

### Examining the Effects of Collaborative Strategic Reading–HS (CSR–HS) Intervention in Adolescents with Autism Spectrum Disorders

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# What is CSESA?

- Center on Secondary Education for Students with Autism Spectrum Disorders (ASD)
  - Center funded by the Department of Education to develop and study a comprehensive high school program for students on the autism spectrum







THE UNIVERSITY OF TEXAS AT AUSTIN





# Investigators

#### **Primary Investigators**

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#### **Co-Pls**

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- Reading and ASD
- Previous Research
- Rationale
- Participants
- Research Design
- Data Collection and Analysis
- Dependent Variables
- Intervention
- Results

Discussion

# **ASD Intervention Research**

 Interventions provided for students with ASD historically have focused on reducing challenging behavior and improving communication, rather than treatments designed to enhance academic performance (El Zein, Solis, Vaughn, & McCulley, in review).

 Previous reading intervention studies with students with ASD have focused on decoding and sight word recognition (Chiang & Lin, 2007; Whalon & Hanline, 2008).

# **Reading Profiles in ASD**

 Many students with ASD may have unique profiles of reading performance which exhibit strengths in basic reading skills coupled with difficulties in reading comprehension (Asberg, Kopp, Berg-Kelly, & Gillberg, 2010; Chiang & Lin, 2007; Nation, Clarke, Wright, & Williams, 2006).

 Students on the autism spectrum do not have well developed reading comprehension skills (Asberg, Kopp, Berg-Kelly, & Gilberg, 2010; Chiang & Lin, 2007; Nation, Clarke, Wright, & Williams, 2006).

# **Previous Research**

The following approaches were found to be promising for improving reading comprehension in students with ASD:

Strategy instruction (e.g., prediction, main idea, summarization, question development)

 Peer-mediated instruction (e.g., peer tutoring, class-wide peer tutoring, cooperative learning)

• ABA principals (e.g., priming, shaping, prompting, task analysis, positive reinforcement, etc.)

El Zein, Solis, Vaughn, & McCulley (in review)

# Rationale

- Reading comprehension is important to academic success and quality of life (Carnahan & Williamson, 2010).
- The number of students with disabilities accessing the general ed curriculum continues to rise.
- General education teachers in inclusive classrooms are often uncertain how to effectively provide reading comprehension intervention for students with ASD (Chiang & Lin, 2007).
- It is well documented that reading comprehension intervention for students with ASD is a limited body of research (Chiang & Lin, 2007; Whalon and Hanline, 2008; El Zein et al. in review)

# Why CSR?

- CSR have yielded positive outcomes for students with learning disabilities, students at risk for reading difficulties including ELs, average- and high-achieving students (Vaughn, Klingner, et al., 2011; Bryant et al., 2000; Klingner, Vaughn, & Schumm, 1998; Vaughn et al., 2000).
- Previous synthesis indicate that reading interventions that have been proven effective with struggling readers without ASD may be promising for students with ASD (Chiang & Lin, 2007; Whalon & Hanline, 2008).

### **Research Question**

What are the reading, behavioral and social outcomes of implementing an adapted version of CSR (CSR–HS) with Adolescents 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) Read on at least a second grade instructional level;
- c) Have an IQ in the low average to above average range (80 and above);
- d) Are willing to participate; and
- e) Possess skills and abilities to share their ideas, contribute to conversation, and to work cooperatively with another student or tutor to complete a reading activity using taught strategies.

### Selection of Participants cont.

### **Peer Partners**–

High school student:

- a) Identified by staff as a good match for target student;
- b) Available for participating during target student's CSR-HS sessions; and
- c) Has some experience in working with target student.

# **Participant Characteristics**

Participan ts	Grade	Age	Diagnosis	Instructional Reading Level (GE)	WJ-III PC
Hector	<b>9</b> <sup>th</sup>	15	Autism	3 <sup>rd</sup>	2.0
Brian	10 <sup>th</sup>	16	Autism	2 <sup>nd</sup>	K8
Sofia	11 <sup>th</sup>	17	Autism	5 <sup>th</sup>	4.8

# 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 tutorial sessions in the special education setting

## **Materials**

Teacher Materials (for modeling and prompting)

- CSR–HS graphic
- lesson plan
- rubrics
- assigned text and comprehension questions (from Read Naturally®, Inc.)
- timer
- instruments for writing

#### **Optional Materials**

- note cards, sticky notes, or white board for key words
- visual for introducing topic: photos, props, artifacts

#### **Observer Materials**

- fidelity form
- site implementer note-taking document

## **Research Design**



# **Dependent Variables**

• Accuracy of responding to reading comprehension probes

### Challenging behavior

- Hector: off-task
- Brian: task refusal
- Sofia: skin picking

Social interactions (imitation and responding)

# **Data Collection**

- Percent correct from permanent product (RC probes)
- Event recording for task refusal (% of opportunities) and social interactions (frequency)
- Partial interval recording for off-task behavior and skin picking
- Treatment fidelity was measured for 100% of the sessions
- Interobserver agreement was measured for at least 40% of the sessions

### Baseline

• 30-minute, teacher-led, business as usual sessions

 Participant read out loud or silently a randomly selected passage on his/her instructional reading level.

