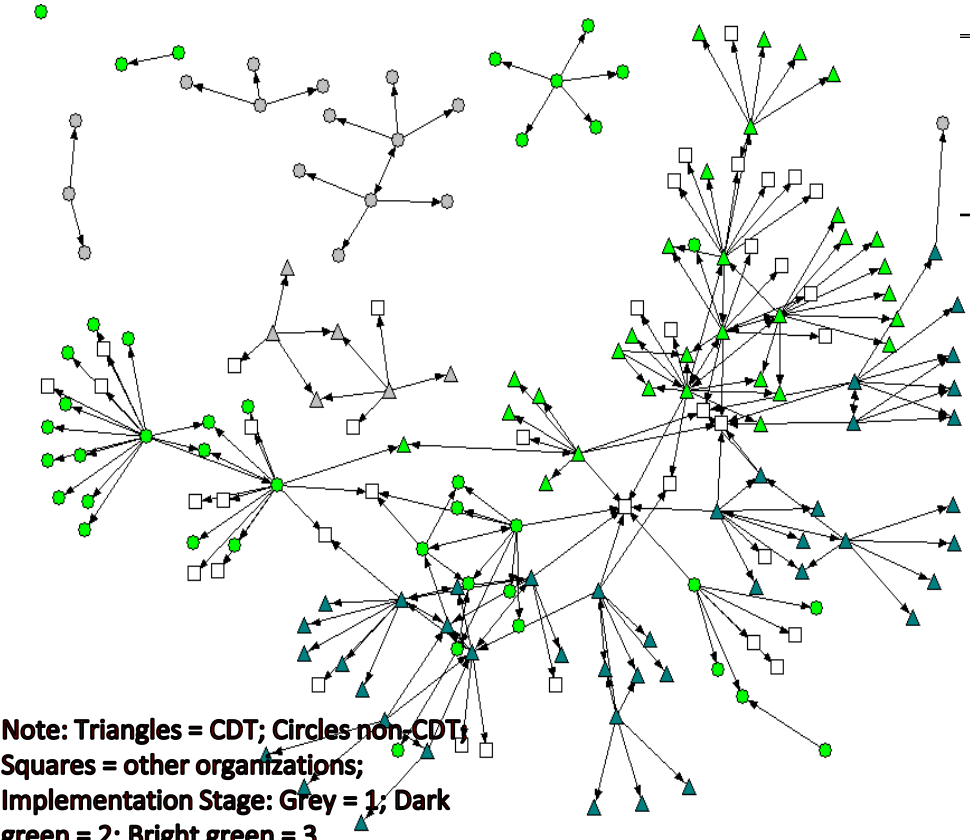
| 8 Stages: | Involvement: |
|---|---|
| 1. Engagement | System Leader |
| 2. Consideration of Feasibility | System Leader, Agency |
| 3. Readiness Planning | System, Agency |
| 4. Staff Hired and Trained | Agency, Practitioner |
| 5. Adherence Monitoring Established | Practitioner, Client |
| 6. Services and Consultation begin | Practitioner, Client |
| 7. Ongoing Services, Consultation, Fidelity Monitoring, Feedback | Practitioner, Client |
| 8. Competency (certification) | System Leader, Agency, Practitioner, Client |

# Examples of SIC Items

- Stage 2: Consideration of Feasibility
  * Date of first contact for pre-implementation planning
  * Date first in-person meeting held
  * Date feasibility questionnaire completed

- Stage 3: Readiness Planning
  * Date of cost/funding plan review
  * Date of staff sequence, time-line, hire plan review
  * Date of foster parent recruitment review
  * Date of referral criteria review
  * Date of communication plan review
  * Date of second in-person meeting held
  * Date written implementation plan complete

