Social Network Analysis of Changes in a Transition Service Network

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Formal research question

Is grant support of direct services and infrastructure change associated with:
- Increased exchange of information and referrals across the transition network?
- Greater availability of age continuity in services?
- Better transition services in general?

Underlying research question

Can we measure change in service system over time?

What would it take to change a well functioning bifurcated mental health system into a more continuous one?

Study Methods

In fall 2003 and again in spring 2007, interviewers from PSU conducted structured interviews with programs in Clark County. Interviewers were with programs thought to be part of the transition network. Interviews were with each program who knew program well and its relationships with other area programs. Interviews addressed relationship program had with each other program in network, nature of program, and respondents' opinions about transition system.

Structured interview

- Information about organizations/program
- Information about interaction with every other organization in network
- Types of services and age continuity of each service
- Rating of their own program and larger system
- Quality of care for transition aged youth
Identifying the Transition Network

Bounding process identified programs that serve youth and young adults with mental health disorders aged 14-25:
- Educational services (High schools, special services, specific programs, community colleges and universities)
- Mental Health Services (Inpatient, outpatient, wrap-around, residential)
- Health (Public health, reproductive health, AIDS)
- Advocacy
- Child welfare
- Juvenile justice
- Vocational and employment services
- Substance abuse
- Housing/Homelessness

Bounded Transition Network

Final network consisted of 103 organizations in Wave I and 101 organizations in Wave II.
- Conducted a third qualitative interview with 26 organizations to interpret results.

Social Network Analysis

A way of describing the relationships among organizations in a network.
- Relationships between child and adult organizations affect the transition from child to adult services.

Interorganizational Network Questions

2.1 How often do staff in your program/agency meet with staff in this other program/agency for client planning purposes?
2.2 How often do staff or administrators in your agency/program and these agencies/programs meet together to discuss issues of mutual interest?
2.3 How often does your agency/program refer clients to this other agency/program?
2.4 How often does your agency/program receive client referrals from this other agency/program?

Interview Questions on network relationships

1. How often do staff in your program meet with staff in this other program for client planning purposes?

Interview Questions on Age Continuity of Services

Informants indicated all services that their organization offered, then described the ages and the age continuity available within their services.

Example:

<table>
<thead>
<tr>
<th>ADOLESCENT AGE</th>
<th>INPATIENT</th>
<th>OUTPATIENT</th>
<th>COMMUNITY-BASED</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-17</td>
<td>50%</td>
<td>30%</td>
<td>20%</td>
</tr>
<tr>
<td>18-21</td>
<td>40%</td>
<td>35%</td>
<td>25%</td>
</tr>
<tr>
<td>22-25</td>
<td>30%</td>
<td>30%</td>
<td>40%</td>
</tr>
<tr>
<td>26+</td>
<td>20%</td>
<td>25%</td>
<td>55%</td>
</tr>
</tbody>
</table>

Continuity was defined as when an individual could continue to be served by the same therapist/staff person/program across those ages.
Data Analysis

- Density - # of actual ties/# of potential ties
- Centrality - degree of hierarchy
- K-cores - organizations in core vs organizations on periphery
- Block model - describes systems with many cores

Block model

One way to describe the network is to look for organizations that are similar in their relationships to other organizations – those that are similar called BLOCKS

- Organizations in blocks tend to interact with the same types of organizations in the same way
- Block members need not have any ties to each other

Social Network Analysis Design

How did the system change?

In Wave 1/ not Wave 2
- Programs terminated n= 10
- Programs merged n= 2
- Refused interview n= 4

In Wave 2 / not Wave 1
- New program n= 9
  (started since 2003)
- Program added n= 6
  (existed in 2003)

Distribution of Age Type Organizations

<table>
<thead>
<tr>
<th>Wave</th>
<th>Youth Only (under 21)</th>
<th>Adult Only (18 and older)</th>
<th>TAY Continuously (14-25 no breaks)</th>
<th>TAY Discontinuously (14-25 with breaks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wave 1</td>
<td>54</td>
<td>27</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Wave 2</td>
<td>51</td>
<td>28</td>
<td>13</td>
<td>8</td>
</tr>
</tbody>
</table>

Each organization was classified by the age grouping of the majority of its services

Conclusions

Organizations remain largely age segregated
Table 1 Comparison of Whole Network Indicators across Time Periods

<table>
<thead>
<tr>
<th>Density</th>
<th>Wave 1</th>
<th>Wave 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participate in client related meetings</td>
<td>.4403</td>
<td>.4223</td>
</tr>
<tr>
<td>Participate in meetings to discuss issues of mutual interest</td>
<td>.3780</td>
<td>.3586</td>
</tr>
<tr>
<td>Send referrals</td>
<td>.3871</td>
<td>.3823</td>
</tr>
<tr>
<td>Receive referrals</td>
<td>.2819</td>
<td>.2412</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Centrality</th>
<th>Wave 1</th>
<th>Wave 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participate in client related meetings</td>
<td>.4156</td>
<td>.4181</td>
</tr>
<tr>
<td>Participate in meetings to discuss issues of mutual interest*</td>
<td>.4747</td>
<td>.3550</td>
</tr>
<tr>
<td>Send referrals</td>
<td>.4501</td>
<td>.3785</td>
</tr>
<tr>
<td>Receive referrals*</td>
<td>.5756</td>
<td>.2388</td>
</tr>
</tbody>
</table>

Table 1 Comparison of Whole Network Indicators across Time Periods

<table>
<thead>
<tr>
<th>Highest &amp; core (Proportion of network in Highest Core)</th>
<th>Wave 1</th>
<th>Wave 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participate in client related meetings</td>
<td>.49 (.69)</td>
<td>.49 (.71)</td>
</tr>
<tr>
<td>Participate in meetings to discuss issues of mutual interest*</td>
<td>.39 (.60)</td>
<td>.43 (.71)</td>
</tr>
<tr>
<td>Send referrals*</td>
<td>.42 (.66)</td>
<td>.43 (.79)</td>
</tr>
<tr>
<td>Receive referrals*</td>
<td>.33 (.50)</td>
<td>.29 (.67)</td>
</tr>
</tbody>
</table>

Roles Within Networks

One way to describe the network is to look for organizations that are similar in their relationships to other organizations – those that are similar called BLOCKS

- Organizations in blocks tend to interact with the same types of organizations in the same way
- Block members need not have any ties to each other

Observations Wave 1

Highly connected network serving children
- Two position that contained both child and adult serving organizations
- Connection between child and adult service delivery networks was sparse

Time 1
Block analysis of Clark County PYT; Fall, 2003 prior to grant implementation

Time 2
Block analysis of Clark County PYT; Spring, 2007 after grant implementation
**Conclusions**

- Rigid separation between child and adult services is less apparent
- More communication directly between positions rather than through two central positions.
- Movement toward decentralization
- Less variance explained in second model

**Observations Wave 2**

Positions of adult serving organizations that are relating directly with child serving organizations

- New category of organization called mixed
- Positions that are adult only are more connected with the rest of the network
- One position had disappeared completely