Outcomes from a Quasi-experimental Study of the Effectiveness of School-based Social Skills Training to Prevent Conduct Problems in Childhood

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Purpose

Present the results of a study of a social skills training program intended to promote social competence and prevent conduct problems in elementary school students.
Topics to be covered...

- Conceptual framework and description of interventions
- Prior studies
- Hypotheses
- Methods
  - Sample
  - Measures
  - Analytic strategies
- Findings
- Implications
Conceptual Framework and Interventions
Cascades of Risk: No Single Pathway

Pre-School
- Biological Risks
- Aggressive Behavior
- Poor Parenting
- Low Family-School Connection
- Poor Pre-School
- Hostile Neighborhood

School Entry
- Low School Readiness
- Aggressive Behavior
- Poor Processing Skills
- Poor Emotional Regulation Skills
- Poor Parenting
- Low Family-School Connection
- Poor School Climate
- Hostile Neighborhood

Elementary School
- Maladaptive Scripts and Schema
- Hostile Attribution Bias
- Rapid Arousal
- Low Conditionability
- Peer Rejection
- Fighting/wandering
- Academic Failure
- Poor Parenting
- Classroom Dynamics
- Hostile Neighborhood

Increasingly Broad Repertoire of Potentially Damaging and Aggressive Behaviors
Making Choices: A Social Development Program

Developing culturally relevant resources for practitioners, teachers, and others

- Focus on outcomes to increase social competence and decrease aggression
- Constant re-invention and refinement
- Fidelity-focused delivery
  - Research-based, highly specified manuals
  - Clinical support
Making Choices: Solving Social Problems

- Social Skills – information processing and problem-solving skills
- Emotional regulation skills
  - understanding feelings, arousal
  - self-talk and other techniques to control impulsive behavior and arousal
- Opportunities for involvement with prosocial peers
- Build a sense of community in the classroom through supportive discussion and learning
Cognitive Problem-Solving Sequence: Integrating Social Information Processing with Emotional Regulation

State the problem
Interpret social cues
Encode social cues
Assess outcomes

Select & enact the best solution(s)
Evaluate potential solutions
Generate potential solutions
Set goal(s)

Social Knowledge
Arousal, Emotions,
Social Knowledge

Social Knowledge: Life experiences producing scripts, schemata, skills, and beliefs
Making Choices Program: Skills for Solving Social Problems

- Feelings & Emotions
- Encoding
- Interpretation
- Goal Formulation
- Response Search
- Response Decision
- Enactment
Unit 3: INTERPRETATION

Lesson 1: Recognizing Others’ Intentions
Lesson 2: Distinguishing Friendly versus Hostile Intentions
Lesson 3: Distinguishing Intentional versus Unintentional Behavior
Lesson 4: Situations, Meanings, and Problems
Making Choices Programs: Two Versions

Making Choices (MC)
- Guided classroom process
- Social learning model – 18.4 hours
  - 7 Units
  - Teaching skills
  - Supervised practice and application

Making Choices Plus (MC Plus)
- Making Choices (regular classroom program)
- Infusion packet – 4-week application to infuse content across other classroom activities
- Classroom behavior management – “Good Behavior Game” or similar strategy
- Parent involvement program – five “Family Nights” and Making Choices Newsletter
FAMILY PROGRAM
“Family Night” Program and Making Choices Newsletter

- An introduction to Making Choices in the classroom
- Family Activities related to MC
- School Success: Children’s Health and Development
- School Success: Orientation to Third Grade
- School Success: Homework and Reading
- Communication
- Discipline: Firm Rules and Consequences
- Discipline: Time Out and Withholding Privileges
Prior Studies

- After-school experimental study
  - Fraser et al. (2004) – *Research on Social Work Practice*

- Classroom-based, quasi-experimental study
  - Smokowski et al. (2004) – *Journal of Primary Prevention*

- Pre-school quasi-experimental study
  - Conners et al. (in prep – dissertation)
Prior Studies: Findings

After School

Program: MC + Strong Families (in-home family intervention)
Sample: Aggressive, rejected 3rd graders
Design: Children randomly assigned to intervention (n=56) or waitlist control (n=47)

Findings*
- Social Competence
- Social Contact
- Cognitive Concentration
- Relational Aggression

During School

Program: MC Only
Sample: All 3rd graders in one school
Design: Four classrooms randomly assigned to intervention (n=51) or routine services (n=50)

Findings*
- Social Competence
- Social Contact
- Cognitive Concentration
- Oppositional Behavior (+)

*All at p>05; unless +p<.10
Prior Studies: Moderation Effects in Classroom Study

Comparing control and intervention children who scored lower on the pretest (i.e., children who were at higher risk), *Making Choices* children scored significantly higher on...

