The Reading, Writing, Respect & Resolution Program: Impacts on Child, Classroom, and Teacher-level Outcomes in Elementary School, New Questions and the Evolution of Practice

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Agenda

- 4Rs: Background, Program, and Study Design
- Sample and Measurement
- Year 1 Program Impacts: Child, Teacher, and Classroom-Levels
- Y1-2 Program Impacts: Child
- Y1 Impacts: Classroom and Teacher
- Next Steps & Future Directions (NIMH Follow-Up Study; WT Grant GxE study)
- Evolution of 4Rs Practice
Why Social-Emotional Learning?

- Social-emotional and mental health problems and poor academic gains co-occur.
  - Programs that *intentionally* target both are likely to maximize positive outcomes.

- Skills tied to social and emotional literacy are universal and developmental.
  - They are essential to the tasks facing children in preschool and school settings.

- Effective instruction reaches its limits when children face substantial social-emotional problems.
  - Addressing SEL could enhance the effect of an academic intervention.
Challenges

- Early efforts at whole school strategies to prevent behavior problems, violence, and substance use plagued by intervention design and implementation fidelity problems.

- Early research on whole school strategies compromised by low power, and inappropriate statistical analyses.

- Need to rigorously test promising but unproven approaches to SEL/SACD.
Social & Character Development Research Network

- 7 Local Evaluations and 1 National Evaluation (Mathematica Policy Research).

Some differences between the 4Rs local study and the national evaluation study:

- 4Rs local study employed data from 18 schools, SACD study employed data from 14 of those 18.
- 4Rs local study employed measures proximal to intervention theory of change (e.g., HAB and other social cognitive outcomes; classroom culture and climate).
- Impact work followed a priori expectations for short- and longer-term effects (e.g., social cognitive outcomes, then behavioral outcomes; strong and expanding effects with more years of exposure to 4Rs).
- Some analytic differences (used original measure defined subscales; included school matched pair dummies in all analyses; different covariates and interactions).
The 4Rs Program

- Universal, school-based intervention in literacy development, conflict resolution, and intergroup understanding.

- 3 Primary components:
  - 7-unit literacy-based curriculum in conflict resolution and social-emotional learning.
    - Each unit organized around grade-appropriate book, includes 2 literacy activities, and 3-5 SEL lessons (21-35 total lessons).
      - Total possible activities per unit = 5-7
      - Total possible activities per year = 35-49
  - Training and ongoing coaching of teachers in the delivery of the 4Rs curriculum.
    - 25 hours introductory training
    - Ongoing classroom coaching, minimum 12 contacts
    - Learning kit
  - Family Connections
    - 1 parent-child “homework” per unit
Intervention Theory of Change - 1

At the level of individuals:

- **Children’s exposure to the curriculum** (participating in read aloud/book talk, working through applied learning lessons) will directly influence their SEL and literacy skills.
  - Changing children’s SEL skills as a result of 4Rs will indirectly influence their mental/emotional/behavioral health and academic outcomes.

- **Teacher’s exposure to the training and ongoing coaching** will directly influence (a) their social-emotional skills, beliefs in the value of SEL, levels of burnout, (b) their classroom management, infusion of core 4Rs messages throughout their day and in interaction with children, and (c) the quality of their relationships with the children in their classrooms.
Heuristic Model: 4Rs Child-Level Study (IES/WTG)

4Rs Experimental (classroom and parent) vs. Control

Teacher SEL Skills, Class Management, Climate

Mental, Emotional & Behavioral Health

Social-Emotional, Literacy Skills & Behaviors

Literacy Skills & Academic Achievement
Intervention Theory of Change - 2

At the level of the setting:

- By changing (a) teacher beliefs, practices, and relationships, and (b) classroom norms for behavior, 4Rs indirectly influences the overall culture and climate of the classroom.
- By operating as a whole school intervention, the 4Rs indirectly influences the overall culture and climate of the school.

Across levels:

- By changing the classroom system and the overall school culture and climate, 4Rs indirectly influences children’s SEL and academic outcomes.
Heuristic Model: 4Rs Setting-Level Study (WTG)

Evaluation Design

- 3-year, 6 wave longitudinal experimental design
- 18 NYC elementary schools matched and randomly assigned to 4Rs and control group (9 assigned to each group)
- Intervention is implemented school-wide, grades K-6 for 3 years (PK in 6 schools)
- All 3rd grade children in each school followed over three years through 5th grade
- Schools represent demographic character of NYC public elementary schools
  - Racially/ethnically diverse; School lunch receipt ~70%; Mobility/Stability = ~18%/60%; Suspensions = 23%
Data Collection Overview

