Measurement of Implementation Process: The Structured Interview of Evidence Use (SIEU) and Cultural Exchange Inventory (CEI)

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Acknowledgments

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• Patricia Chamberlain, Ph.D.
• Funded by the William T. Grant Foundation (# 10648), NIMH (R01 MH076158, R01MH076158-05S1, P30 MH074678), and Children’s Bureau
• Innovation and the Use of Research Evidence in Public Youth-Serving Systems
  – PI: Lawrence Palinkas, Co-PIs: Patricia Chamberlain C. Hendricks Brown
  – Aims
    ▫ Understand and measure the use of research evidence by decision makers of public youth-serving agencies
    ▫ Identify factors that predict the use of research evidence
    ▫ Determine whether consensus on use of research evidence is associated with stage of implementation of an evidence-based practice (MTFC)
Scaling up MTFC 2006-2012

Collaborators:
- Center for Research to Practice (Chamberlain, Saldana, & Padgett)
- California Institute for Mental Health (Marsenich, & Sosna)
- University of Southern California (Palinkas)
- University of South Florida (Brown & Wang)

Randomized 40 California and 11 Ohio counties into 2 conditions:
- Community Development Teams (CDT)
- Individualized services “as usual” (IS)
- Matched into 4 equivalent cohorts to deal with feasibility (8 equivalent groups)
- Then randomized to 2 conditions (CDT or IS)
- Wait-list feature

Which produces better implementation of MTFC?
- Measured by the Stages of Implementation Completion (SIC)
- Also tests mediators and moderators

The study is funded by the following:
NIH, WT Grant Foundation, and the DHHS Children’s Administration.
Innovation and the Use of Research Evidence

Methods

– Qualitative
  • 1 focus group with 8 CW directors and 18 semi-structured interviews with JJ or MH directors
  • Participant observation of 4 CDT meetings

– Quantitative
  • Creations of instruments to measure use of research evidence and cultural exchanges among key stakeholders
  • Data collection using new survey instruments
  • Matching with data collected from MTFC Study
### Sample

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (mean, sd)</strong></td>
<td>50.11</td>
<td>9.07</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male (n, %)</td>
<td>54</td>
<td>30.3</td>
</tr>
<tr>
<td>Female (n, %)</td>
<td>124</td>
<td>69.7</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian (n, %)</td>
<td>151</td>
<td>85.8</td>
</tr>
<tr>
<td>Non-Caucasian (n, %)</td>
<td>25</td>
<td>14.2</td>
</tr>
<tr>
<td><strong>Physical Location</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California (n, %)</td>
<td>108</td>
<td>59</td>
</tr>
<tr>
<td>Ohio (n, %)</td>
<td>75</td>
<td>41</td>
</tr>
<tr>
<td><strong>Member Role</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program Administrator (n, %)</td>
<td>15</td>
<td>8.2</td>
</tr>
<tr>
<td>Program Supervisor (n, %)</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>System Leader (n, %)</td>
<td>157</td>
<td>85.8</td>
</tr>
<tr>
<td><strong>Type of Agency</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child Welfare (n, %)</td>
<td>69</td>
<td>38.5</td>
</tr>
<tr>
<td>Mental Health (n, %)</td>
<td>41</td>
<td>22.9</td>
</tr>
<tr>
<td>Juvenile Justice (n, %)</td>
<td>38</td>
<td>21.2</td>
</tr>
<tr>
<td>Other (n, %)</td>
<td>31</td>
<td>17.3</td>
</tr>
<tr>
<td><strong>Highest Degree</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>16</td>
<td>9.1</td>
</tr>
<tr>
<td>2-4 yr college degree (n, %)</td>
<td>44</td>
<td>25</td>
</tr>
<tr>
<td>Master's degree (n, %)</td>
<td>96</td>
<td>54.5</td>
</tr>
<tr>
<td>Doctoral degree (n, %)</td>
<td>20</td>
<td>11.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>183</td>
<td></td>
</tr>
</tbody>
</table>
Structured Interview of Evidence Use

Three constructs

– Access to research evidence (20 items)
  • Primary
  • Secondary

– Evaluation of research evidence (20 items)
  • Validity
  • Reliability
  • Generalizability

– Use of research evidence (20 items)
  • What kind of evidence to rely on
  • When to ignore research evidence
## Structured Interview of Evidence Use

<table>
<thead>
<tr>
<th>When I need information or research evidence related to a particular program or intervention.</th>
<th>Not at all</th>
<th>Rarely</th>
<th>Occasionally</th>
<th>Often</th>
<th>All the time</th>
<th>Refuse to answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>I search the internet (e.g. Google or other general search engines)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>I rely on particular staff members of my agency to obtain it for me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
</tbody>
</table>

When judging the validity/reliability/generalizability of research evidence supporting a particular program or intervention I’m interested in.