- social competence
  - emotional regulation
  - prosocial behavior
- social contact

Delivered as universal prevention intervention, *Making Choices* appears to have differentially benefited high risk children (without the potential “deviancy training” effects associated with selective and indicated prevention interventions.)*

*GLM and regression, controlling for sex, race/ethnicity, and pretest
Hypotheses
Working Hypotheses

- Classrooms receiving MC and MC Plus will demonstrate more prosocial behavior than those receiving a routine health curriculum only*

- A broader pattern of effects will be observed for MC Plus relative to MC only

- No significant differences will be observed by sex or race/ethnicity

*One-tailed tests for intervention effects at classroom level
Methods
Design

Setting: Two rural/suburban elementary schools
Classrooms: 29 (3rd Grade)
Teachers: 14
Cohort Design: (j=classrooms)
  ● Year 1: Routine Services (j=9)
  ● Year 2: Making Choices Only (j=9)
  ● Year 3: Making Choices Plus (j=11)

Note. Complicated nesting structure of students within classrooms within teachers (raters) within schools.
## Sociodemographic Characteristics by School

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>Total Sample (n=548)</th>
<th>School A (n=343)</th>
<th>School B (n=205)</th>
<th>χ² statistic or t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free or Reduced Lunch</td>
<td>52.9%</td>
<td>81.6%</td>
<td>24.8%</td>
<td>65.3***</td>
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<td>Race/Ethnicity (%/n)</td>
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<td>Latino</td>
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<td>European American, Not Latino</td>
<td>34.3% (188)</td>
<td>15.5% (53)</td>
<td>65.9% (135)</td>
<td>144.63***</td>
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<td>African American</td>
<td>19.7% (108)</td>
<td>23.3% (80)</td>
<td>13.7% (28)</td>
<td>7.58**</td>
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<td>Other</td>
<td>4.7% (26)</td>
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<tr>
<td>Sex (%/n)</td>
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<tr>
<td>Female</td>
<td>49.1% (269)</td>
<td>48.1% (165)</td>
<td>50.7% (104)</td>
<td>0.35</td>
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<tr>
<td>Male</td>
<td>50.9% (279)</td>
<td>51.9% (178)</td>
<td>49.3% (101)</td>
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<tr>
<td>Age (Mean/SD)</td>
<td>8.93 (0.50)</td>
<td>8.95 (0.50)</td>
<td>8.90 (0.42)</td>
<td>t=1.18</td>
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</tbody>
</table>
Measures: Carolina Child Checklist and CBCL Aggression

- Social Competence ($\alpha = .92$)
- Social Contact ($\alpha = .84$)
- Cognitive Concentration ($\alpha = .96$)
- Social Aggression ($\alpha = .91$)
- Authority Acceptance ($\alpha = .89$)
- CBCL Aggression ($\alpha = .94$)

Data Source: Pretests for Cohorts 1, 2, and 3 (N=548)

Skill Level Assessment of SIP Skills

- **Encoding** \((\alpha = .78)\)
- **Hostile Attribution** \((\alpha = .52)\)
- **Goal Formulation** \((\alpha = .76)\)

- **Response Decision** \((\alpha = .80)\)
- **All SLA skills** \((\alpha = .71)\)

Data Source: Posttests for Cohorts 1, 2, and 3 (N=548)

*Note.* Students listen to a series of six short stories in which a peer interaction of ambiguous intent occurs. They are asked to put themselves in the place of the main character and answer paper-and-pencil questions according to how they would respond in the given situation. The Skill Level Assessment is an adaptation of Dodge’s Home Interview for attributional bias (Dodge, 1980; Dahlberg, Toal, & Behrens, 1998).
Analytic Strategy

- Multilevel (random effects) ANCOVA for differences in pretest across cohorts
- 2-level (student and teacher) hierarchical linear models, controlling for pretest, gender, race/ethnicity, and school
- 3-level (student, classroom, and teacher) hierarchical linear models, controlling for pretest, gender, race/ethnicity, and school

Note. The effects of MC and MC+ are estimated as one-tailed tests at the classroom level. For a comparable example, see Raudenbush and Bryk (2002, pp. 112-113).
2-Level Hierarchical Linear Model

- Level 1:
  \[ \text{POST}_{ij} = \beta_{0j} + \beta_{1j} \text{Pre}_{ij} + \beta_{2j} \text{AFR}_{ij} + \beta_{3j} \text{LAT}_{ij} + \beta_{4j} \text{MALE}_{ij} + r_{ij} \]

- Level 2 (random intercept model):
  \[ \beta_{0j} = \pi_{00} + \pi_{01} \text{MC}_j + \pi_{02} \text{MCP}_j + \pi_{03} \text{SCH}_j + u_{0j} \]

