Challenges and Successes of Multidisciplinary Team Science in the Context of Community-Based Participatory Research

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Disclosures

- The authors have nothing to disclose.
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Community-Based Participatory Research

• Community-based participatory research (CBPR)
  • Equitably involves all partners in research process
  • Recognizes unique strengths that each brings
  • Partnership drives the project
  • Combines knowledge with action
  • Achieves social change

• CBPR can facilitate the translation of evidence-based practice into community settings
Intervention: PARTNERS

Intervention Components
- Social Cognitive Problem-Solving and Leadership
- Parent and Family-Based Support
- Community Engagement and Partnership

Intervention Sites/Venues
- After School Programs within Schools, Recreation Centers, YMCA, Faith-Based Centers

Outcomes Evaluated
- Aggressive Behaviors
- Social Problem Solving
- Youth Leadership
- Youth Involvement in the Community
What is the Best Way to Measure Intervention Outcomes in CBPR?

- Researchers select measures with strong psychometric properties that may not fully assess outcomes relevant to the community.

- Community members may prefer to measure different constructs, but measures that have not been evaluated in terms of psychometric properties make it difficult to draw conclusions from the data.

- Can CBPR blend the measurement of researcher-defined and community-defined outcomes?
Overview

- Study 1: Develop community-defined indicators of a successful violence prevention program
- Study 2: Populate community-defined indicators with items from the researcher-defined measurement battery (Aim 1) and assess psychometric properties (Aim 2)
- Study 3: Compare convergence (Aim 1) and basic psychometrics (Aim 2) between a researcher-defined measure and a community-derived measure
Challenges of Team Science

- Communication
- Integrating discipline-specific conceptual and theoretical knowledge
- Differential access to resources
- Geographical distance between team members
- Competing career priorities
Study 1: Develop Community-Defined Indicators

- Indicators perceived by community members to be plausible outcomes of a successful violence prevention program were created (Hausman et al., 2009)
  - Focus groups were conducted with key groups of stakeholders within PARTNERS neighborhoods
  - 43 indicators of successful violence prevention programs were expressed by the participants
  - For example, “Increased Civility,” “Helping Others,” “Cleaner Streets and Neighborhoods”
Study 2: Populate Indicators with Items from the PARTNERS Assessment Battery (Aim 1)

- A researcher-community panel reviewed the battery of measures used to evaluate PARTNERS (Leff, Thomas, et al., 2010) from the perspective of the community-defined indicators.

- The assessment battery included 10 youth-report measures and 4 caregiver-report measures.

- The panel deconstructed the measures and reviewed individual items, rating their agreement to the match with the indicator (McDonald et al., 2012):
  - 270 youth-report items
  - 210 adult-report items

- Of the original 43 indicators, 17 were matched to preexisting PARTNERS evaluation data.
Study 2: Assess Psychometric Properties of Community-Defined “Measure” (Aim 2)

- **Proof of concept target outcome:** Effective Parenting (Hausman, Baker et al., submitted)

- **Researcher-defined measure:** Alabama Parenting Questionnaire Child and Parent Forms (APQ; Shelton, Frick, & Wootton, 1996)
  - Self-report
  - Strong psychometric properties
  - Adult (k = 39) and youth (k = 48) versions
  - Six core subscales (e.g., Parental Involvement, Positive Parenting, Poor Monitoring/Supervision, Inconsistent Discipline, Corporal Punishment, Other Discipline Practices)

- **Community-defined “measure”: “More Parental Involvement”**
  - Defined as parents being more involved in their children’s lives across home and school/community contexts
  - Adult and youth versions
PARTNERS Sample

- Baseline data collected from intervention and control participants

- Youth sample \((n = 125)\):
  - \(M_{\text{age}} = 11\) years
  - 62% female
  - All racial/ethnic minority group members; 81% African American
  - 58% live with mothers; 31% live with both parents

- Caregiver sample \((n = 95)\):
  - \(M_{\text{age}} = 42\)
  - 84% female
  - 89% African American
  - 51% single; 29% married
  - Approximates W and SW Philadelphia community with >70% having at least a high school diploma/GED; 25% living below the federal poverty level; 40% of adults in the workforce
“More Parental Involvement” Psychometric Properties

• Youth report
  • 22 APQ Youth items
  • $\alpha = .84$
  • 4-factor PCA explained 61% of the variance