<table>
<thead>
<tr>
<th>When deciding to adopt a new program or intervention in my county.</th>
<th>Not at all</th>
<th>Rarely</th>
<th>Occasionally</th>
<th>Often</th>
<th>All the time</th>
<th>Refuse to answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>I rely on people I know and trust to tell me if it is valid</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I see if the information is obtained from more than one source and is consistent</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

| I make site visits to counties that have already implemented the program | 1 | 2 | 3 | 4 | 5 | 9 |
| I tend to ignore the research evidence if there are no resources to implement the program | 1 | 2 | 3 | 4 | 5 | 9 |
Individual Measure Scale Development

• An initial pool of 60 items was generated based on qualitative data obtained from interviews and focus group
  – Likert scaled (0 = not at all; 5 = to a great extent)

• Factor analysis was conducted using Principal Axis factoring.

• Promax oblique rotation was used allowing for factor intercorrelations.

• Items were retained if they loaded at least .40 on the primary factor and < .30 on any other factor (e.g. Fabrigar, et al., 1999).
Parallel Analyses

- Parallel analyses engine that utilizes SAS based code (Patil et al., 2007)
- Calculates eigenvalues from randomly generated correlation matrices by relying upon number of variables in dataset and sample size
- Number of factors to retain are the number of eigenvalues generated from the analyses that are *larger* than the corresponding random eigenvalues (Horn, 1965)
Individual Measure Scale Benchmarks

1. Assess reliability of scale and subscales
2. Compare measure with system leader and organizational characteristics
   – Bivariate analyses
   – Multivariate analyses
SIEU Scales

- **Input**
  - (12-items; $\alpha = .76$)
  - The extent to which a system leader acquires research evidence, either from self-directed efforts or at the instigation of external sources.

- **Process**
  - (14-items; $\alpha = .85$)
  - The extent to which research evidence is evaluated for its validity, reliability, and generalizability to the system leader’s own county.

- **Output**
  - (15-items; $\alpha = .62$) or 12-items; $\alpha = .67$ (if delete items due to low alpha coefficients)
  - The extent to which research evidence is used or ignored by a systems leader when deciding whether or not to adopt or implement a new program or practice.

- **Total**
  - 41-items; $\alpha = .80$; mean = 3.26; SD= .90
  - 38-items; $\alpha = .81$; mean = 3.30; SD= .90
## “Input” Subscales

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Mean</th>
<th>S.D.</th>
<th>Eigen-Value</th>
<th>% variance</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Internal and external knowledge</td>
<td>2.63</td>
<td>.623</td>
<td>3.42</td>
<td>28.47</td>
<td>.69</td>
</tr>
<tr>
<td>2. Local experts and knowledge</td>
<td>2.78</td>
<td>.704</td>
<td>1.78</td>
<td>14.83</td>
<td>.75</td>
</tr>
<tr>
<td>3. Published Data</td>
<td>3.24</td>
<td>.730</td>
<td>1.45</td>
<td>12.05</td>
<td>.69</td>
</tr>
<tr>
<td>Total</td>
<td>2.83</td>
<td>.490</td>
<td>55.35</td>
<td></td>
<td>.76</td>
</tr>
</tbody>
</table>
## “Process” Subscales

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Mean</th>
<th>S.D.</th>
<th>Eigen-value</th>
<th>% Variance</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Availability of research evidence</td>
<td>3.69</td>
<td>.671</td>
<td>5.08</td>
<td>36.31</td>
<td>.88</td>
</tr>
<tr>
<td>2. Assess feasibility of implementation</td>
<td>4.08</td>
<td>.597</td>
<td>2.20</td>
<td>15.71</td>
<td>.76</td>
</tr>
<tr>
<td>3. Rely on external peers</td>
<td>3.39</td>
<td>.696</td>
<td>1.51</td>
<td>10.76</td>
<td>.73</td>
</tr>
<tr>
<td>Total</td>
<td>3.74</td>
<td>.492</td>
<td>62.78</td>
<td></td>
<td>.85</td>
</tr>
</tbody>
</table>

**Mean and Standard Deviation (S.D.)**

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Mean</th>
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<th>α</th>
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<tr>
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<td>.73</td>
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<tr>
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<td>.492</td>
<td>62.78</td>
<td></td>
<td>.85</td>
</tr>
</tbody>
</table>
## “Output” Subscales