- And...for models with random intercepts and slopes
  - Cognitive concentration:
    \[ \beta_{2j} = \pi_{20} + u_{2j} \] (random slope for race/ethnicity)
    \[ \beta_{1j} = \pi_{10} + \pi_{11} \text{MC}_j + \pi_{12} \text{MCP}_j \] (interaction with pretest)
  - Authority acceptance, social contact, CBCL aggression:
    \[ \beta_{1j} = \pi_{10} + u_{1j} \] (random slope for pretest)

*Note.* The effects of MC and MC+ are estimated as one-tailed tests at the classroom level. For a comparable example, see Raudenbush and Bryk (2002, pp. 112-113).
3-Level Hierarchical Linear Model

- **Level 1:**
  \[
  \text{POST}_{ijk} = \beta_{0jk} + \beta_{1jk} \text{Pre}_{ijk} + \beta_{2jk} \text{AFR}_{ijk} + \beta_{3jk} \text{LAT}_{ijk} + \beta_{4jk} \text{MALE}_{ijk} + r_{ijk}
  \]

- **Level 2:**
  \begin{itemize}
  \item \(\beta_{0jk} = \pi_{00k} + \pi_{01k}\text{MC}_{jk} + \pi_{02k}\text{MCP}_{jk} + u_{0jk}\)
  \item \(\beta_{1jk} = \pi_{10k} + u_{1jk}\)
  \end{itemize}

- **Level 3:**
  \[
  \pi_{00k} = \gamma_{000} + e_{00k}
  \]

*Note.* The effects of MC and MC+ are estimated as one-tailed tests at the classroom level. For a comparable example, see Raudenbush and Bryk (2002, pp. 112-113).
Findings
Pretest Differences across the Three Conditions/Cohorts*

- Sex – none
- Race/ethnicity – none
- Cognitive concentration – none
- Social competence – none
- Social contact – none
- Social aggression – none
- Authority acceptance – none
- CBCL aggression – none

*Multilevel ANCOVA with random effect covariate for classrooms
Fitted 2-Level HLMs for Behavioral Outcomes

<table>
<thead>
<tr>
<th>Fixed Effects</th>
<th>Cognitive Concentration</th>
<th>Authority Acceptance</th>
<th>Social Competence</th>
<th>Social Contact</th>
<th>CBCL Aggression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Effects</td>
<td>Est</td>
<td>SE</td>
<td>Est</td>
<td>SE</td>
<td>Est</td>
</tr>
<tr>
<td>Conditional Mean (Intercept)</td>
<td>3.21 ***</td>
<td>0.06</td>
<td>4.24 ***</td>
<td>0.04</td>
<td>3.27 ***</td>
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<tr>
<td>Pre-test</td>
<td>0.79 ***</td>
<td>0.03</td>
<td>0.79 ***</td>
<td>0.05</td>
<td>0.72 ***</td>
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<tr>
<td>Race/Ethnicity: African American</td>
<td>-0.23 *</td>
<td>0.10</td>
<td>-0.14 **</td>
<td>0.06</td>
<td>-0.08</td>
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<tr>
<td>Race/Ethnicity: Latino</td>
<td>0.02</td>
<td>0.07</td>
<td>0.09</td>
<td>0.05</td>
<td>0.15 *</td>
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<tr>
<td>Gender (Male)</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.06</td>
<td>0.04</td>
<td>-0.05</td>
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<table>
<thead>
<tr>
<th>Classroom Effects &amp; Interactions</th>
<th>Cognitive Concentration</th>
<th>Authority Acceptance</th>
<th>Social Competence</th>
<th>Social Contact</th>
<th>CBCL Aggression</th>
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<tbody>
<tr>
<td>Making Choices</td>
<td>0.19</td>
<td>0.15</td>
<td>0.03</td>
<td>0.10</td>
<td>0.29 *</td>
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<td>Making Choices Plus</td>
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<td>0.11</td>
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<td>School</td>
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<td>Pre-test by Making Choices</td>
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<td>0.07</td>
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<td>Pre-test by Making Choices Plus</td>
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<th>Random Effects Variance</th>
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<th>Authority Acceptance</th>
<th>Social Competence</th>
<th>Social Contact</th>
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<td>Student Intercept/Conditional Mean</td>
<td>0.1 ***</td>
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<td>Student Effect Slopes</td>
<td>Race/Ethnicity: African American</td>
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<td>Pre-test</td>
<td>0.03 *</td>
<td></td>
<td>0.08 ***</td>
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<tr>
<td>Covariance of Intercept and Slope</td>
<td>0.08 *</td>
<td>-0.04 **</td>
<td>-0.03</td>
<td>0.02 ***</td>
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### Fitted 3-Level HLM for Social Aggression