## Social network members by intervention condition and implementation stage

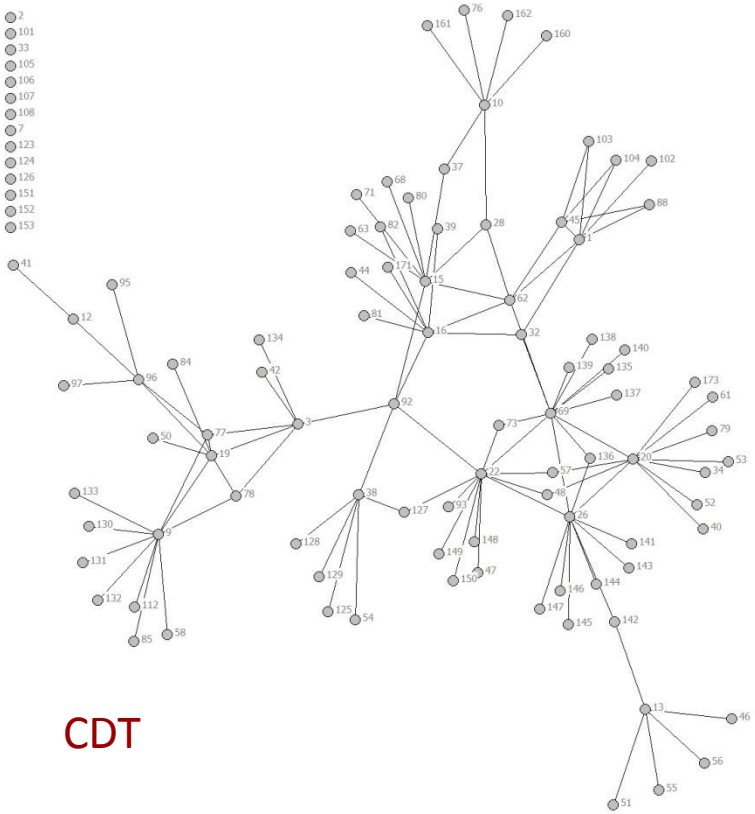


Note: Triangles = CDT; Circles non-CDT; Squares = other organizations; Implementation Stage: Grey = 1; Dark green = 2; Bright green = 3.

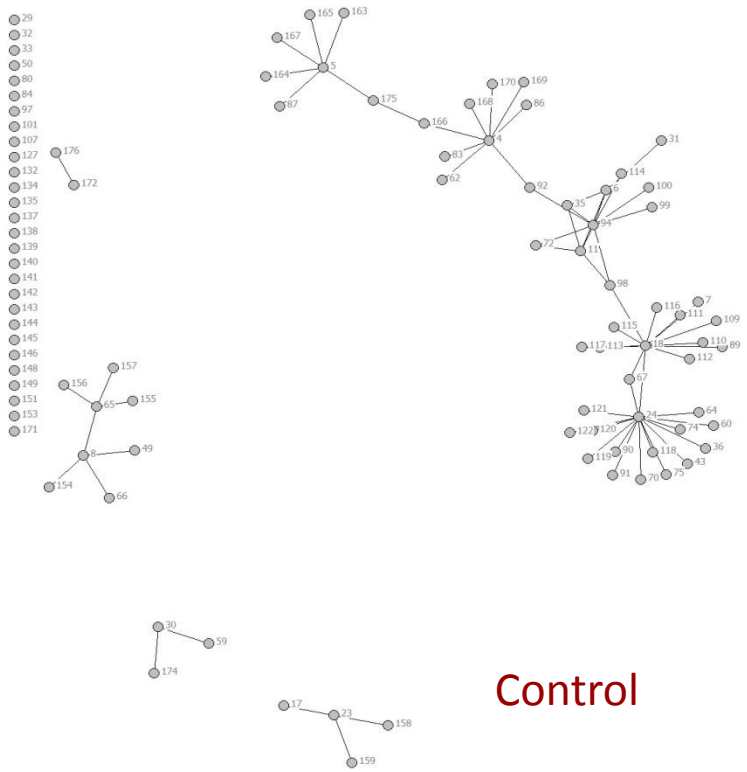
## Regression of implementation stage on centrality, county size and urban/rural classification (n = 137)

