EFFECTS OF CW-FIT ON TEACHER RATINGS OF ELEMENTARY STUDENTS AT RISK FOR EBD

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OVERVIEW

Background
EBD

CW-FIT

RCT
EMOTIONAL AND BEHAVIORAL DISORDER (EBD)

- Excesses, deficits or disturbances of behavior adversely affecting child’s educational performance;
  
  A. Inability to learn that cannot be explained by intellectual, sensory, or health factors
  
  B. Inability to build or maintain satisfactory interpersonal relationships with peers and teachers
  
  C. Inappropriate types of behavior or feelings under normal circumstances
  
  D. General pervasive mood of unhappiness or depression
  
  E. Tendency to develop physical symptoms or fears associated with personal school problems

- Individuals with Disabilities Educational Improvement Act, 2004
STUDENTS CLASSIFIED WITH EBD STRUGGLE WITH:

- Social Competence
  - Lower than peers with other disabilities (Wagner et al., 2005)
  - More negative than positive (or neutral) interactions with their teachers (Shores & Wehby, 1999)
  - Poor problem-solving skills and difficulty developing adaptive relationships with peers and teachers (Gresham, 2002; Lane, Wehby, & Barton-Arwood, 2005)
STUDENTS CLASSIFIED WITH EBD STRUGGLE WITH:

- School behavior
  - Tendency to misinterpret neutral cues as hostile
  - Higher levels of problem behaviors
  - Higher rates of absenteeism, suspension, expulsion
    - (Lane, Carter, Pierson, & Glaser, 2006; Wagner et al., 2005)
STUDENTS CLASSIFIED WITH EBD STRUGGLE WITH:

- Academics
  - Skill deficits, lack of content knowledge, limited task completion
  - Lower grades
  - Fail more classes
  - Repeat a grade more often than other students
    - (Lane et al., 2005)
SOCIAL SKILLS INTERVENTIONS

- Students need to learn and use social skills to be successful in school
  - With peers, teachers, and staff
- Social skills programs have been shown to be effective
  - To improve social interactions and teach specific skills to reduce problem behaviors (Cook et al., 2008)
PREVENTION

- Without prevention and early intervention
  - At-risk students with social skill deficits and problem behaviors can develop EBD (Walker, Ramsey, Gresham, 2004)

- Need for evidence-based behavior management techniques
  - To assist in prevention of, and intervention for, EBD
  - Provide effective instruction in both social skills and academics (Kauffman, 1999)
Multi-tiered framework for preventing or eliminating challenging behaviors using proactive strategies:

- Direct teaching and reinforcing of social skills (Sugai et al., 2001)
- Fostering students’ positive relationships with peers and adults
- Defining and teaching clear behavioral expectations
- Providing students feedback on use of appropriate social skills throughout the school day (Benedict, Horner, & Squires, 2007)
CLASS-WIDE FUNCTION-RELATED INTERVENTION TEAMS (CW-FIT)

- Main Components (Tier 1, class-wide):
  - Lessons (Teaching skills)
  - Teams (Group contingency)
  - Goals and Points
  - Incentives and Consequences

- Components designed to address common functions maintaining problem behaviors:
  - Teacher attention
  - Peer attention
  - Escape
TEACHING SKILLS

- Direct instruction of skills to meet expectations
  - Define
  - Model
  - Role play
  - Feedback
  - Practice
- Teach and practice (3-5 days)
- Pre-correct at start of instruction
SOCIAL SKILLS POSTERS

**Ignore Inappropriate Behavior**
1. Keep a nice face.
2. Look away from the person.
3. Keep a quiet mouth.
4. Follow directions and do your work.

**How to Get the Teacher’s Attention**
1. Look at the teacher.
2. Raise your hand.
3. Wait for the teacher to call on you.
4. Ask your question or give your answer.

**Follow Directions the First Time**
1. Look at the teacher and listen.
2. Say OK in your head.
3. Do it now.
4. Check back, if needed.
REINFORCEMENT

- Group Contingency
  - Teams
  - Daily point goal set
  - Points awarded every 2-5 minutes to groups in which all students are displaying behavioral skills at the beep
  - Reward given at end of class to all groups who met goal
- Teacher Praise
  - Behavior specific and frequent
  - Given to groups and individuals
TEAMS

- Class is divided into 3-6 teams (2-5 students)
- Teams are usually “rows” or groups that the teacher may quickly and easily differentiate between
- Some students may need to be on “their own team”
As the timer beeps, teachers scan the room and give points to each group actively engaged in appropriate behavior at that moment.