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Mean</th>
<th>S.D.</th>
<th>Eigen-Value</th>
<th>% Variance</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Circumstances when evidence is ignored</td>
<td>2.83</td>
<td>.857</td>
<td>3.64</td>
<td>24.23</td>
<td>.85</td>
</tr>
<tr>
<td>2. Collect evidence and resources</td>
<td>3.55</td>
<td>.527</td>
<td>2.66</td>
<td>17.76</td>
<td>.77</td>
</tr>
<tr>
<td>3. Rely on positive outcomes</td>
<td>2.81</td>
<td>.642</td>
<td>1.50</td>
<td>10</td>
<td>.47</td>
</tr>
<tr>
<td>Total</td>
<td>3.16</td>
<td>.367</td>
<td></td>
<td>52</td>
<td>.62</td>
</tr>
<tr>
<td>Total (without Subscale 3)</td>
<td>3.25</td>
<td>.430</td>
<td></td>
<td>51.95</td>
<td>.67</td>
</tr>
</tbody>
</table>
Cultural Exchange Inventory

A series of Likert scale questions focusing on process and outcomes of exchange

– Process
  • Collaboration
  • Communication
  • Compromise

– Outcomes
  • Change in knowledge
  • Change in attitudes/opinions
  • Change in behavior/practice
Cultural Exchange Inventory

- Each set of questions relates to a specific partner in the collaboration
  - Treatment developer (TFCC, Inc.)
  - Intermediary Organizations
    - California Institute for Mental Health - California
    - Center for Innovative Practices - Ohio
  - Other agencies
    - In same county
    - In other counties
CEI Analyses

1) Significant amount of missing data with respect to:
   - Treatment developer
   - Intermediary Organizations
   - Agencies in “other” counties

2) Analyses focus on nature of cultural exchanges with other agencies in their county
   - More data collected n=73, but still 111 cases missing

3) EFA with MPLUS software to address missing data
   - FIML Framework
   - 108 cases retained
Cultural Exchange Inventory

On a scale of 1-7 with 1 = not at all and 7 = a great deal, please answer the following with respect to the other agencies in your county.

1. I feel like we are working together
2. I feel like we understand one another
3. I feel like we respect one another
4. I feel like they have learned something from me
5. I feel like I have learned something from them
6. I feel like they have changed their opinions about something because of me
7. I feel like I have changed my opinion about something because of them
8. I feel like my agency has changed our practices because of this collaboration
9. I feel like they have changed their practices because of this collaboration
10. I feel like I have devoted a lot of time and energy to maintain this collaboration
11. I feel like they have devoted a lot of time and energy to maintain this collaboration
12. I feel like they have answered all my questions
13. I feel like I have answered all their questions
14. I feel they have had to make some changes to accommodate my concerns or wishes.
15. I feel that I have had to make some changes to accommodate their concerns or wishes.
CEI Scales

- **Exchange Process**
  - 5-items; $\alpha = .91$
  - The extent to which providers understand and respect one another, address questions, and work well together

- **Exchange Outcomes**
  - 10-items; $\alpha = .91$
  - The extent to which providers modify opinions and practices, learn from each other, devote time to maintain collaborative relationship

- **Total**
  - 15-items; $\alpha = .92$
<table>
<thead>
<tr>
<th>Subscale</th>
<th>Mean</th>
<th>S.D.</th>
<th>Eigen-Value</th>
<th>% variance</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Exchange Process</td>
<td>5.86</td>
<td>1.02</td>
<td>8.02</td>
<td>14.93</td>
<td>.91</td>
</tr>
<tr>
<td>2. Exchange Outcomes</td>
<td>5.08</td>
<td>1.01</td>
<td>2.29</td>
<td>48.84</td>
<td>.91</td>
</tr>
<tr>
<td>Total</td>
<td>5.32</td>
<td>.904</td>
<td>63.73</td>
<td>.92</td>
<td></td>
</tr>
</tbody>
</table>
Sample Bivariate Results

1) Demographics
• Age positively correlated with (1) relying upon local experts and knowledge, (2) assessing feasibility of implementation, (3) relying on external peers, and (4) higher “process” scale scores

2) Member Role
• System leaders more likely than program supervisors to rely on local experts and knowledge, assess feasibility of implementation, and rely on external peers

3) Education
• Providers with doctoral degrees less likely to transform practice behaviors due to cultural exchanges than providers with 2-4 year and master’s degrees, and marginally more likely to rely on external peers than providers with 2-4 year college degrees.

4) Type of Provider
• Practice transformations resulting from exchange significantly higher among CW than “other” providers
Implications

• Expands efforts to measure extent to which providers
  a) Communicate and collaborate with one another to facilitate implementation of EBPs
  b) Access, evaluate, and use evidence to implement EBPs

• New domains identified
  a) CEI: Transformations and modifications of practice behaviors as a result of “cultural exchanges”
  b) SIEU: Several factor solutions identified among the three scales (input, process, output)

• Implications for future research
  a) Establish construct validity with new sample
  b) Determine whether measures are associated with or moderated/mediated by provider and organizational characteristics