Gender Differences in Patterns of Risk Across Programmatic Phases of the CMHI

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Context
• Boys and girls enter into mental health services from different agencies and with different types of problems
• A better understanding of gender differences in risk histories would allow for targeted service and policy development

Study Aims
• To determine whether the nature of risk patterns, the relative prevalence of each risk pattern, or both, have remained constant (or changed) across funding phases for boys and girls
• To examine the relation between risk patterns and age, for boys and girls, and to identify to what extent that relation has changed across funding phases
• To examine the relationship between risk patterns and impairment for boys & girls, and to determine the extent to which that relation has changed across funding phases

Data Source
• Data: collected as part of Phases I-III of the national evaluation of the Children’s Mental Health Initiative
  – Collected between 1994-2004
  – Collected from 67 communities initially funded between 1993-2000
• Study Sample: 18,437 children, 5-22 years, enrolled in the National Evaluation with data on gender, referral source, race/ethnicity, 6 child risk factors

Sample Characteristics
• Average age was 12.2 years
  – Phase I children were somewhat younger
  – Boys were younger than girls, across phases
• Across phases, 52% of the sample was Caucasian, 25% was African American, 10% was Hispanic
  – In Phase III, the proportion of African American and children of “other” races increased
• In Phase I & II, about 25% of referrals were from mental health agencies; in Phase III, referrals from mental health agencies almost doubled.
Variables of Interest

<table>
<thead>
<tr>
<th>Variable</th>
<th>Source of Information</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic Information</td>
<td>Caregiver</td>
<td>Age, gender, race/ethnicity, referral source</td>
</tr>
<tr>
<td>Child Risk Factors</td>
<td>Caregiver</td>
<td>Lifetime history of physical or sexual abuse, substance abuse, running away, suicide attempt, sexually abusing others</td>
</tr>
<tr>
<td>Functional Impairment</td>
<td>Caregiver</td>
<td>Child and Adolescent Functional Impairment Scale</td>
</tr>
<tr>
<td>Funding Phase</td>
<td>Generated from</td>
<td>Phase sites received their funding (i.e., I, II, or III)</td>
</tr>
</tbody>
</table>

Analytic Approach

Aim 1: Nature of Risk Patterns

- Multi-group latent class analysis
  - Compares latent class characteristics across groups
  - We have 6 gender-by-phase groups
  - 4-class solution originally proposed in Walrath et al (2004) was compared to 3- and 5-class models
  - Multiple fit statistics were used to select the best fitting model, with an emphasis on parsimony
  - Equivalence of the probabilities of endorsing each risk factor by class, between boys & girls, as well as across phases, was tested

Results: Latent Class Model Selection

<table>
<thead>
<tr>
<th>Model</th>
<th>AIC</th>
<th>BIC</th>
<th>$\chi^2$</th>
<th>DF</th>
<th>P</th>
<th>% Reduction in $\chi^2$ ($H_0$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H_0$</td>
<td>166503.4</td>
<td>166824.1</td>
<td>7669.6</td>
<td>342</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>$H_3C$</td>
<td>159770.7</td>
<td>160748.5</td>
<td>769.0</td>
<td>258</td>
<td>0.0000</td>
<td>90%</td>
</tr>
<tr>
<td>$H_4C$</td>
<td>159349.5</td>
<td>160655.8</td>
<td>263.7</td>
<td>216</td>
<td>0.0147</td>
<td>97%</td>
</tr>
<tr>
<td>$H_5C$</td>
<td>159347.9</td>
<td>160982.7</td>
<td>178.2</td>
<td>174</td>
<td>0.3988</td>
<td>98%</td>
</tr>
</tbody>
</table>

Analytic Approach: Aim 2: Age & Class Membership

- The model was refitted to include age as a predictor of class membership
- For each gender-by-phase group, the log odds of belonging to one class compared with a base class was modeled as a linear function of age
Results

