Solidifying Outcomes: Mounting evidence for the transformational wilderness experience

Matt Hoag, Ph.D.
Katie Missey, MSW, MSH
Sean Roberts, MS

Methods

Results

Conclusions

In perspective

Lessons Learned

Introduction

Contact Information

Challenges

Responses

Future Directions
Solidifying Outcomes: Mounting evidence for the transformational wilderness experience

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Introduction

Need for Evaluative Research
- Growth in the wilderness therapy industry
- Demand for mental health services and lack of them
- Estimated 10,000 clients each year in wilderness
- Improvement in Outcome Research in Wilderness
  - OSBRC - Keith Russell - since 1999
  - NATSAP Research Committee - since 2006

Second Nature Pilot Study
- Significant and reliable change on adolescent client and parent assessments, as well as young adult client assessments
- Clients also demonstrated more hope, life skills, optimism, problem solving abilities, and felt better about themselves

Challenges
- Difficulty conducting research in a clinical setting
- Response rates and attrition
- Parent participation

Research Questions
- Do students change while in wilderness therapy?
- When does change occur?
- Does change remain 6 months after wilderness therapy?
- What factors influence positive outcome in Wilderness therapy?
- Demographics, diagnosis, student's attitudes and sense of self

Background
-Literature review of psychotherapy with children/adolescents
- Over 1,500 controlled trials of therapy
- 500 forms of therapy with children/adolescents
- Lack of empirical research
- What worked for whom?
- Expectation for evidence-based practice in mental health
- Fundamental need to evaluate programs and outcomes
- Accountability to clients and families, the CAA, insurance, and accrediting bodies
Background

• Kazdin – review of psychotherapy with children/adolescents
  • Over 1500 controlled trials of therapy
  • 550 forms of therapy with children/adolescents
  • Lack of empirical research
  • What works? For whom?

• Expectation for evidence-based practices in mental health
  • Fundamental need to evaluate programs and outcomes
  • Accountability to clients and families, the GOA, insurance, and accrediting bodies
Need for Evaluative Research

• Growth in the wilderness therapy industry
  • Demand for mental health services and lack of them
  • Estimated 10,000 clients each year in wilderness

• Improvement in Outcome Research in Wilderness
  • OBHRC – Keith Russell – since 1999
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Second Nature Pilot Study

- Significant and reliable change on adolescent client and parent assessments, as well as young adult client assessments
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- Challenges
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Research Questions

• Do students change while in wilderness therapy?

• When does change occur?

• Does change remain 6 months after wilderness therapy?

• What factors influence positive outcome in wilderness therapy?
  • Demographics, diagnosis, student’s attitudes and sense of self
Methods

- Response rates: 658 adolescents, 196 adults

- Independent variable
- Dependent variable

- "Nothing you do affects me. I'm independent."
- "Some things you do affect me."

Participants
- [List of participants]

- [Additional notes and diagrams]
Nothing you do affects me

—I'm independent.

Some things you do
affect me.

Independent variable

Dependent variable
• Enrollment:
  • Adults - May 2011 - June 2012
  • Adolescents – June 2011 – June 2012

• Eligibility
  • Consent form
  • At least 5 weeks in the program

• 844 Participants: 658 adolescents; 186 adults

• Measures
  • Adults: OQ-45.2, LEQ, DAS, CMOTS
  • Adolescents: YOQ-SR, YOQ 2.01, LEQ, TEQ
Response rates: 658 adolescents, 186 adults

<table>
<thead>
<tr>
<th>Stage</th>
<th>Adolescents</th>
<th>Parents</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intake</td>
<td>99%</td>
<td>80%</td>
<td>85%</td>
</tr>
<tr>
<td>Week 3</td>
<td>91%</td>
<td></td>
<td>82%</td>
</tr>
<tr>
<td>Week 5</td>
<td>89%</td>
<td>49%</td>
<td>81%</td>
</tr>
<tr>
<td>Discharge</td>
<td>82%</td>
<td>60%</td>
<td>70%</td>
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<tr>
<td>**6 Months Post Discharge</td>
<td>54%</td>
<td>63%</td>
<td>43%</td>
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Participants: Age

- Adolescents: \( N = 658 \)
  - Average = 15.8 years old

- Adults: \( N = 186 \)
  - Average = 20.3 years
# Participants

## Adolescents
- Gender
  - 32% females (209)
  - 68% males (449)
- Parents Marital Status
  - 65% Together (394)
  - 35% Not together (214)
- Adoption status
  - 17% Adopted (111)
- Average length of stay
  - 10.3 weeks

