The Effects of a Self-Management Intervention on Academic Engagement for High School Students with Autism

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The University of Texas at Austin

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What is CSESA?

- Center on Secondary Education for Students with Autism Spectrum Disorders (ASD) [http://csesa.fpg.unc.edu](http://csesa.fpg.unc.edu)
  - Center funded by the Department of Education to develop and study a comprehensive high school program for students on the autism spectrum
What is PRISM?

- PRISM stands for *Personal Responsibility, Independence, and Self-Management* - the behavioral outcomes we are all striving for when working with adolescents on the autism spectrum.

- PRISM is a process that supports school staff in selecting goals and interventions to support optimal outcomes for our students.
Investigators

Primary Investigators
• Sam Odom & Kara Hume, UNC-Chapel Hill

Co-PIs
• Diane Browder & David Test, UNC-Charlotte
• Erik Carter, Vanderbilt Kennedy Center
• Leann Smith, Waisman Center, Univ. of Wisconsin-Madison
• Sally Rodgers, MIND Institute, UC Davis
• Sharon Vaughn & Colleen Reutebuch, Meadows Center, The University of Texas at Austin
2013–14 UT Team
Acknowledgements

• Dr. Sharon Vaughn
• Dr. Colleen Reutebuch
• Dr. Farah El Zein
• Garrett Roberts
• Min Kyung Kim
• Briana Steelman
• Aron Weinberg
• Participating district, staff, students, and parents
Overview

- Previous Research
- Rationale
- Participants
- Research Design
- Data Collection and Analysis
- Dependent Variables
- Intervention
- Results
- Discussion
Some Characteristics of Autism

Students with autism frequently include:

- Poor social skills
  - Interactions and initiations
  - Social reciprocity

- Language delay
  - Verbal and non-verbal

- Attention problems

- Emotion regulation deficits
Self-Management

• Self-management
  - Self-monitoring
  - Self-recording
  - Self-evaluation
  - Self-reinforcement

• Self-management is considered an emerging and effective evidence-based practice with strong effect sizes (deBruin, Deppeler, Moore, & Diamond, 2013; Odom et al., 2003)

• Has been successfully used to improve: (a)social skills, (b) independent work skills, and (c) social interactions in inclusive settings (Harrower & Dunlap, 2001)
Self-Management

• Effective in general education and special education settings (Koegel, Koegel, Harrower, & Carter, 1999)

• Shown to increase ownership of personal management of behavior and behavioral outcomes with minimal adult support (Dunlap, Dunlap, Koegel, & Koegel, 1991; Koegel, Koegel, & Parks, 1991)

• Combining evidence-based practices with self-management has been shown to be effective (Koegel, Koegel, Harrower, & Carter, 1999)

• Students can learn and generalize these strategies with increased self-awareness (Myles & Southwick, 1999)
Academic Engagement

• Time spent engaged is positively related to learning outcomes (Cancelli, Harris, Friedman, & Yoshida, 1993)

• Visual and auditory engagement is necessary to make social and academic gains (Goodman & Williams, 2007)

• Visual and activity schedules have been helpful in increasing student engagement (Dettmer, Simpson, Myles, & Ganz, 2000)
Rationale

• Little research has been conducted with adolescents with ASD (Mesibov & Shea, 2011)

• It remains unclear whether research-based approaches are as effective in the public school setting as they are in a clinical setting (deBruin, Deppeler, Moore, & Diamond, 2013)

• The number of students with disabilities accessing the general ed curriculum continues to rise

• No study has looked at self-management and academic engaged time in high school aged students with autism in a public school setting (deBruin, Deppeler, Moore, & Diamond, 2013; Lee, Simpson, & Shogren, 2007; Southall & Gast; 2011)
What is the effect of a multi-component self-management intervention on academic engaged time (AET) for two high school students with ASD?
Selection of Participants

Target students with ASD-

High school students with ASD who:

a) Access primarily academic content across the school day;
b) Participated in a study skill period;
c) Have an IQ in the low average to above average range (80 and above);
d) Were selected by school staff as needing behavioral supports; and
e) Are willing to participate
### Participant Characteristics

<table>
<thead>
<tr>
<th>Participants</th>
<th>Grade</th>
<th>Age</th>
<th>Diagnosis</th>
<th>Behavior IEP Goals?</th>
<th>Academic IEP Goals?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andrew</td>
<td>12(^{th})</td>
<td>18</td>
<td>Autism</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Derek</td>
<td>11(^{th})</td>
<td>17</td>
<td>Autism</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
Setting

• Rural Central Texas High School with over 800 students

• Approximately 30 miles southeast of Austin

• 65% of the students are economically disadvantaged

• Pull-out study skills period in the special education setting
## Prior to Intervention