• Caregiver report
  • 16 APQ Caregiver items
  • $\alpha = .79$
  • 2-factor PCA explained 57% of the variance
<table>
<thead>
<tr>
<th>Item</th>
<th>Item Text</th>
<th>F1: Relation and Connection with Dad</th>
<th>F2: Daily Interactions with Mom</th>
<th>F3: Special Activities with Mom</th>
<th>F4: Attitudes-Practices Both Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td>APQ7a</td>
<td>You play games or do other fun things with your dad.</td>
<td>0.86</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ14a</td>
<td>Your dad asks you what your plans are for the coming day.</td>
<td>0.85</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ11a</td>
<td>Your dad helps you with your homework.</td>
<td>0.81</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ9a</td>
<td>Your dad asks you about your day in school.</td>
<td>0.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ15a</td>
<td>Your dad takes you to a special activity.</td>
<td>0.78</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ26a</td>
<td>Your dad goes to a meeting at school like a PTA meeting or parent/teacher conference.</td>
<td>0.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ1a</td>
<td>You have a friendly talk with your dad.</td>
<td>0.74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ20a</td>
<td>Your dad talks to you about your friends.</td>
<td>0.66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ14</td>
<td>Your mom asks you what your plans are for the coming day.</td>
<td>0.74</td>
<td>0.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ20</td>
<td>Your mom talks to you about your friends.</td>
<td>0.64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ26</td>
<td>Your mom goes to a meeting at school, (PTA, parent/teacher conference).</td>
<td>0.58</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ9</td>
<td>Your mom asks you about your day in school.</td>
<td>0.51</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ1</td>
<td>You have a friendly talk with your mom.</td>
<td>0.47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ11</td>
<td>Your mom helps you with your homework.</td>
<td>0.44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ5</td>
<td>Your parents reward or give something extra to you for behaving well.</td>
<td>0.44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ15</td>
<td>Your mom takes you to a special activity.</td>
<td></td>
<td></td>
<td>0.84</td>
<td></td>
</tr>
<tr>
<td>APQ4</td>
<td>Your mom helps with some of your special activities (such as sports, boy/girl scouts, church youth groups).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ7</td>
<td>You play games or do other fun things with your mom.</td>
<td>0.65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ19†</td>
<td>You go out without a set time to be home.</td>
<td>0.76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ24†</td>
<td>Your parents get so busy that they forget where you are and what you are doing.</td>
<td>0.74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ2</td>
<td>Your parents tell you that you are doing a good job.</td>
<td>0.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APQ17†</td>
<td>Your parents do not know the friends you are with.</td>
<td>0.31†</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. *Value is less than 0.4 but retained because of added meaning and no other competing factor loading value; †items are reverse-scored.
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>F1: Activity With Child</th>
<th>F2: Parenting Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>APQ1</td>
<td>You have a friendly talk with your child.</td>
<td>.93</td>
<td></td>
</tr>
<tr>
<td>APQ2</td>
<td>You let your child know when he/she is doing a good job with something.</td>
<td>.85</td>
<td></td>
</tr>
<tr>
<td>APQ20</td>
<td>You talk to your child about his/her friends.</td>
<td>.83</td>
<td></td>
</tr>
<tr>
<td>APQ7</td>
<td>You play games or do other fun things with your child.</td>
<td>.83</td>
<td></td>
</tr>
<tr>
<td>APQ14</td>
<td>You ask your child what his/her plans are for the coming day.</td>
<td>.76</td>
<td></td>
</tr>
<tr>
<td>APQ9</td>
<td>You ask your child about his/her day in school.</td>
<td>.72</td>
<td></td>
</tr>
<tr>
<td>APQ15</td>
<td>You take your child to a special activity.</td>
<td>.63</td>
<td></td>
</tr>
<tr>
<td>APQ4</td>
<td>You volunteer to help with special activities that your child is involved in (such as sports, boy/girl scouts, church youth groups).</td>
<td>.62</td>
<td></td>
</tr>
<tr>
<td>APQ5</td>
<td>You reward or give something extra to your child for obeying you or behaving well.</td>
<td>.33*</td>
<td></td>
</tr>
<tr>
<td>APQ21†</td>
<td>Your child is out after dark without an adult with him/her.</td>
<td></td>
<td>.86</td>
</tr>
<tr>
<td>APQ32†</td>
<td>Your child is at home without adult supervision.</td>
<td>.75</td>
<td></td>
</tr>
<tr>
<td>APQ17†</td>
<td>Your child is out with friends you don’t know.</td>
<td>.75</td>
<td></td>
</tr>
<tr>
<td>APQ19†</td>
<td>Your child goes out without a set time to be home.</td>
<td>.71</td>
<td></td>
</tr>
<tr>
<td>APQ26</td>
<td>You attend PTA meetings, parent/teacher conferences, or other meetings at your child’s school.</td>
<td>.55</td>
<td></td>
</tr>
<tr>
<td>APQ24†</td>
<td>You get so busy that you forget where your child is and what she/she is doing.</td>
<td>.54</td>
<td></td>
</tr>
<tr>
<td>APQ11</td>
<td>You help your child with his/her homework.</td>
<td>.43</td>
<td></td>
</tr>
</tbody>
</table>