- Classroom-based administration of surveys to children (2 50-minute classroom periods)
- Teacher reports on children and on teachers
- Parent reports on children
- School records
- Classroom Observations
- Staff/Teacher rating of school climate
- Principal Interview
- 4Rs Implementation
Measures Overview
(individual-level, child)

Focus on processes and outcomes central to 4Rs theory of change:

• **Social Cognitive Processes and Symptomatology**
  • Hostile Attributional Biases (SR); Home Interview
  • Interpersonal Negotiation Strategies (Aggressive; SR); Home Interview
  • Aggressive and Prosocial Fantasies (SR); What I Think
  • Depressive Symptoms (SR); DISC Predictive Scales

• **Teacher Reports of Children’s Behavior**
  • Child Aggression (TR); BASC
  • Child ADHD Symptoms (TR); ADHD Symptomatology Scale
  • Child Social Competence (TR); Social Competence Scale

• **Academic Functioning**
  • Academic Skills (TR); from ECLS-K
  • Standardized Reading and Math; school records
  • Attendance; school records
Measures Overview
(individual-level, teacher)

Features of Teacher development central to 4Rs theory of change:

- **Teacher Affective Experiences**
  - **Teacher Burnout (SR); Maslach Burnout Inventory**
    - Emotional Exhaustion (“I feel fatigued when I get up in the morning and have to face another day on the job”)
    - Depersonalization (“I’ve become more callous toward people since I took this job”)
    - Personal Accomplishment (“I feel exhilarated after working closely with my students”)
  - **Perceived Emotional Ability (SR); Emotional Ability Scale**
    - Perceive emotions in self and others (“By looking at people’s facial expressions, I recognize the emotions they are experiencing”)
    - Understand emotions (“I have a rich vocabulary to describe my emotions”)
    - Regulate emotions (“When I’m in a bad mood it takes me a long time to get over it” (reversed))
Measures Overview
(individual-level, teacher)

- Classroom Practices and Beliefs
  - Teaching Strategies (SR); Webster-Stratton et al., 2001
    - Frequency and Usefulness of specific strategy use for managing classroom
      - Positive Strategies ("Give clear positive directions")
      - Inappropriate Strategies ("Single out a child or group of children for misbehavior")
    - Confidence Managing Class Behavior ("How confident are you in managing current behavior problems in your classroom?")
  - Role in Students Social Emotional Well-Being (SR); Ryan et al., 1998
    - Self-reported feelings about role of teacher in students’ lives ("Teachers need to frequently think about their students’ mental health and well-being")
Focus on quality of classroom interactions/relationships:

CLASS (Pianta, La Paro, & Hamre, 2005)

- Emotional Support ($\alpha = .90$)
  - E.g., Positive Climate, Negative Climate, Teacher Sensitivity

- Instructional Support ($\alpha = .90$)
  - E.g., Concept Development, Quality of Feedback, Language Modeling

- Classroom Organization ($\alpha = .83$)
  - E.g., Productivity, Behavior Management

Observations are 2 hrs and include 4 20 min. segments
### Children

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### Teachers

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<td>Years Teaching (this school)</td>
<td>5.0(4.0) yrs.</td>
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Baseline Subgroup Differences

- Gender, Race/Ethnicity, Family Income, Treatment

  - Many gender differences in child, teacher, and parent report scales
    - (e.g., Competent and prosocial cognitions and behaviors, B<G; aggressive/externalizing cognitions and behaviors, B>G)

  - Many race/ethnic differences in child, teacher, and parent report scales

  - Poor children look worse than non-poor children

  - Few (almost none) significant Treatment/Control differences in Fall 2004
Year 1-2 Program Impacts
Child-Level

Analytic Strategy: Child-Level

- Focus on the full set of processes and outcomes most central to 4Rs theory of change
- 3-Level Hierarchical Linear Model using HLM 6.02
  - Level 1: Time (4 repeated measurements)
    - Intercept, Slope, Quadratic (only int. & slope for T-report)
  - Level 2: Child
    - Baseline: Gender, Race/Ethnicity, SES Risk, Community Risk, Behavioral Risk, average Y1-Y2 Classroom size, teacher burnout and experience
  - Level 3: School Level
    - TX/Control dummy
    - 8 school match dummies
- Estimate Tx impact on intercept, slope, and quadratic parameters (employ alpha of p < .1, effect sizes)
Results: Child-Level TX Main Effects

- Significant impacts for 3 of 5 child-reported outcomes
  - Hostile Attributional Biases (slope)
  - Child Self-Report Depression (slope)
  - Child Self-Report Aggressive INS (quadratic)
  - Aggressive & Prosocial Fantasies (n.s.)