 Implementer provided directions to answer reading comprehension questions.

Participant completed probes without receiving error correction or prompting.

### Intervention

 Overview Sessions: priming technique that provided students with an opportunity to access the steps of CSR–HS strategies prior to beginning CSR– HS lessons

#### • CSR-HS Sessions:

- Paired with trained typically developing peer
- Before, during, and after reading model
- Strategy instruction
- Cooperative learning
- Adaptations for ASD: priming (tutorials), task analysis, self-monitoring (checklist), least-to-most prompting, and visual cues (pictures, video clips)

CSR-HS-2: specific further adaptations based if needed



## Results

### **Hector and Sofia**

- RC: Improved accuracy of responding upon implementation of CSR-HS as well as during maintenance and independent phases
- **CB:** reduced intervals with off-task behavior (all phases)
- **SI:** increased social interactions (all phases)

RC = Reading Comprehension CB = Challenging Behavior SI = Social Interactions

### **Brian**

- RC: Accuracy of responding dropped during CSR-HS.
  Increase in accuracy upon implementation of CSR-HS 2
- **CB:** reduced intervals with off-task behavior (from CSR-HS until independent)
- **SI:** increased social interactions (from CSR-HS until independent)











### Accuracy of Responding on Reading Comprehension Probes

Participants	Mean Scores					
	Baseline	CSR-HS		Μ	I	
Hector	40%	81%		94%	92%	
Brian	60%	Ph. 1	Ph. 2	75%	NA	
		33%	85%			
Sofia	60%	88%		92%	100%	

### **Occurrences of Challenging Behaviors**

Participants	Mean Scores					
	Baseline	CSR-HS		Μ	I	
Hector	100%	77%		14%	2%	
Brian	33%	Ph. 1 9%	Ph. 2 0%	0%	NA	
Sofia	90%	36%		3%	0%	

### **Frequency of Social Interactions**

Participants	Mean Scores				
	Baseline	CSR-HS		Μ	I
Hector	6	57		95	51
Brian	2	Ph. 1 45	Ph. 2 51	16	NA
Sofia	5	74		73	26

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# Implications

• Findings confirm the need for individualizing instruction for students with ASD.

• The use of multicomponent interventions (e.g., strategy instruction, cooperative learning, behavioral techniques) may improve reading comprehension performance in students with ASD.

 Modifying academic tasks is a promising antecedent intervention that may indirectly reduce challenging behaviors and increase social interactions.

# Limitations

- Limited number of participants
- Self-contained setting
- Researcher-implemented intervention
- Lack of generalization data

### **Direction for Future Research**

• Future research is warranted to examine the generality of CSR-HS strategies across settings and content areas.

• Future research efforts are needed to examine the effects of each approach employed through component analysis.

 Further investigations are warranted to establish evidencebased practices particular to enhancing reading comprehension performance in students with ASD.

### **Select References**

Åsberg, J., Kopp, S., Berg-Kelly, K., & Gillberg, C. (2010). Reading comprehension, word decoding and spelling in girls with autism spectrum disorders (ASD) or attention-deficit/hyperactivity disorder (AD/HD): performance and predictors. *International journal of language & communication disorders*, *45*(1), 61-71.

Carnahan & P. Williamson, *Quality literacy instruction for students with autism spectrum disorders* (pp. 21-44). Shawnee Mission, KS: Autism Asperger.

O'Connor, I. M., & Klein, P. D. (2004). Exploration of strategies for facilitating the reading comprehension of high-functioning students with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, *34*(2), 115-127.

Whalon, K., & Hanline, M. F. (2008). Effects of a reciprocal questioning intervention on the question generation and responding of children with autism spectrum disorder. *Education and Training in Developmental Disabilities*, *43*, 367-387.

Vaughn, S., Klingner, J. K., Swanson, E. A., Boardman, A. G., Roberts, G., Mohammed, S. S., & Stillman-Spisak, S. J. (2011). Efficacy of Collaborative Strategic Reading With Middle School Students\*. *American educational research journal*, *48*(4), 938-964.

Vaughn, S., & Klingner, J. K. (1998). Students' perceptions of inclusion and resource room settings. *The Journal of Special Education*, *3*2(2), 79-88.

Vaughn, S., Klingner, J. K., & Bryant, D. P. (2001). Collaborative strategic reading as a means to enhance peer-mediated instruction for reading comprehension and content-area learning. *Remedial and Special Education*, 22(2), 66-74.

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