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Study 3: Compare Researcher-Defined Measure with Community-Defined “Measure” (Aim 1)

- **Aim 1**: Evaluate convergence between researcher- and community-defined measures (Baker & Hausman, 2012)

- **Aim 2**: Compare basic psychometrics between the researcher- and community-defined measures
Convergence Results: Youth Report

Community-Defined “Measure”:

- More Parental Involvement
  - APQ Parental Involvement (Mother) (90%)
  - APQ Parental Involvement (Father) (80%)
  - APQ Positive Parenting (33%)
  - APQ Poor Monitoring/Supervision (30%)
  - APQ Inconsistent Discipline (0%)
  - APQ Other Discipline Practices (0%)
Convergence Results: Caregiver Report

Community-Defined “Measure”:

More Parental Involvement

APQ Parental Involvement (90%)

APQ Positive Parenting (33%)

APQ Poor Monitoring/Supervision (60%)

APQ Inconsistent Discipline (0%)

APQ Other Discipline Practices (0%)
Study 3: Compare Researcher-Defined Measure with Community-Defined “Measure” (Aim 2)

- **Aim 1:** Evaluate convergence between researcher- and community-defined measures

- **Aim 2:** Compare basic psychometrics between the researcher- and community-defined measures (Baker & Hausman, 2012)
### Comparing Basic Psychometrics: Youth Report

<table>
<thead>
<tr>
<th>Researcher-Defined Measure Subscales</th>
<th>PARTNERS α (APQ α)</th>
<th>Community-Defined “Measures”</th>
<th>PARTNERS α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental Involvement (Mother)</td>
<td>.80 (.72)</td>
<td>More Parental Involvement</td>
<td>.82</td>
</tr>
<tr>
<td>Parental Involvement (Father)</td>
<td>.90 (.85)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive Parenting</td>
<td>.72 (.76)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor Monitoring</td>
<td>.70 (.72)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inconsistent Discipline</td>
<td>.53 (.53)</td>
<td>More Adults Intervening for Youth</td>
<td>.49</td>
</tr>
<tr>
<td>Other Discipline Practices</td>
<td>.57 (n/a)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Comparing Basic Psychometrics: Caregiver Report

<table>
<thead>
<tr>
<th>Researcher-Defined Measure Subscales</th>
<th>PARTNERS $\alpha$ (APQ $\alpha$)</th>
<th>Community-Defined “Measures”</th>
<th>PARTNERS $\alpha$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental Involvement</td>
<td>.84 (.79)</td>
<td>More Parental Involvement</td>
<td>.66</td>
</tr>
<tr>
<td>Positive Parenting</td>
<td>.75 (.80)</td>
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<td>.49 (n/a)</td>
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</table>

Implications

- Using community-defined “measures” appears to maintain adequate levels of internal consistency and improve validity.

- CBPR has the potential to blend the measurement of researcher-defined and community-defined outcomes.
  - Community-defined “measures” may be the best of both worlds.

- Created from preexisting data.
  - Not all community-defined indicators can be created from preexisting psychometrically strong measures.

- **Next step**: Comparison between intervention outcomes as measured by researcher- and community-defined measures.
Challenges of Team Science

• Worked to develop a shared vocabulary
• Integrated discipline-specific conceptual and theoretical knowledge
• Divided responsibility and worked together
• Differential access to resources
• Thought creatively about meeting times and spaces
• Geographical distance between team members
• Ensured that each team member benefited from our collaboration
• Competing career priorities
Outcomes of Team Science

- Strong, innovative ideas about measurement in CBPR, which have been
  - Presented nationally
  - Published in peer-reviewed journals
  - Featured in several federal and foundation grant applications

- Ongoing collaboration with team members on these and other ideas

- Ongoing mentor-mentee relationships crossing disciplines

- Ongoing commitment to multidisciplinary team science within this and other projects
Thank You

- Alice J. Hausman, PhD, MPH, Department of Public Health, Temple University
- Eugene Komaroff, PhD, Department of Public Health, Temple University
- Nicole Thomas, MBA, Community Consultant
- Terry Guerra, MS, ACHIEVEability
- Bernadette Hohl, PhD, Perelman School of Medicine at the University of Pennsylvania
- Stephen S. Leff, PhD, Children’s Hospital of Philadelphia and Perelman School of Medicine at the University of Pennsylvania
- The rest of the PCVPC Team
- The youth, families, and community partners in W and SW Philadelphia who made this project possible!
Questions?

- Children
- University
- Community
- Schools
- Teachers
- Parents