The Role of Clinical Significance in Outcome Evaluation

Why Outcomes
(Jacobs, 2003; Ogles, Lambert, & Fields, 2002)
- Demonstrate efficacy
  - Ethical responsibility
  - Securing funding
- Evaluate current practices
  - Agency level goal attainment
  - Re-evaluate service provision/selection criteria
  - Training and personnel decisions

Process of Outcome Assessment
(Kozh, Lewis, & McColl, 1998)
- Pre-investigation decisions
  - Standardized
  - Normative information available
- Data collection
- Data analysis
  - Typically we evaluate using statistical significance

Statistical Significance
- Based solely upon probability and group data
- Influenced by clinically extraneous factors
- Limited ability to qualify change

Early Conceptualizations of Clinical Significance
(McGlinchey, Atkins, Jacobson, 2002; Ogles, Lutten & Bonasteel, 2001)
- Large portion of clients improving
- A change which is large in magnitude
- An improvement in everyday functioning
- Elimination of presenting problems
- Attained level of functioning cannot be discerned from non-deviant peers
- Reliable change and recovery
  (Jacobson & Truax, 1991)

Comparison
Clinical Significance
- Generated at the individual level
- Statistically robust – sample size, outliers
- Norm based
Statistical Significance
- Generated at the group level
- Statistically vulnerable
- Probability based
Reliable Change
(Jacobson, Follette, & Revenstorf, 1984)

Does the client’s reported change exceed measurement error?

- Identify a cutoff for reliable change based upon the Standard Error of Measurement for the selected outcome measure.
- Compare an individual’s change score with the cutoff to determine the reliability of change.

Cutoff Establishment

- Some measures provide the cutoffs in the user’s manual (e.g. The Ohio Scales; reference)
- 1) Identify the reliability coefficient ($r_{xx}$) and the standard deviation ($s$)
- 2) Compute the Standard Error of Measurement

$$SE = s \sqrt{(1 - r_{xx})}$$

3) Compute cutoff

$$\text{Reliable Change} \geq 1.96 \times 2(\text{SE})^2$$

<table>
<thead>
<tr>
<th>Scale</th>
<th>Reliable Change Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beck Depression Inventory</td>
<td>9</td>
</tr>
<tr>
<td>Ohio Scales – Parent</td>
<td>10</td>
</tr>
<tr>
<td>Problem Severity</td>
<td></td>
</tr>
<tr>
<td>Child Behavior Checklist</td>
<td>9</td>
</tr>
<tr>
<td>Total Problem</td>
<td></td>
</tr>
</tbody>
</table>

Recovery
(Jacobson, Follette, & Revenstorf, 1984)

Has the client moved from a clinical level of symptom manifestation to a normative level of symptom manifestation?

- Some measures provide a clinical cutoff score
- Can be computed based upon normative data.

Methods of Determining Recovery

1) Two standard deviations
2) Calculated based upon a weighted average

$$\text{Threshold} = \frac{s_0 M_1 + s_1 M_0}{s_0 + s_1}$$
Recovery
(Ogles, Lambert, & Fields, 2002)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Cutoff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beck Depression Inventory</td>
<td>13</td>
</tr>
<tr>
<td>Ohio Scales – Parent Problem Severity</td>
<td>25</td>
</tr>
<tr>
<td>Child Behavior Checklist</td>
<td>42</td>
</tr>
<tr>
<td>Total Problem</td>
<td></td>
</tr>
</tbody>
</table>

Clinical Examples

- Data collected during the State of California’s pilot test of an alternative Children’s Performance Outcome System
- General Characteristics
  - Children receiving out patient services by state sponsored facilities
  - Data collected using the Ohio Scales – Short Form

Clinical Example 1

Sample Characteristics

<table>
<thead>
<tr>
<th>Sample Size</th>
<th>101</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Diagnosis</td>
<td>Disruptive Behavioral Adjustment Disorder</td>
</tr>
<tr>
<td>Gender</td>
<td>76.9 % Male</td>
</tr>
<tr>
<td>Age</td>
<td>11.84 (3.63)</td>
</tr>
<tr>
<td>OS-A Functioning Time 1</td>
<td>44.50 (11.26)</td>
</tr>
<tr>
<td>OS-A Functioning Time 2</td>
<td>48.57 (12.86)</td>
</tr>
<tr>
<td>Change in Functioning</td>
<td>4.07 (12.07)</td>
</tr>
</tbody>
</table>

Statistical Significance Findings

- Pre-post Functioning Mean Comparison
  - Significant Change \((t = 3.388, p = .001)\)
- Effect Size Calculation
  - \(d = .33\); Small to medium effect

Statistical Significance

Clinical Significance
Reliable Change

Putting it Together

Clinical Example 2
Sample Characteristics
Sample Size 28
Primary Diagnosis PTSD
Gender Female
Age 11.52 (3.63)
OS-A Functioning Time 1 47.61 (10.13)
OS-A Functioning Time 2 52.14 (12.69)
Change in Functioning 4.54 (12.08)

Statistical Significance Findings
- Pre-post Functioning Mean Comparison
  - Significant Change ($t = -1.98, p > .05$)
- Effect Size Calculation
  - $d = .39$ (Small to moderate effect)
Usefulness of Clinical Significance

- Provides clinically meaningful data
- Allows for individual and small group analysis
- Allows for preliminary investigations of negative/positive change factors

References


Special Editions:
- Clinical Psychology: Research and Practice (2001)