## Adults
- Gender
  - 18% females (33)
  - 82% males (153)
- Parents Marital Status
  - 73% Together (129)
  - 27% Not together (48)
- Adoption status
  - 14% Adopted (26)
- Average length of stay
  - 10.1 weeks
Primary diagnosis

Adolescents

- Behavior: 18%
- Anxiety: 18%
- Substance: 20%
- Mood: 38%
- Attachment: 3%
- Other: 3%

Adults

- Mood: 39%
- Anxiety: 13%
- Substance: 30%
- Behavior: 5%
- PDD: 6%
- Attachment: 4%
- Other: 3%
Results

Demographics

Adolescents

Adults

Other measures

Diagnosis
Adults

Young adults paired t-tests
Change from intake to discharge on all measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean difference</th>
<th>95% CI</th>
<th>t</th>
<th>df</th>
<th>Sig (2 tailed)</th>
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<tr>
<td>DAS</td>
<td>25.36</td>
<td>18.23</td>
<td>32.58</td>
<td>6.906</td>
<td>116</td>
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<tr>
<td>LQ</td>
<td>0.9%</td>
<td>1.30</td>
<td>0.75</td>
<td>8.4.67</td>
<td>122</td>
</tr>
<tr>
<td>CMQTS</td>
<td>3.24</td>
<td>5.20</td>
<td>1.16</td>
<td>2.094</td>
<td>137</td>
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</table>

Young adult paired z-test
Change 6 months after discharge on the OQ

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean difference</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Discharge to 6 months post</td>
<td>8.58</td>
<td>-16.34</td>
<td>62.57</td>
<td>1.451</td>
<td>17</td>
</tr>
<tr>
<td>Intake to 6 months post</td>
<td>20.68</td>
<td>16.35</td>
<td>24.42</td>
<td>5.016</td>
<td>42</td>
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</tbody>
</table>
Young Adult OQ

- RCI = 14
- Cut off score: 63 points

OQ Scores

Intake  Week 3  Week 5  Discharge  6 months

71  62  57  46  45
Young adults paired t-tests
Change from intake to discharge on all measures

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<td>CMOTS</td>
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<td>-5.30</td>
<td>-1.16</td>
<td>-3.088</td>
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**Young adult paired $t$-test**
Change 6 months after discharge on the OQ

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<td></td>
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<td></td>
</tr>
<tr>
<td>Discharge to 6 months post</td>
<td>-8.88</td>
<td>-18.55</td>
<td>0.97</td>
<td>-1.825</td>
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<td>Intake to 6 months post</td>
<td>20.88</td>
<td>13.35</td>
<td>28.42</td>
<td>5.596</td>
<td>.000</td>
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Adolescent paired $t$-test
Change from 6 months after discharge on the YOQ

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<thead>
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</thead>
<tbody>
<tr>
<td>Student: Discharge – 6 m post</td>
<td>-3.5</td>
<td>-8.5 to 1.5</td>
<td>-1.367</td>
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<td>.174</td>
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<tr>
<td>Student: Intake - 6 m post</td>
<td>35.4</td>
<td>29.8 to 41.1</td>
<td>12.324</td>
<td>169</td>
<td>.000</td>
</tr>
<tr>
<td>Parent: Discharge – 6 m post</td>
<td>-2.9</td>
<td>-7.5 to 1.7</td>
<td>-1.256</td>
<td>165</td>
<td>.211</td>
</tr>
<tr>
<td>Parent: Intake - 6 m post</td>
<td>61.1</td>
<td>55.7 to 66.4</td>
<td>22.646</td>
<td>169</td>
<td>.000</td>
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Adolescent paired $t$-tests
Change from intake to discharge on all measures

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<tr>
<td>YOQ – SR</td>
<td>36.6</td>
<td>33.5 to 39.7</td>
<td>23.42</td>
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<td>.000</td>
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<tr>
<td>YOQ Parent</td>
<td>64.8</td>
<td>61.1 to 68.5</td>
<td>34.57</td>
<td>327</td>
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<tr>
<td>TFQ</td>
<td>-12.5</td>
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<td>-19.55</td>
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<td>.000</td>
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<td>LEQ</td>
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<td>22.67</td>
<td>4493</td>
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</tbody>
</table>
YOQ Adolescent Self Report

• RCI = 18
• Cutoff score: 47 points
YOQ-Parent Assessment

- RCI = 13
- Cutoff score: 46 points
## Adolescent paired t-tests
Change from intake to discharge on all measures

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# Adolescent paired t-test

Change from 6 months after discharge on the YOQ

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</tbody>
</table>
### Demographics

#### Gender

<table>
<thead>
<tr>
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<th>Adolescents</th>
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<tbody>
<tr>
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<td></td>
</tr>
<tr>
<td>Exit</td>
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<tr>
<td>Post 6</td>
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</tr>
</tbody>
</table>

**Adolescents:** At intake, girls were 2 points higher and parents of girls were 7 points higher. At 6 months post-discharge, girls were 14 points higher than boys.