Points are awarded contingent on entire group.
REWARDS

STRONGLY ENCOURAGE QUICK ACTIVITIES OR PRIVILEGES

- Five minute of freeze dance game
- School supplies (pencils, erasers, small notebooks)
- Five-minute class game
- Use of gel pens during the next academic lesson
- Tickets as part of a class or school-wide reinforcement system
- Reading with feet on the desk
- Stickers (younger kids)
- Bonus choice time
CW-FIT TIER II – FOR STUDENTS NOT RESPONDING TO CLASS-WIDE COMPONENTS

Help Cards
- Addresses Escape/Avoidance for students who need additional help with work
- Taught in small group booster session
- Peer or teacher help

Self-Management
- Addresses students with attention seeking behaviors
- Presented as a “privilege”
- Taught in small group booster session
OUR STUDY

- Effects of CW-FIT on elementary school teachers' ratings of students' social skills, problem behaviors, and academic competence

- Randomized Control Trial

- 160 teachers across 19 schools in Missouri, Tennessee, Utah

- Used pre-test and post-test teacher behavior rating scales on 350 students identified as at risk for EBD

- Collected over a 3-year period
HYPOTHESES

- CW-FIT would result in improved teacher ratings of:
  - Social skills
  - Problem behaviors
  - Academic competence

- Higher fidelity of CW-FIT implementation would result in improved outcomes
# PARTICIPANTS

<table>
<thead>
<tr>
<th>State</th>
<th>Schools</th>
<th>Teachers</th>
<th>Students</th>
<th>% of Total</th>
<th>% Low SES</th>
<th>School Size</th>
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<tbody>
<tr>
<td>MO</td>
<td>7</td>
<td>60</td>
<td>130</td>
<td>37%</td>
<td>70%</td>
<td>351</td>
</tr>
<tr>
<td>UT</td>
<td>6</td>
<td>56</td>
<td>125</td>
<td>36%</td>
<td>60%</td>
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<tr>
<td>TN</td>
<td>6</td>
<td>44</td>
<td>95</td>
<td>27%</td>
<td>79%</td>
<td>474</td>
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<tr>
<td>TOTAL</td>
<td>19</td>
<td>160</td>
<td>350</td>
<td>100%</td>
<td>M = 70%</td>
<td>M = 438</td>
</tr>
</tbody>
</table>

Grades Pre-K thru 6; 149 Gen Ed and 11 SPED classrooms

95% Female; 83% White, 11% Black, 3% Hispanic

73% Male; 43% White, 39% Black, 15% Hispanic
MEASURES

- **Systematic Screening for Behavior Disorders: Stage 1 (SSBD; Walker & Severson, 1992)**
  - Teacher nomination of students at-risk for EBD

- **Social Skills Improvement System-Teacher Form (SSIS; Gresham & Elliot, 2008)**
  - Social Skills, Problem Behaviors, and Academic Competence

- **School Social Behavior Scales-Second Edition (SSBS-2; Merrell, 2002)**
  - Social Competence and Antisocial Behavior

- **Classroom Performance Survey – Elementary (CPS-E; Robin, 1988; Caldarella et al., 2016)**
  - Academic Competence and Interpersonal Competence
MEASURES, CONTINUED

Treatment fidelity

Direct observation fidelity checklists

Table: CW-FIT Procedures Observed Quality
1. Skills are prominently displayed on posters. Y N 1 2 3
2. Precorrection on skills at beginning of session Y N 1 2 3
3. Corrections are instructive and refer to skills Y N N/A 1 2 3
4. Team point chart displayed. Y N 1 2 3
5. Daily point goal posted Y N 1 2 3
6. Self-management charts given to individuals. Y N N/A
   6a. Teacher prompts SM students to give
       points/HC students to use HC. Y N N/A 1 2 3
   6b. SM students give themselves points/Students
       use HC. Y N N/A 1 2 3
   6c. Teacher praises SM/HC students (at least 2
       times). Y N N/A 1 2 3
   6d. Teacher supports SM/HC (proximity, checks for
       accuracy). Y N N/A 1 2 3
7. Timer used & set at appropriate intervals. Y N 1 2 3
8. Points awarded to teams for use of skills Y N 1 2 3
9. Points tallied for teams Y N 1 2 3
10. Winners immediately rewarded Y N 1 2 3
11. Winners reward announced if delayed. Y N N/A 1 2 3
12. Frequent praise (points) given Y N 1 2 3
13. Behavior-specific praise given. Y N 1 2 3
14. Praise (points) to reprimand ratio is approximately 4:1 Y N 1 2 3

Please subtract out any items marked N/A when computing your totals.