### PRISM BEHAVIORS:
- **Personal Responsibility and Independence:** Organization, Planning, Problem-solving, Personal presentation
- **Community Engagement:** Conversation, Other communication, Recognizing emotions, Cooperation, Understanding School/community culture,
- **Self-Management:** Self-regulation of emotion & behavior, Flexibility, Self-monitoring

### Subdomain: Problem Solving & Goal Setting

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Code</th>
<th>Description</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS1. Identifies appropriate person to ask for assistance*+</td>
<td>0 1 2 N/O N/A</td>
<td>Note: Includes peers, adults, staff</td>
<td>0 1 2</td>
<td>3</td>
<td>0=no concern 2=major concern</td>
<td></td>
</tr>
<tr>
<td>PS2. Seeks help appropriately from identified person</td>
<td>0 1 2 N/O N/A</td>
<td>Note: Includes asking for materials/assignments, directions</td>
<td>0 1 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PS3. Identifies/defines a problem in structured school/community setting*+</td>
<td>0 1 2 N/O N/A</td>
<td>Note: May include challenges that arise in classroom/job site related to tasks, materials, schedule, relationships, etc.</td>
<td>0 1 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PS4. Identifies/defines a problem in unstructured school/community setting*+</td>
<td>0 1 2 N/O N/A</td>
<td>Note: May include challenges that arise in hallways, lunch room, social arenas related to schedule, relationships, group activities</td>
<td>0 1 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PS5. Generates possible solutions to problem*+</td>
<td>0 1 2 N/O N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PS6. Selects solution after considering possible consequences *+</td>
<td>0 1 2 N/O N/A</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>PS7. Carries out solutions*+</td>
<td>0 1 2 N/O N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PS8. Identifies goals and related steps required to meet goals*</td>
<td>0 1 2 N/O N/A</td>
<td>Note: This can be part of coursework/employment, part of transition planning</td>
<td>0 1 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PS9. Makes choices that match identified goals*</td>
<td>0 1 2 N/O N/A</td>
<td>Note: This may include courses to take, preferred leisure activities</td>
<td>0 1 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PS10. Makes choices that support healthy lifestyle*+</td>
<td>0 1 2 N/O N/A</td>
<td>Note: Related to diet, exercise, substance abuse, personal safety</td>
<td>0 1 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PS11. Communicates goals and choices to others at appropriate time</td>
<td>0 1 2 N/O N/A</td>
<td>Note: Includes at IEP/ITP meetings</td>
<td>0 1 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PS12. Other:</td>
<td>0 1 2 N/O N/A</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### Key for Step 1: Skill Evaluation (left column)

- 0: This is **NOT** like my student.
- 1: This is **sort of** like my student.
- 2: This is very much like my student.

- My student is not/rarely able to demonstrate this skill with the supports I provide to the group.
- My student is able to demonstrate this skill regularly with additional supports (e.g., individual attention, visual information, additional reminders, adjusted assignment) AND OR.
- My student is able to demonstrate this skill sporadically with the supports I provide to the group.
- My student is able to demonstrate this skill regularly with the supports I provide to the group.

### Key for Step 2: Priority Ranking (middle column)

- 0: Not a concern
- 1: Minor concern
- 2: Major concern

- Though the skill is not demonstrated consistently and/or independently, it is not a concern or priority in this environment.
- Demonstrating this skill consistently and/or independently would be helpful in this environment.
- Demonstrating this skill consistently and/or more independently is a requirement in this environment.
# Prior to Intervention

## Measurable IEP Goals

## Goal Attainment Scaling

<table>
<thead>
<tr>
<th>Goal Attainment Scaling</th>
<th>Present Level of Performance (Baseline)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>0</strong></td>
<td>Erik asks teachers 41 off topic and 0 on topic questions during a class period.</td>
</tr>
<tr>
<td><strong>1</strong></td>
<td>Given visual prompts, Erik will ask teachers no more than 10 questions (on or off topic) during a class period across one week of data.</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Given visual prompts, Erik will ask teachers no more than 5 questions (on or off topic) during a class period across one week of data.</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Given visual prompts, Erik will ask teachers at least 2 on topic and less than 2 off topic questions during the class period across one week of data.</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>Given visual prompts, Erik will ask teachers at least 2 on topic questions and no off topic questions during the class period across one week of data.</td>
</tr>
</tbody>
</table>
# Student Materials

## To Do List

<table>
<thead>
<tr>
<th>Name: _____________________________</th>
<th>Date: ____________</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th>X When Completed</th>
<th>Items to Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>![ ]</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>![ ]</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>![ ]</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>![ ]</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>![ ]</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>![ ]</td>
<td></td>
</tr>
</tbody>
</table>
# Student Materials