- Significant impacts for 3 of 4 teacher-reported outcomes
  - Aggressive Behavior (slope)
  - ADHD Symptoms (slope)
  - Social Competence (slope)
  - Academic Skills (n.s.)

- School Records (n.s.)
TX on HAB Slope
(ES Slope=.14; T4=.25)
TX on Depression Slope (ES Slope=.22)

Time (Fall 3rd Grade → Spring 4th Grade)
TX on Aggressive INS Slope (ES Slope=0.08; T4=.42)
TX on TR Aggression Slope (ES Slope=.05; T4=.21)

Teacher Report of Aggression (1-4)

Time (Fall 3rd Grade $\rightarrow$ Spring 4th Grade)
Results: Tx by Baseline Covariates

- No significant Tx by baseline covariate interactions with 3 exceptions.....

- Tx by baseline behavioral risk interactions significant for:
  - Teacher-reported Academic Skills
  - Math Achievement
  - Reading Achievement
TX By Baseline Behavioral Risk on Achievement

Year 2 Math Achievement Scaled Score, BR=Behavioral Risk

Wave 4 Teacher-Reported Academic Skills, BR=Behavioral Risk
Child Developmental Outcomes: SEL & Academic Achievement

4Rs: Instruction, Teacher Training & Coaching

Teacher Affective & Pedagogical Processes & Practices

Teacher-Child Relationships

Child Behavioral Dispositions & Normative Beliefs

Classroom Emotional, Instruct. & Org. Climate

School Culture and Climate

The Classroom System: Culture and Climate

Child Developmental Outcomes: SEL & Academic Achievement

Heuristic Model: 4Rs Setting-Level Study
Year 1 Impacts on Classroom Quality (CLASS)
Analytic Strategy: Classroom Quality (CLASS)

• Focus on overall classroom quality and 3 quality dimensions (Emotional, Instructional, Organizational)

• 2-Level Hierarchical Linear Models (HLM 6.02)
  ▪ Level-1: Classroom level
    ▪ Covariates:
      ▪ T. race/ethnicity, class special ed status
      ▪ Baseline: Teacher Emotional Ability, Teacher Burnout
  ▪ Level-2: School level
    ▪ Treatment/Control dummy
    ▪ 8 school match dummies

• Estimate Tx impact on spring of Year 1 (note, no baseline control)
4Rs: Impacts on Classrooms (CLASS) Spring Y1

- Classrooms in Tx group had higher Spring Classroom Quality scores, accounted for by higher mean Emotional Support and Instructional Support scores, than the Control group.
Analytic Strategy: Teacher Outcomes

• 2-Level Hierarchical Linear Models (HLM 6.02)

  ▪ Level-1: Teacher
    ▪ Teacher outcome in spring of Year 1
    ▪ Baseline score of target Teacher outcome (from fall)
    ▪ Teacher and Classroom demographic characteristics
      ▪ Teacher gender, race/ethnicity, years of teaching experience, and class size
  
  ▪ Level-2: School
    ▪ Treatment/Control dummy
    ▪ 8 school match dummies
    ▪ All Treatment x L1 covariate interactions
Results: Teacher Outcomes Tx Main Effects

• Significant impacts for 4 of 8 Teacher-reported outcomes in Spring of Year 1 (controlling for baseline):

* Emotional Ability (p<.05, accounted for by Perception & Regulation subscales)

* Burnout (p<.01)
  - Frequency of Positive Teaching Strategies (n.s.)

* Usefulness of Positive Teaching Strategies (p<.05)
  - Frequency of Inappropriate Teaching Strategies (n.s.)

? Usefulness of Inappropriate Teaching Strategies (p<.05)
  - Confidence Managing Classroom Behavior (n.s.)
  - Role in Student Social-Emotional Well-Being (n.s.)
Tx on Burnout (Y1)
Tx on Emotional Ability (Y1)
Tx on Usefulness of Positive Teaching Strategies (Y1)
Tx on Usefulness of Inappropriate Teaching Strategies (Y1)
Summary

Child Outcomes, through 2nd Year of Intervention

1. All Children:
   - Targeted processes and outcomes: Hostile Attributional Bias (CR), Aggressive INS (CR), Aggressive Behavior (TR), Social Competence (TR)
   - Cross-over processes and outcomes: Depression (CR), ADHD (CR)

2. Children at Highest Behavioral Risk at Baseline
   - Academic Skills (TR)
   - Math and Reading Achievement
Summary

■ Classroom Outcomes, after 1st Year of Intervention

■ 4Rs has positive impact after 1 year on overall Classroom Quality as rated by independent observers (accounted for in post-hoc analyses by Emotional and Instructional Support dimensions, not Organizational).