Social validity

Teacher and student questionnaires

Table: CW-FIT Intervention Teacher Satisfaction Survey
1. I enjoyed being a CW-FIT Intervention Teacher.
   - Very True
   - Mostly True
   - Somewhat True
   - Not True
   - Total Score Possible: 1 2 3 4

2. The CW-FIT program was easy to learn and implement in my classroom.
   - Very True
   - Mostly True
   - Somewhat True
   - Not True
   - Total Score Possible: 1 2 3 4

3. The timer was manageable for use during instruction.
   - Very True
   - Mostly True
   - Somewhat True
   - Not True
   - Total Score Possible: 1 2 3 4

4. The use of teams and points for appropriate behaviors were helpful in improving students’ behavior.
   - Very True
   - Mostly True
   - Somewhat True
   - Not True
   - Total Score Possible: 1 2 3 4

5. The self-management component was easy for students to learn.
   - Very True
   - Mostly True
   - Somewhat True
   - Not True
   - Total Score Possible: 1 2 3 4

6. Students were reliable in evaluating their behavior and giving points on self-management charts.
   - Very True
   - Mostly True
   - Somewhat True
   - Not True
   - Total Score Possible: 1 2 3 4

7. The self-management component was helpful in improving students’ behaviors.
   - Very True
   - Mostly True
   - Somewhat True
   - Not True
   - Total Score Possible: 1 2 3 4

8. The help card component was easy for students to learn.
   - Very True
   - Mostly True
   - Somewhat True
   - Not True
   - Total Score Possible: 1 2 3 4

9. Students were reliable in determining when to use help cards and responded to help.
   - Very True
   - Mostly True
   - Somewhat True
   - Not True
   - Total Score Possible: 1 2 3 4

N/A
**Design**

- Randomized controlled trial (RCT)
  - Experimental group: CW-FIT
  - Comparison group: Business as usual

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**Diagram: ALL SITES CW FIT CROSS SITE CONSORT CHART: Cumulative Counts Years 1 -3**

- **Enrollment**
  - Assessed for eligibility (n=603)
    - Excluded (n=245)
      - Not meeting inclusion criteria (n=64)
      - Declined to participate (n=164)
      - Teacher dropped 14
      - Other reasons (n=13*)

- **Randomized (n=358)**
  - Allocated to intervention (n=193)
    - Received allocated intervention (n=177)
    - Did not receive allocated intervention (n=16**)
  - Allocated to comparison (n=165)
    - Received allocated assessments (n=150)
    - Did not receive allocated intervention (n=15***)

- **Within Study**
  - Lost to study (n=12)
    - 1 permanent expulsion, 1 too many absences, 1 moved to another class; 9 moved
  - Lost to study (n=11)
    - 11 moved

- **Analysis**
  - Analyzed (n=165)
    - Excluded from analysis (n=0)
  - Analyzed (n=139)
    - Excluded from analysis (n=0)

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**Notes:**

- *7 students not in class at scheduled time; 6 teachers decided behaviors not severe enough
- **4 students in classes where teacher left school/ on leave; 2 students diagnosed with autism; 1 student too many absences; 7 student unavailable SPED pull-out; 1 changed classrooms; 1 moved
- ***7 students in classroom where teacher declined to participate; 2 students diagnosed with autism; 5 students unavailable in SPED pull-out; 1 moved
Across all sites, all three years

- Teacher SSBD Nomination of At-Risk Students
  - Informed Consent Obtained
- Pre-Test Rating Scales Completed
  - SSIS, SSBS-2, CPS-E
- 4-6 Months of Intervention
  - CPS-E Completed Monthly
- Post-Test Rating Scales Completed
  - SSIS, SSBS-2, CPS-E