Class Membership & Age

<table>
<thead>
<tr>
<th></th>
<th>Phase I</th>
<th>Phase II</th>
<th>Phase III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR (95%CI)</td>
<td>OR (95%CI)</td>
<td>OR (95%CI)</td>
</tr>
<tr>
<td>Boys</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR</td>
<td>1.60 (1.39-1.84)</td>
<td>2.00 (1.28-3.13)</td>
<td>1.65 (0.93-2.93)</td>
</tr>
<tr>
<td>AB</td>
<td>0.96 (0.9-1.01)</td>
<td>1.04 (0.94-1.14)</td>
<td>1.00 (0.92-1.08)</td>
</tr>
<tr>
<td>SO</td>
<td>1.97 (1.8-2.16)</td>
<td>2.51 (1.98-3.17)</td>
<td>1.87 (1.65-2.13)</td>
</tr>
<tr>
<td>Girls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR</td>
<td>2.32 (1.76-3.03)</td>
<td>2.39 (1.89-3.02)</td>
<td>2.30 (1.83-2.90)</td>
</tr>
<tr>
<td>AB</td>
<td>1.02 (0.92-1.12)</td>
<td>1.07 (0.9-1.26)</td>
<td>0.93 (0.83-1.05)</td>
</tr>
<tr>
<td>SO</td>
<td>2.30 (1.78-2.96)</td>
<td>2.32 (2.00-2.69)</td>
<td>2.10 (1.73-2.54)</td>
</tr>
</tbody>
</table>

Analytic Approach
Aim 3: Class Membership & Impairment
- Latent class regression was used to examine the relation between class membership and impairment
- As before, the parameters, which describe the nature & prevalence of the classes, were re-estimated
- Age was kept in the model
- Relationship was examined by gender & phase
- Wald test was used to assess the equivalence of means and variances across classes

Results: Mean Impairment Score & Class Membership for Boys

<table>
<thead>
<tr>
<th></th>
<th>Phase I</th>
<th>Phase II</th>
<th>Phase III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate (95%CI)</td>
<td>Estimate (95%CI)</td>
<td>Estimate (95%CI)</td>
</tr>
<tr>
<td>HR</td>
<td>135.5 (125.2-145.8)</td>
<td>139.1 (124.4-153.8)</td>
<td>157.0 (146.2-167.9)</td>
</tr>
<tr>
<td>AB</td>
<td>92.2 (82.2-102.2)</td>
<td>117.4 (109.6-125.3)</td>
<td>130.6 (120.1-141.1)</td>
</tr>
<tr>
<td>SO</td>
<td>109.9 (105.2-114.5)</td>
<td>109.7 (89.6-129.9)</td>
<td>120.4 (113.1-127.8)</td>
</tr>
<tr>
<td>LR</td>
<td>74.9 (72.7-77.1)</td>
<td>95.6 (90.3-100.9)</td>
<td>98.9 (93.1-104.6)</td>
</tr>
</tbody>
</table>

Results: Mean Impairment Score & Class Membership for Girls

<table>
<thead>
<tr>
<th></th>
<th>Phase I</th>
<th>Phase II</th>
<th>Phase III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate (95%CI)</td>
<td>Estimate (95%CI)</td>
<td>Estimate (95%CI)</td>
</tr>
<tr>
<td>HR</td>
<td>113.6 (106.9-120.3)</td>
<td>132.2 (122.1-142.2)</td>
<td>134.5 (122.4-146.5)</td>
</tr>
<tr>
<td>AB</td>
<td>71.3 (63.5-79.1)</td>
<td>99.4 (80.3-118.5)</td>
<td>121.7 (103.4-139.9)</td>
</tr>
<tr>
<td>SO</td>
<td>92.2 (85.1-99.4)</td>
<td>119.4 (106.9-131.9)</td>
<td>118.1 (109.6-126.6)</td>
</tr>
<tr>
<td>LR</td>
<td>51.4 (45.8-57.1)</td>
<td>88.6 (79.0-98.2)</td>
<td>95.0 (88.4-101.7)</td>
</tr>
</tbody>
</table>
Summary

- Multigroup latent class analysis was used to identify groups of children with similar patterns of risk entering into SOC
  - Overall, 4 latent classes offer best explanation for patterns, across phases and by gender
- Proportion of girls in high risk class was greater than the proportion of boys in same class
  - Difference diminishes across funding periods

Summary

- There was variation in the probability of item endorsement across phases
  - Phase I boys in HR group had high probability of physical abuse, sexual abuse & running away. Probability of these factors decreased in subsequent phases
  - Probability of history of sexual abuse increased across phases for girls in HR and Abuse classes

Limitations

- Caregivers were the reporters of child risk factors
- Investigation of patterns of risk were limited to the 6 child risk factors available
- National evaluation protocol changed between Phase I and Phases II & III
- Alternative statistical models could offer plausible explanations

Implications

- Clinicians & service providers can use this information to better develop individualized treatment plans, and direct resources to children in greatest need
- Across funding phases, the CMHI has enrolled more boys with complex histories of child risk.
  - History of drug use and running away more common

Implications

- There may be a higher threshold for problems in girls
  - Need to increase awareness regarding behaviors in girls that suggest need for mental health services?
- Need for further research
  - Family, community, societal level factors

Acknowledgements

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References