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<th><strong>Fixed Effects</strong></th>
<th><strong>Social Aggression</strong></th>
<th><strong>Est</strong></th>
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<td><strong>Student Effects</strong></td>
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<tr>
<td>Conditional Mean (Intercept)</td>
<td>1.03  ***</td>
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<tr>
<td>African American</td>
<td>0.08</td>
<td>0.07</td>
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<tr>
<td>Latino</td>
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<td>0.06</td>
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<td><strong>Classroom Effects</strong></td>
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<td>Making Choices</td>
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<tr>
<td>Making Choices Plus</td>
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<td>Student Effect Slope (Level 2)</td>
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<td>Covariance of Intercept and Slope</td>
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<td>Classroom Intercept (Level 3)</td>
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<tr>
<td>Conditional Mean</td>
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Fitted 2-Level HLM: Posttest SIP Differences by Group

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<tr>
<th>Fixed Effects</th>
<th>Response Decision Est</th>
<th>SE</th>
<th>Encoding Est</th>
<th>SE</th>
<th>Goal Formulation Est</th>
<th>SE</th>
<th>Hostile Attribution Est</th>
<th>SE</th>
<th>All SLAs Est</th>
<th>SE</th>
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<td>Conditional Mean (Intercept)</td>
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<td>0.57 ***</td>
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<td>0.79 ***</td>
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<td>0.04</td>
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<td>-0.02</td>
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<td>0.05 **</td>
<td>0.02</td>
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<td>Making Choices Plus</td>
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<td>0.12 ***</td>
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<tr>
<td>School by Making Choices</td>
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<td>School by Making Choices Plus</td>
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<td>Random Effects Variance</td>
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<tr>
<td>Student Intercept/Conditional Mean</td>
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Positive effects for…

- Making Choices Only on...
  - Social Competence
  - Social Aggression
  - Social Contact
  - SIP – encoding, goal formulation

- Making Choices Plus on...
  - Social Competence
  - Social Aggression
  - Cognitive Concentration
  - SIP – encoding, hostile attribution, goal formulation, and response decision
## Effect Sizes

<table>
<thead>
<tr>
<th></th>
<th>Making Choices</th>
<th>Making Choices Plus</th>
</tr>
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<tbody>
<tr>
<td>Cognitive Concentration</td>
<td>0.27</td>
<td>0.43</td>
</tr>
<tr>
<td>Authority Acceptance</td>
<td>0.06</td>
<td>0.23</td>
</tr>
<tr>
<td>Social Competence</td>
<td><strong>0.46</strong></td>
<td>0.56</td>
</tr>
<tr>
<td>Social Contact</td>
<td><strong>0.67</strong></td>
<td>0.48</td>
</tr>
<tr>
<td>CBCL Aggression</td>
<td>-0.06</td>
<td>-0.20</td>
</tr>
<tr>
<td>Social Aggression</td>
<td><strong>-0.32</strong></td>
<td><strong>-0.48</strong></td>
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<tr>
<td>Response Decision</td>
<td>0.18</td>
<td>0.54</td>
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<tr>
<td>Encoding</td>
<td><strong>0.82</strong></td>
<td>0.77</td>
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<tr>
<td>Goal Formulation</td>
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<td>0.66</td>
</tr>
<tr>
<td>Hostile Attribution</td>
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<td><strong>-0.55</strong></td>
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<tr>
<td>All SLAs</td>
<td><strong>0.36</strong></td>
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</tbody>
</table>

*Note. Effect size $\delta = \beta / ((\tau^2 + \sigma^2)^{1/2})$ where $\tau^2$ is variance in conditional mean and $\sigma^2$ is error variance*
Implications
Implications for Intervention

- Skills training (alone) appears to affect social competence and social aggression
- To produce a broader pattern of effects...
  - Classroom behavior management
  - Classroom MC infusion
  - Modest family involvement
A developmental perspective...

- From early life experiences, some children develop maladaptive mental processes (e.g., attributions and scripts) and skills that negatively influence conduct.

- In the absence of social changes to promote more positive early life experiences, elementary school intervention provides important opportunities to change mental processes and skills related to conduct problems.
Limitations

- Sample – not urban
- History is confounded with cohort
- Experimental contamination of Years 2 and 3 – teachers in Yr 3 had benefit of Yr 2 intervention
- Selection on unmeasured factors
Conclusions…
Hypotheses are (mostly) supported:
- Both programs appear to reduce socially aggressive behavior and to increase social competence
- MC Plus has a stronger pattern of classroom and SIP skill effects

Next Steps:
• Effects of differential exposure to MC/MC+ (dose) should be estimated
• Effects of SIP skills and emotional regulation on behavioral outcomes should be estimated (mediational models)
Selected References