PROCEDURES
ANALYSIS

- Robust means modeling (RMM)
  - To test whether CW-FIT results in higher scores on the SSBS-2 and SSIS measures for students at risk for EBD;

- Latent growth curve model
  - Studying the progress of these students across all eight time points of the CPS-E measure;

- Structural equation modeling (SEM)
  - Simultaneously regressing fidelity of treatment on all the outcomes of interest.
### RESULTS: SOCIAL SKILLS-ROBUST MEANS MODELING

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Mean Treatment post-test</th>
<th>Mean Control post-test</th>
<th>One-sided p value of differences</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSBS-2 Social Competence Total</td>
<td>99.30</td>
<td>91.55</td>
<td>0.004</td>
<td>0.35</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>42.90</td>
<td>38.62</td>
<td>0.002</td>
<td>0.39</td>
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<tr>
<td>SSIS Social Skills Total</td>
<td>71.19</td>
<td>67.33</td>
<td>0.052</td>
<td>0.19</td>
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<tr>
<td>Communication</td>
<td>11.86</td>
<td>11.21</td>
<td>0.048</td>
<td>0.20</td>
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<tr>
<td>Cooperation</td>
<td>8.47</td>
<td>7.62</td>
<td>0.006</td>
<td>0.27</td>
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<tr>
<td>Assertion</td>
<td>11.84</td>
<td>11.05</td>
<td>0.008</td>
<td>0.23</td>
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<tr>
<td>Empathy</td>
<td>9.52</td>
<td>8.73</td>
<td>0.044</td>
<td>0.20</td>
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<tr>
<td>Engagement</td>
<td>11.97</td>
<td>11.07</td>
<td>0.030</td>
<td>0.24</td>
</tr>
</tbody>
</table>

**Note.** Mean scores on the SSBS-2 and SSIS are raw scores. Higher scores on the SSBS-2 and SSIS indicate higher levels of behavior. All p values are one-tailed. N slightly different from consort diagram, due to the addition of preschool participants from grant side study.
RESULTS: SOCIAL SKILLS

- No significant difference ($p > 0.05$) between treatment and control groups on CPS-E Interpersonal Competence scores at the last time point.

- However, the effect of treatment on the slope was statistically significant ($b = -0.03, p = 0.006$)
  - Treatment group - decreased by 0.06 points (0.14 standard deviation units) per unit of time
  - Control group - decreased by 0.03 points (0.07 standard deviation units) per one-unit increase in time on average

- CWFIT approximately doubled the natural improvement on this measure
RESULTS: SOCIAL SKILLS-LATENT GROWTH CURVE

Lower scores on the CPS-E indicate improvement.
RESULTS: SOCIAL SKILLS

- SSBS-2 and SSIS showed significant posttest improvements in social skills for students exposed to CW-FIT compared to results for control group students.

- The slopes of the CPS-E Interpersonal Competence scale also showed significantly more improvement over time in the treatment group compared to the control group.
RESULTS: PROBLEM BEHAVIORS-
ROBUST MEANS MODELING

- None of the problem behavior measures had $p$ values below or near .05, indicating no treatment effect.
## RESULTS: ACADEMIC COMPETENCE-ROBUST MEANS MODELING

<table>
<thead>
<tr>
<th>SSBS-2</th>
<th>Mean Treatment post-test</th>
<th>Mean Control post-test</th>
<th>p value of differences</th>
<th>Cohen’s d</th>
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</thead>
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<tr>
<td>Academic Behavior</td>
<td>25.15</td>
<td>23.34</td>
<td>0.004</td>
<td>0.27</td>
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</table>
RESULTS: ACADEMIC COMPETENCE-LATENT GROWTH CURVE MODEL

- CPS-E Academic Competence score significantly lower (.20 points; 0.30 standard deviation units) in treatment group ($p = 0.011$) at last time point
  - Teachers rated students in the treatment group as significantly more improved than students in the control group
- The effect of treatment on slope was statistically significant ($b = -0.03$, $p < 0.001$)
  - Treatment group scores decreased by 0.06 points (0.09 standard deviation units) for every one-unit increase in time
  - Control group scores decreased by 0.03 points (0.04 standard deviation units) for every one-unit increase in time on average
- CW-FIT approximately doubled the natural improvement in this measure
RESULTS: ACADEMIC COMPETENCE - LATENT GROWTH CURVE MODEL