| 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 |

# Results



CDT



Control

Figure 2: Treatment and Control Conditions w/ Non-County Actors

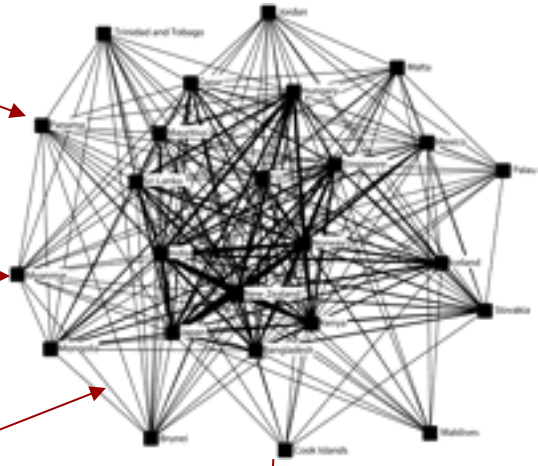
# Themes from Qualitative Data

- Systems leaders develop and maintain networks of information and advice based on roles, responsibility, geography, and friendship ties.
- Social networking is central to implementation of EBPs through two mechanisms,
  - Acquisition of information and advice related to EBPs
  - Pooling of resources among agencies
- Both mechanisms involve collaboration between organizations

# 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**

# Conclusions

- Successful implementation of evidence-based practices requires consideration and utilization of existing social networks of high status systems leaders that often cut across service organizations and their geographic jurisdictions for sharing of information and resources.

# Innovation and the Use of Research Evidence in Public Youth-Serving Systems

PI: Lawrence A. Palinkas, Ph.D.
University of Southern California
Co-PI: Patricia Chamberlain, Ph.D.
Oregon Social Learning Center
Co-PI: C. Hendricks Brown, Ph.D.
Northwestern University
Co-I: Antonio Garcia, Ph.D.
University of Pennsylvania

Funded by the William T. Grant Foundation No. 10648

# Background

- Little is known regarding when, how, and under what conditionsresearch evidence is used in policy and practice that affect youth, and how its use can be improved.
- How do policy-makers gain access to, evaluate, and apply research evidence in their decision-making?

# Study Specific Aims

- Aim 1. Understand and measure the use of research evidence by decision makers of public youth-serving agencies.
- Aim 2. Prospectively determine whether use of research evidence predicts stage of EBP implementation.

# Aim 1. Methods

- Semi-structured interviews and focus groups to assess how systems leaders determine a practice is evidence-based and how they acquire information, evaluate it, and apply it in making decisions about adopting and implementing new programs and practices.
- Development of two new measures
  - Structured Interview for Evidence Use (SIEU)
  - Cultural Exchange Inventory (CEI)
- Web-based survey of 156 leaders of county child welfare, juvenile justice and mental health systems participating in the CAL-OH study, 10 leaders in other counties and states other than California and Ohio, and 37 state-level systems leaders participating in the AAIMS Study (total = 202).

# Structured Interview for Evidence Use (SIEU)

| Factor | No. of items | Mean | Reliability |
|---|---|---|---|
| Input | 17 | 2.89 | .80 |
| Acquisition from network members | 7 | 2.61 | .75 |
| Acquisition from experts | 5 | 3.08 | .73 |
| Acquisition from documents and published materials | 5 | 3.10 | .71 |
| Process | 16 | 3.80 | .86 |
| Self assessment of validity and reliability | 9 | 3.82 | .88 |
| Self assessment of relevance | 4 | 4.06 | .71 |
| Assessment by others | 3 | 3.42 | .74 |
| Output | 12 | 3.22 | .80 |
| Use the evidence to make or support decisions | 8 | 3.65 | .80 |
| Ignore the evidence | 4 | 3.18 | .84 |
| Total Use of Research Evidence | 45 | 3.38 | .88 |