**Adults:** No statistically significant differences.

<table>
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<th>Exit</th>
<th>Post 6</th>
</tr>
</thead>
</table>

**Intake:** (t(500) = 2.569, p = .027)

**Exit:** (t(500) = .348, p = .730)

**Post 6:** (t(500) = .039, p = .970)

#### Adoption

<table>
<thead>
<tr>
<th></th>
<th>Adolescents</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intake</td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Post 6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Adolescents:** Adoptive parents scored 7.8 points higher at discharge and 8.4 higher at post 6 months discharge.

**Adults:** No statistically significant differences.

<table>
<thead>
<tr>
<th></th>
<th>Intake</th>
<th>Exit</th>
<th>Post 6</th>
</tr>
</thead>
</table>

**Intake:** (t(500) = 1.832, p = .068)

**Exit:** (t(500) = 2.028, p = .045)

#### Parents together

<table>
<thead>
<tr>
<th></th>
<th>Adolescents</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intake</td>
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<td>Exit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post 6</td>
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</tbody>
</table>

**Adolescents:** Adolescents claimed themselves: 11.7 points higher at intake if their parents lived together

**Adults:** Young adults claimed themselves: 16.7 points worse at intake if their parents lived together

<table>
<thead>
<tr>
<th></th>
<th>Intake</th>
<th>Exit</th>
<th>Post 6</th>
</tr>
</thead>
</table>

**Intake:** (t(500) = 5.603, p = .000)

**Exit:** (t(500) = 2.336, p = .018)

#### Aftercare

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Intake</td>
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<tr>
<td>Exit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post 6</td>
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</tr>
</tbody>
</table>

**Adolescents:** 82% attended AC

**Adults:** 83% attended AC

<table>
<thead>
<tr>
<th></th>
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<th>Exit</th>
<th>Post 6</th>
</tr>
</thead>
</table>

**Intake:** Adolescents who went to an AC scored 12.5 points higher.

**Post 6:** No differences at intake, discharge, or 6 months post.

<table>
<thead>
<tr>
<th></th>
<th>Intake</th>
<th>Exit</th>
<th>Post 6</th>
</tr>
</thead>
</table>

**Intake:** (t(500) = 3.302, p = .001)

**Exit:** (t(500) = 2.336, p = .018)

**Post 6:** No differences.
## Demographic factors

<table>
<thead>
<tr>
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<th>Adolescents</th>
<th>Adolescent Parents</th>
<th>Adults</th>
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<td>No</td>
<td>No</td>
<td>No</td>
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</tbody>
</table>

** indicates p < .01  
* indicates p < .05
Gender

Adolescents

At intake girls were 8 points higher and parents of girls were 9 points higher. At 6 months post discharge, girls were 18 points higher than boys.

Intake:
• Adol: t(618) = 2.698, p=.007
• Par: t(498) = 3.541, p=.000

6 months post:
• Adol: t(177)= 4.336, p=.000

Adults

No statistically significant differences.

Females were 7 points higher at intake and 9 points lower at discharge.

Intake:
• t(157)=1.298, p = .196

Discharge:
• t(129)= -1.536, p = .139
Adolescents

Adoptive parents scored 7.8 points higher at discharge (not sig.) and 8.6 higher at post 6 months discharge.

Discharge:
  • Par: $t(370) = 1.832, p = .068$
Post 6 months:
  • Par: $t(203) = 2.020, p = .045$

Adults

No statistically significant differences.

At intake adult clients who were adopted scored 10.7 points lower (not sig).

Intake:
  • $t(151) = -1.812, p = .072$
<table>
<thead>
<tr>
<th>Demographic factors</th>
<th>Adolescents</th>
<th>Adolescent Parents</th>
<th>Adults</th>
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<tbody>
<tr>
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<td>Exit</td>
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</tr>
<tr>
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<td>No</td>
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<tr>
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<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

** indicates p < .01  
* indicates p < .05
Parents together

**Adolescents**

Adolescents assessed themselves 11.7 points higher at intake if their parents lived together

Intake:
- Adol: $t(570) = 3.903, p = .000$

**Adults**

Young adults assessed themselves 10.7 points worse at intake if their parents lived together

Intake:
- $t(149) = 2.226, p = .028$
## Demographic factors

<table>
<thead>
<tr>
<th></th>
<th>Adolescents</th>
<th>Adolescent Parents</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intake</td>
<td>Exit</td>
<td>Post 6</td>
</tr>
<tr>
<td>Gender</td>
<td>Yes**</td>
<td>No</td>
<td>Yes**</td>
</tr>
<tr>
<td>Age</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Adopt</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Parents together</td>
<td>Yes**</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>After care</td>
<td>Yes**</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Length of stay</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

** indicates p < .01  
* indicates p < .05
Aftercare

Adolescents: 82% attended AC

Adolescents who went to an AC scored 12.3 points higher. Parents of adolescents who went to an AC scored 11.9 points lower at 6 months post discharge.