Lower scores on the CPS-E indicate improvement.
RESULTS: FIDELITY

- Improved fidelity was associated with better outcomes on many of the measures in the treatment group.
- Results suggest that CW-FIT can be implemented with fidelity by elementary school teachers.
  - Average 92.1% fidelity.
- Results indicated that these practices, as measured by the CW-FIT fidelity measure, were not naturally occurring at high frequencies in control classrooms.
<table>
<thead>
<tr>
<th>Response Variable</th>
<th>b</th>
<th>SE</th>
<th>p</th>
<th>β</th>
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<tr>
<td>SSBS-2 Social Competence Total</td>
<td>0.31</td>
<td>0.14</td>
<td>0.013*</td>
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<td>SSBS-2 Self-Management/ Compliance</td>
<td>0.14</td>
<td>0.08</td>
<td>0.033*</td>
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<td>SSBS-2 Academic Behavior</td>
<td>0.45</td>
<td>0.26</td>
<td>0.042*</td>
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<td>-0.19</td>
<td>0.11</td>
<td>0.040*</td>
<td>-0.18</td>
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<td>SSIS Assertion</td>
<td>0.08</td>
<td>0.05</td>
<td>0.052</td>
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<td>SSIS Bullying</td>
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<td>0.09</td>
<td>0.057</td>
<td>-0.14</td>
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<tr>
<td>SSIS Hyperactivity/ Inattention</td>
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<td>0.04</td>
<td>0.047*</td>
<td>-0.15</td>
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<tr>
<td>SSIS Autism Spectrum</td>
<td>-0.06</td>
<td>0.04</td>
<td>0.039*</td>
<td>-0.12</td>
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<tr>
<td>CPS-E Academic Competence</td>
<td>-0.03</td>
<td>0.01</td>
<td>0.005*</td>
<td>-0.22</td>
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<td>CPS-E Interpersonal Competence</td>
<td>-0.02</td>
<td>0.01</td>
<td>0.032*</td>
<td>-0.15</td>
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*Note.* All p values are one-tailed.
RESULTS: SOCIAL VALIDITY

**Teachers:**
- 100% agreed that their students were more focused and engaged with CW-FIT;
- 96% found using teams and reinforcement points helpful in improving student behavior;
- 94% found the program easy to learn and implement;
- 92% would use CW-FIT skills with future classes;
- 90% would recommend the program to colleagues;
- 88% of teachers enjoyed teaching with CW-FIT;

**Students:**
- 93% of students reported liking CW-FIT, particularly the group rewards and point system;
- 90% of students agreed that their peers should also get to use CW-FIT
  - It is fun and helps improve behavior and teamwork in class
DISCUSSION

- CW-FIT involves social skills being directly taught and reinforced by classroom teachers.
- Improvements in at-risk students’ social competence increases the probability of their success in school (Hemmeter et al., 2006) and will likely result in improved classroom learning environments for all students (Conroy et al., 2008).
- Non-significant results on problem behaviors somewhat surprising, as prior studies have shown significant decreases in disruptive behaviors (Kamps, Conklin et al., 2015; Trevino-Maack et al., 2015; Wills et al., 2014; Wills et al., in press).
  - Prior studies using direct observations measured different discrete behaviors than were measured using the SSBS-2 and SSIS.
  - Teachers ratings likely reflected student behaviors exhibited throughout the day, not limited to behaviors only during CW-FIT (as with direct observation).
- Academic skills improvements are important, given the critical role of such skills in students’ academic success (Walker et al., 2004).
LIMITATIONS

- Teacher rating scales were the only outcome measures examined
- Though spanning three states, the study was not nationally representative
- The study examined only elementary school students with or at risk for EBD who returned signed consents
- No end of year standardized academic test scores were examined
- The study followed students for only one year
CONCLUSIONS

- Helpful to use a variety of PBIS strategies to support the academic engagement of students at risk for EBD;
  - Classroom rules and expectations, explicit instruction, teacher praise, student feedback, positive reinforcement, and group contingencies (Benner et al., 2013; Conroy et al., 2008)
  - CW-FIT employs such strategies in natural classroom settings
- CW-FIT can help improve social skills and academic competence for elementary students at risk for EBD when implemented in general education classrooms


REFERENCES, CONTINUED


QUESTIONS AND COMMENTS?

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