# Aim 2 Methods

- **Participants**
  - 140 directors and senior administrators of child welfare, mental health and juvenile justice systems in 40 California and 11 Ohio counties participating in an RCT of the use of community development teams to scale up implementation of Multidimensional Treatment Foster Care over a 3 year period (2010-12).
  - Grouped into 45 clusters, defined as 3 or more participants from 2 or more organizations in a county in a specific year.
    - Average of 4 participants per cluster (range = 3 – 8)

# SIC Variables

- Most advanced stage achieved in a specific year
- Stage Duration - Amount of time between first and last activity completed within a Stage
- Proportion of activities completed within each stage

# Table 1. SIC measures by average use of research evidence

| SIEU measures | SIC Stage | Duration | Proportion of activities | | |
|---|---|---|---|---|---|
| | | | Phase 1 | Phase 2 | Phase 3 |
| | r | r | r | r | r |
| Input | .15¶ | .03 | -.10 | .29* | .37* |
| Process | .19 | .28 | .07 | .28 | .14 |
| Output | .29* | -.11 | .15 | .25 | .16 |
| Total SIEU score | .29* | .13 | .02 | .38** | .31* |

* $p < 0.05$; ** $p < 0.01$

¶ When SIC stage in divided into three categories (Stages 1-3, 4-7, and 8), $p = 0.026$

# Conclusion

- Engagement in URE was positively associated with stage of implementation
  - Especially in later phases/stages

# A qualitative study of barriers to adoption of innovative and evidence-based practices

Lawrence A. Palinkas, Ph.D.
Mee Young Um, M.A.
Chung Hyeon Jeong, M.S.W.
Briannon O'Connor, Ph.D.
Serene Olin, Ph.D.
Sarah M. Horwitz, Ph.D.
Kimberly Hoagwood, Ph.D.

Support: NIH-NIMH P30 MH090322

# Study Objective

- Identify most significant barriers and facilitators to innovation and adoption of EBPs as determined by agency and program directors
- Explore whether barriers and facilitators identified are associated with role in agency and level of adoption
- Explore whether consensus on barriers or facilitators is associated with level of adoption

# Methods

- Design and Participants
  - Exploratory qualitative study of 34 OMH-supported mental health clinics in New York State
  - Agencies purposefully sampled to represent different level of adoption based on highest intensity adopted
    - Non-adopters = no response to invitations to adopt (n= 11)
    - Low adopters = webinar (n = 5)
    - Medium adopters = in-person training (n = 6)
    - Super-high adopters = 1 or both LCs (n = 12)
  - Agency and Program Directors (n = 75)
    - Agency CEOs/VPs (n = 36)
    - Program Directors (n = 39)

# Methods

- Semi-structured interview
  - Three top barriers to adoption
  - Rate them on a scale of 1 to 5 (easy to difficult to overcome)
  - Top three facilitators

# Methods

- Analysis
  - Grounded theory approach (Glaser & Straus, 1967) of coding, consensus, co-occurrence and comparison (Willms et al., 2992)
    - **Coding**: Three levels using Dedoose qualitative software
    - **Consensus**: Achieved an average of 91.25% agreement across three levels of codes
    - **Comparison**: Used for classifying individual codes into larger groups
    - **Co-occurrence**: Examining association between themes and participant role and pace of adoption

# Methods

- Analysis
  - Template approach (Miller & Crabtree, 1992) to compare themes by stakeholder group and intensity of adoption
  - Comparison of agency directors with program directors based on percent agreement
    - Number of barriers and facilitators identified by both/total number of unique barriers
    - Barriers assigned a score of 3 or higher on 5 point scale of difficulty to overcome

# Barrier Themes

| Costs | Capacity | Acceptibilty |
| --- | --- | --- |
| • Financial – costs<br>• Financial – loss of staff<br>• Lost productivity<br>• Time for training<br>• Organizational impacts<br>• EBP requirements | • Financial - reimbursement<br>• Organizational<br>• Lack of staff<br>• Leadership<br>• Environmental constraints<br>• Lack of technical support | • Staff buy-in<br>• Client fit and buy-in<br>• Organizational fit and buy-in |