## Self-Management Sheet

<table>
<thead>
<tr>
<th>Goals</th>
<th>Mon. Date:</th>
<th>Tues. Date:</th>
<th>Wed. Date:</th>
<th>Thurs. Date:</th>
<th>Fri. Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I came in and sat down</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I quickly began working on my checklist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I tried my best</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult Agrees? Yes=2 No=0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Points</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Student Prize (6 pts)? Circle one:</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Research Design

Target Participant

Baseline Phase
(minimum 5 data points) + 2 days of training

Self-Management Intervention Phase (SM-1)
(minimum 5 consistent data points)

Withdrawal Phase
(minimum 5 data points)

Self-Management Intervention Phase (SM-2)
(minimum 5 consistent data points)
Dependent Variables

Academic Engaged Time (AET)

- **Includes:** (a) working on an assigned task in seat (i.e., looking at paper, text, or writing) (b) students may look away from text for up to one second and still be considered AET, or (c) talking to adult about task

- **Does not include:** (a) asking an off-topic question or engaging in an off-topic conversation, (b) organizing materials, (c) getting out of seat, or (d) flipping through pages not part of assigned task

Social Validity Measures

- **Teacher:** (a) training, coaching, and support, (b) feasibility and acceptability, (c) usefulness and effectiveness

- **Student:** (a) working on independence
Data Collection

- Percent of time academically engaged
  - 10-s whole interval

- Interobserver agreement was measured for 24% of the sessions
  - Interval agreement calculation @ 93%

- Teacher and student surveys
Baseline/ Withdrawal

- 30-minute, independent work, business as usual sessions
- Participant completed unfinished assignments from other classes
- Redirects were given to students
- Students were able to ask for help if needed
Training

Day 1
- Led by a trained peer with autism
- Video modeling used
- Opportunities to practice, ask questions, give feedback

Day 2
- Rules retaught by adults and students practiced using the self-management device
Intervention (SM 1 & 2)

- Same as baseline except, students:
  1. Complete a “to-do” checklist of work to be completed
  2. Begin working on the items on the “to-do” checklist
  3. Fill out a self-management form at the conclusion of work being completed
  4. Check the accuracy of the work completed and the self-management sheet with a teacher or paraprofessional
  5. Earn desired activity time upon accurate completion of work on “To Do List” (about 5-10 min)
    - E.g., movie, phone, etc.
### Results

#### Percentage of time academically engaged

<table>
<thead>
<tr>
<th>Participants</th>
<th>Mean Scores (Standard Deviations)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
</tr>
<tr>
<td>Andrew</td>
<td>24 (8)</td>
</tr>
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</table>
Results

Percentage of time academically engaged

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<td></td>
<td>Baseline</td>
</tr>
<tr>
<td>Derek</td>
<td>28 (24)</td>
</tr>
</tbody>
</table>
## Results

**Percentage of time academically engaged**

<table>
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<tr>
<th>Participants</th>
<th>Mean Scores (Standard Deviations)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Baseline</td>
</tr>
<tr>
<td>Derek</td>
<td>28 (24)</td>
</tr>
</tbody>
</table>
Results

Percentage of time academically engaged

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</table>
Results

Percentage of time academically engaged

<table>
<thead>
<tr>
<th>Participants</th>
<th>Baseline</th>
<th>SM-1</th>
<th>Withdrawal</th>
<th>SM-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Derek</td>
<td>28 (24)</td>
<td>75 (13)</td>
<td>58 (29)</td>
<td>88 (10)</td>
</tr>
</tbody>
</table>
Results

Both Andrew and Derek:

- Increase in level
- Positive change in slope
- Decrease in variability
- Immediacy of effect present
Results

Social Validity

- Teachers
  - Results suggest the intervention was helpful and useful
- When students were asked various questions about working on independence:
  - All responses were positive or “not sure”
  - 9/10 responses were “not sure”
  - One student said he liked working on the skill
Implications

- Findings suggest that self-management interventions can be used to improve academic engagement for high school students with autism.

- The use of multicomponent interventions (e.g., self-management, visual schedules, video modeling) may improve academic engagement for high school students with autism.

- Teacher reports suggest that using this multi-component intervention is feasible and beneficial.
Limitations

- Limited number of participants
- Special education setting
- Lack of generalization data
Direction for Future Research

• Future research is warranted to examine the generality of self-management strategies for high school students with autism strategies across settings and content areas

• Future research efforts can examine the effects of self-management for high school students with autism on academic outcomes

• Future research can investigate the effects of each approach employed through component analysis
Select References

Contact Info:

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