■ Teacher Outcomes, after 1st Year of Intervention

1. Positive impacts on 3 of 8 Teacher outcomes:
   ■ Job Stress/Burnout
   ■ Emotional Ability (Emotion Perception, Regulation)
   ■ Usefulness of Positive Teaching Strategies

2. Counterintuitive finding for 1 outcome:
   ■ Usefulness of Inappropriate Strategies
Next Steps

1. Examine relation between reported Frequency and Usefulness of Positive and Inappropriate Teaching Strategies
   - Potentially weight Usefulness by Frequency?

2. Model teacher mobility to appropriately estimate:
   - Point-in-time Treatment impacts in Years 2 and 3
   - Treatment impacts on growth over 2 and 3 years among “stayers” and among full ITT sample.
   - $\text{Tx} \rightarrow \text{Burnout}$ impacts warrant consideration of $\text{Tx} \rightarrow \text{mobility}$ impacts.

3. Examine relations between variation in 4Rs implementation and Teacher impacts
   - Preliminary evidence from implementation data of greater Burnout among Teachers with higher implementation (e.g., Burnout as index of engagement/hard work?)
Health Risk Behavior in Middle Childhood: Impact of a Longitudinal Randomized Trial

Elementary School

$\Delta$ Cognitions & Beliefs

$\Delta$ Behavioral Dispositions & Relationships

$\Delta$ Health Risk Behaviors & Outcomes

Middle School

$\Delta$ Cognitions & Beliefs

$\Delta$ Behavioral Dispositions & Relationships

$\Delta$ Health Risk Behaviors & Outcomes

4R’s

Preventive Intervention

Developmental Processes

(a) Aggression/Violence;
(b) School Disengagement/Failure,
(c) Depression,
(d) Substance Use

Figure 1: Conceptual Model Guiding the Specific Aims of the Proposed Study

Health Risk Behavior in Middle Childhood: Impact of a Longitudinal Randomized Trial
Adding the “Bio” to “Bioecological”
(WT Grant)

Aim 1: Test specific genetic polymorphisms as moderators of intervention impacts on youth mental health outcomes

Genotype
- MAOA (low activity)
- 5-HTTLPR (short alleles)
- DRD4 (7-repeat allele)

Youth Mental Health Outcomes
- Aggression/Violence (MAOA, DRD4)
- Depressive symptoms (5-HTTLPR)
- Substance Use (5-HTTLPR)
- ADHD (5-HTTLPR, DRD4)
Adding the “Bio” to “Bioecological”
(WT Grant)

Aim 2: Test specific genetic polymorphisms as moderators of relationship between classroom stress and support on youth mental health outcomes

Genotype
- MAOA (low activity)
- 5-HTTLPR (short alleles)
- DRD4 (7-repeat allele)

Youth Mental Health Outcomes
- Aggression/Violence (MAOA, DRD4)
- Depressive symptoms (5-HTTLPR)
- Substance Use (5-HTTLPR)
- ADHD (5-HTTLPR, DRD4)
Aim 3a (exploratory): Potential multigenic effects (example...)

- Genotype
  - E.g., MAOA * 5-HTTLPR

- Treatment Status
  - 4Rs/Control

- Depressive symptoms (5-HTTLPR)
Adding the “Bio” to “Bioecological” (WT Grant)

Aim 3b (exploratory): Other gene polymorphisms as moderators of other 4Rs intervention-sensitive outcomes (example...based on interactions of polymorphisms in COMT gene and maternal rejection in predicting reading comprehension among adolescent juvenile detainees, Grigorenko, 2007)
The Evolution of 4Rs Practice:

4Rs + My Teaching Partner
4Rs + MTP

- Combine MTP’s web-mediated approach to teacher consultation with 4Rs face-to-face coaching model

- 8 “cycles” per year - each of which centers on one of the dimensions of CLASS as starting point for 4Rs coaching

- Currently: Year 2 of Pilot phase (3 NYC public elementary schools, 4 Teachers in each)

- Next year: 5 schools (6 Teachers per school), comparing teacher and child outcomes to matched comparison group from original 4Rs elementary school study.
The Social and Character Development (SACD) research program funded by the Institute of Education Sciences (IES), U.S. Department of Education includes a national evaluation study conducted by Mathematica Policy Research (MPR), and complementary research studies conducted by each grantee. The findings reported here are based on the complementary research activities carried out by Dr. J. Lawrence Aber of New York University under the SACD program. These findings may differ from the results reported for the SACD national evaluation study. The findings presented in this conference presentation are based on a smaller sample size of children, classrooms, and teachers, utilized a different set of outcome measures, and sought to answer complementary research questions. The content of this presentation does not necessarily reflect the views or policies of the SACD Consortium including IES, CDC, and MPR, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Department of Education.
End