# Facilitator Themes

| Costs | Capacity | Accepaibilty |
| --- | --- | --- |
| • Free/low cost<br>• Little impact on organization | • Available training<br>• Money/financial support<br>• Leadership support<br>• Evidence of positive outcomes<br>• Available trained staff<br>• Organizational capacity and resources<br>• EBP flexibility<br>• Available supervision<br>• Regulatory mandate | • Staff motivation to change<br>• Client need<br>• Supportive organizational culture and fit |

# Barriers by Agency Role

| Barrier | Agency Director (n=36) | Program Director (n=39) | Total (n=75) |
|---|---|---|---|
| Costs | 81.8 | 88.2 | 85.2 |
| Financial | 48.5 | 44.1 | 46.3 |
| Loss of staff | 6.1 | 5.9 | 6.0 |
| Time | 33.3 | 70.6** | 52.2 |
| Organizational impact | 33.3 | 14.7 | 23.9 |
| EBP requirements | 3.0 | 11.8 | 7.5 |
| Capacity | 78.8 | 38.2*** | 58.2 |
| Organizational | 45.5 | 26.5 | 35.8 |
| Financial reimbursement | 21.2 | 0.0** | 10.4 |
| Training access | 9.1 | 0.0 | 4.5 |
| Environmental constraints | 21.2 | 5.9 | 13.4 |
| Leadership support | 0.0 | 5.9 | 3.0 |
| Lack of technical support | 0.0 | 5.9 | 3.0 |
| Acceptability | 54.5 | 58.8 | 56.7 |
| Staff fit and buy-in | 21.2 | 44.1* | 32.8 |
| Organizational fit | 6.1 | 17.6 | 11.9 |
| Client fit and buy-in | 30.3 | 14.7 | 22.4 |

# Facilitators by Agency Role

| Barrier | Agency Director (n=36) | Program Director (n=39) | Total (n=75) |
|---|---|---|---|
| Available training | 37.5 | 50.0 | 43.9 |
| Money/financial support | 37.5 | 41.2 | 39.4 |
| Available time | 21.9 | 17.6 | 19.7 |
| Leadership support | 15.6 | 17.6 | 16.7 |
| Evidence of positive outcomes | 18.8 | 11.8 | 15.2 |
| Staff motivation to change | 12.5 | 14.7 | 13.6 |
| Client need | 9.4 | 17.6 | 13.6 |
| Available supervision/consultation | 9.4 | 14.7 | 12.1 |
| Regulatory mandate | 12.5 | 8.8 | 10.6 |
| Organizational capacity and resources | 12.5 | 2.9 | 7.6 |
| Supportive organizational culture and fit | 12.5 | 5.9 | 9.1 |
| Available trained staff | 9.4 | 8.8 | 9.1 |
| EBP flexibility | 0.0 | 11.8* | 6.1 |
| Free/low cost | 9.4 | 2.9 | 6.1 |
| Little impact on organization | 6.3 | 5.9 | 6.1 |

# Costs/Capacity

- Program director:  Yeah, I mean, but it really all boils down to money.  Money is the only thing that disrupts the agency support of it.  And money's the only thing that disrupts staff being able to do it.  Meaning the pressure to produce billable hours really is the pressure that requires them to be booked all day long.  And that makes it hard to find thinking time, which makes it really almost impossible to adopt new practices.  So, it's really about the way clinics are reimbursed and the degree to which we have sort of pretty limited choice in how we structure clinicians days a result of the financial structure.