Intake:
  • Adol: $t(584) = 3.302, p = .001$

6 months post:
  • Par: $t(209) = -2.370, p = .019$

Adults: 83% attended AC

No differences at intake, discharge or 6 months post.
Diagnosis
Adults OQ scores by diagnosis

OQ 45.2 Scores

- Mood
- Substance
- Anxiety
- Behavior
- Asperger's

Intake  | Discharge  | 6 m post
Adolescent YOQ scores by diagnosis
Parent YOQ scores by diagnosis

YOQ 2.01 Scores

- Mood
- Substance
- Anxiety
- Behavior
- Attachment
- Asperger's

Intake  | Discharge  | 6 m post
Other measures

Adolescents
As life effectiveness increased, YOQ scores improved as well

Life effectiveness**
- Intake: $r = -0.539, p = 0.000$
- Discharge: $r = -0.469, p = 0.000$

TEQ
- Intake: $r = 0.037, p = 0.172$
- Discharge: $r = -0.186, p = 0.000$

Adults
As life effectiveness and dysfunctional attitudes improved, OQ scores also improved.

Life effectiveness**
- Intake: $r = -0.510, p = 0.000$
- Discharge: $r = -0.550, p = 0.000$

Dysfunctional attitudes**
- Intake: $r = 0.620, p = 0.000$
- Discharge: $r = 0.677, p = 0.000$

CMOTS
- Intake: $r = -0.127, p = 0.172$
- Discharge: $r = -0.378, p = 0.000$
...Drone Drone Drone... Results show... Drone Drone Drone...

What's this got to do with me?

Not again...

All talk, no action...

What happened to the last survey?
Conclusions

- Clinically and statistically significant improvements from intake to discharge
- Clinically and statistically significant changes remaining 6 months post discharge
- Clinically significant change begins around week 5 for adolescents and adults.
- Life effectiveness increased with outcome for adolescents and adults. Dysfunctional attitudes decreased, as outcome improved for adults.
- The four major diagnoses in wilderness therapy have similar outcome trajectories.
- Female participants had more dramatic changes than males.
Conclusions

• Clinically and statistically significant improvements from intake to discharge

• Clinically and statistically significant changes remaining 6 months post discharge

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• Female participants had more dramatic changes than males.
In perspective
## Response rates in perspective

<table>
<thead>
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</thead>
<tbody>
<tr>
<td></td>
<td>S</td>
<td>P</td>
<td>S</td>
<td>P</td>
<td>S</td>
</tr>
<tr>
<td><strong>Intake &amp; exit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>76%</td>
<td>50%</td>
<td></td>
<td>68%</td>
<td>14%</td>
<td>61%</td>
</tr>
<tr>
<td><strong>Post discharge</strong></td>
<td>*54%</td>
<td>*63%</td>
<td>3%</td>
<td>17%</td>
<td>46%</td>
</tr>
<tr>
<td></td>
<td>S</td>
<td>P</td>
<td>S</td>
<td>P</td>
<td>S</td>
</tr>
</tbody>
</table>

S indicates student  
P indicates parents  
* indicates tentative rate as follow up is not complete
YOQ Parent reports in perspective

- **Intake**
  - Russell: 97
  - 2NE Pilot: 99
  - 2N Current: 97

- **Discharge**
  - Russell: 45
  - 2NE Pilot: 33
  - 2N Current: 32

- **Post discharge**
  - Russell: 49
  - 2NE Pilot: 48
  - 2N Current: 34
Y-OQ adolescent self reports in perspective

Intake | Discharge | Post discharge
--- | --- | ---
68 | 47 | 39
65 | 29 | 36
60 | 21 | 20
Lessons Learned

Remaining challenges
- Self-report accuracy
- Non-response bias
  - Particularly with adults
- Accuracy of parent responses

Future directions
- Finish 6 month follow up
- 18 month follow up with random sample
Follow up

- Outcome tools
- Personal emails
- Contacting ACs
- Phone calls
Attrition

- Quality control
- Point persons
- Training staff
Remaining challenges

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• Non-response bias
  • Particularly with adults
• Accuracy of parent responses
Future directions

- Finish 6 month follow up
- 18 month follow up with random sample
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