# Barriers by Level of Adoption

| Barrier | Non-adopter (n=21) | Low/medium adopter (n=22) | High-super adopter (n = 23) |
|---|---|---|---|
| Costs | 85.7 | 86.4 | 83.3 |
| Financial | 66.7 | 36.4 | 37.5 |
| Loss of staff | 9.5 | 0.0 | 8.3 |
| Time | 66.7 | 45.5 | 45.8 |
| Organizational impact | 14.3 | 27.3 | 29.2 |
| EBP requirements | 4.8 | 4.5 | 12.5 |
| Capacity | 42.9 | 59.1 | 70.8 |
| Organizational | 42.9 | 31.8 | 33.3 |
| Financial reimbursement | 0.0 | 18.2 | 12.5 |
| Training access | 0.0 | 4.5 | 8.3 |
| Environmental constraints | 9.5 | 9.1 | 20.8 |
| Leadership support | 0.0 | 4.5 | 4.2 |
| Lack of technical support | 0.0 | 4.5 | 4.2 |
| Acceptability | 52.4 | 72.7 | 45.8 |
| Staff fit and buy-in | 28.6 | 40.9 | 29.2 |
| Organizational fit | 9.5 | 9.1 | 16.7 |
| Client fit and buy-in | 23.8 | 31.8 | 12.5 |

# Facilitators by Level of Adoption

| Barrier | Non-adopter (n=21) | Low/medium adopter (n=22) | High-super adopter (n = 23) |
|---|---|---|---|
| Available training | 52.4 | 50.0 | 30.4 |
| Money/financial support | 61.9 | 31.8 | 26.1* |
| Available time | 28.6 | 31.8 | 0.0* |
| Leadership support | 4.8 | 9.1 | 34.8** |
| Evidence of positive outcomes | 14.3 | 9.1 | 21.7 |
| Staff motivation to change | 23.8 | 4.5 | 13.0 |
| Client need | 9.5 | 9.1 | 21.7 |
| Available supervision/consultation | 9.5 | 9.1 | 17.4 |
| Regulatory mandate | 23.8 | 0.0 | 8.7* |
| Organizational capacity and resources | 0.0 | 9.1 | 13.0 |
| Supportive organizational culture and fit | 4.8 | 0.0 | 21.7* |
| Available trained staff | 14.3 | 9.1 | 4.3 |
| EBP flexibility | 0.0 | 9.1 | 8.7 |
| Free/low cost | 4.8 | 4.5 | 8.7 |
| Little impact on organization | 0.0 | 13.6 | 4.3 |

* P < 05, ** p < 0.01

# Consensus on barriers and facilitators by level of adoption

| Adopter category | Barriers Percent agreement | | Facilitators Percent agreement | |
|---|---|---|---|---|
| | Multiple | 3 categories | Multiple | 3 categories |
| Non-adopter | 24.4 | 56.0 | 18.8 | 52.9 |
| Low-medium adopter | 26.1 | 60.0 | 23.1 | 58.8 |
| Super-high adopter | 15.4 | 55.6 | 7.6 | 65.0* |

Note: 3 categories refer to 3 themes of costs, capacity and acceptability

* $P < 0.05$

# Conclusion

- Organizations assess EBPs and other innovations in terms of costs, capacity and acceptability.
- This suggests a behavioral economic model of implementation that differs from the typical inner/outer context models
  - Greater emphasis on avoiding costs than seeking benefits
- These themes are not discrete but interconnected
  - Availability of funding associated with capacity
  - Staff buy-in associated with capacity

# Conclusion

- Assessment of barriers and facilitators varies by role within an organization and by an organization's level of engagement in implementation activities.
  - Agency directors more concerned about financial reimbursement and organizational capacity.
  - Program directors more concerned about time for training and staff buy-in and EBP flexibility.
  - Money/financial support, available time, and regulatory mandate inversely associated with level of adoption.
  - Leadership support and supportive organizational culture and fit positively associated with level of adoption.

# Conclusion

- Level of adoption not associated with consensus on barriers because of different roles of participants but may be associated with consensus on facilitators.
  - Barriers and facilitators are linked but not merely the opposites of one another.
  - Consensus within an organization as to specific facilitators and barriers is a potential predictor of EBP adoption and implementation.