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# **An Examination of A Reading Comprehension Intervention in Secondary Students with ASD: CSR–HS Pilot Year 2**

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FOR PREVENTING EDUCATIONAL RISK



# Overview

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# ASD Intervention Research

- The 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, 2013).
- 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 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)
- Antecedent and consequence-based ABA principals (e.g., priming, shaping, prompting, task analysis, providing choice opportunities, incorporating student interests, positive reinforcement, etc.)

# Rationale

- Reading comprehension is important to academic success and quality of life (Carnahan & Williamson, 2010).
- NCLB and IDEA (inclusion & same expectations)
- Reading intervention research for students with ASD is very limited (El Zein et al. 2013)

# Why CSR?

- During a 20-year period, CSR has been evaluated using quasi-experimental and RCT designs, yielding 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), Klingner & Vaughn, 1996).
- Year 1 pilot study by Reutebuch, Vaughn, El Zein, Kim, and Weinberg (in review) suggested that modifying CSR may enhance reading comprehension, reduce challenging behaviors, and increase social interactions of three adolescents with ASD.

# Research Questions

1. What are the effects of implementing CSR–HS on reading comprehension outcome and challenging behaviors of three adolescents with ASD and deficits in reading comprehension?
2. What are the effects of implementing CSR–HS with choice of text in comparison to implementing CSR–HS without choice to adolescents with ASD and deficits in reading comprehension?
3. How do students' perspectives about reading change after implementation of CSR-HS as measured by a researcher-developed social validity student questionnaire?



# 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

Participants	Grade	Age	Diagnosis	Instructional Reading Level	WJ-III PC
Victor	10 <sup>th</sup> gr.	16	Autism	3 <sup>rd</sup> gr.	2.0
Roxana	12 <sup>th</sup> gr.	17	Autism	5 <sup>th</sup> gr.	4.8
Maceo	11 <sup>th</sup> gr.	17	Autism	2 <sup>nd</sup> gr.	K8

# 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–Lite graphic
- lesson plan
- rubrics
- assigned text
- timer
- instruments for writing

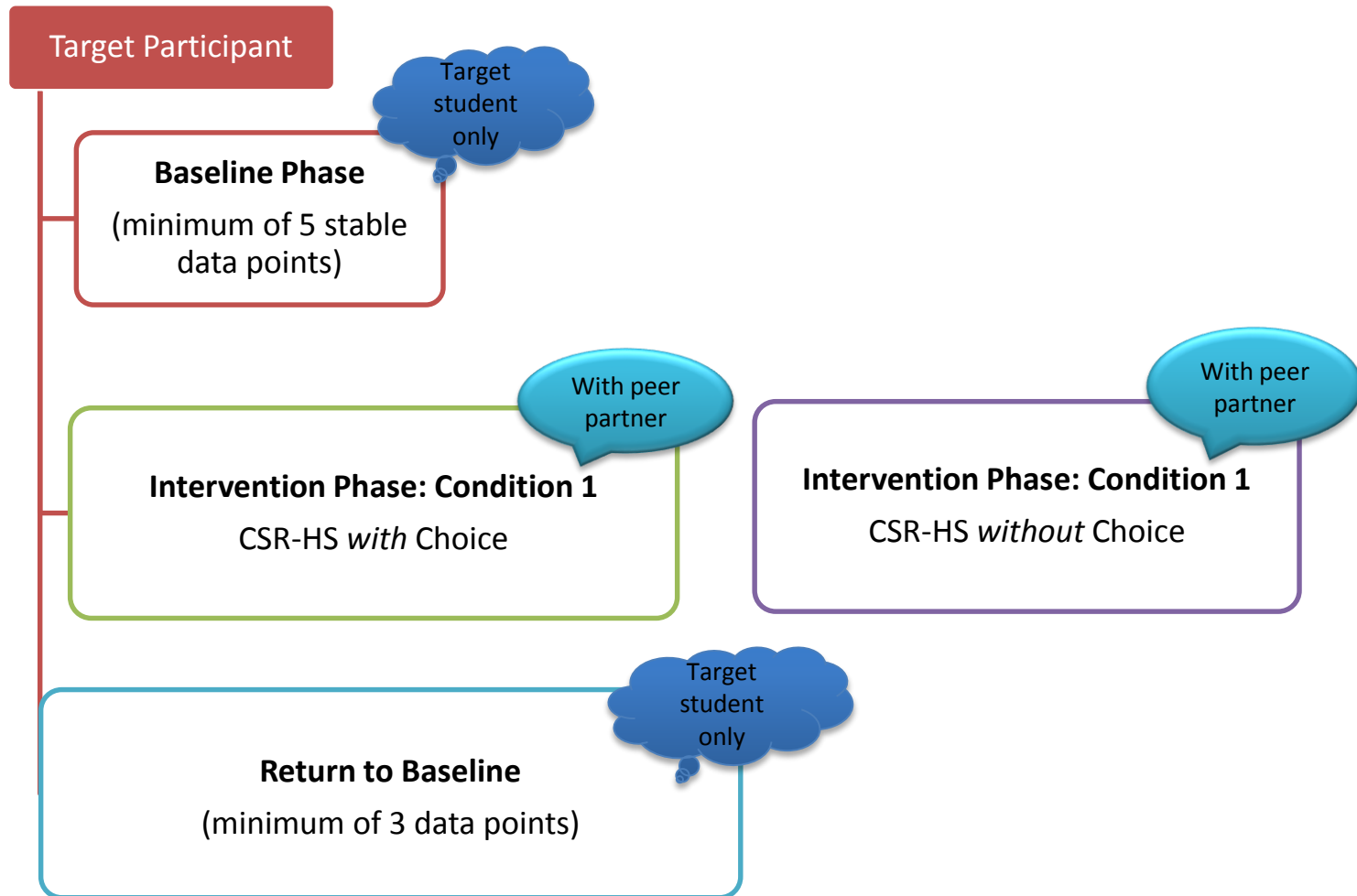
## **Optional Materials**

- 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

- **Reading comprehension**

Accuracy of responding on “cloze” probes

- **Challenging behavior**

- Hector: off-task behavior

- Brian: task refusal

- Sofia: skin picking

# Data Collection

- Percent correct from permanent product (RC probes)
- Event recording for task refusal (% of opportunities)
- Partial interval recording for off-task behavior and skin picking
- Treatment fidelity was measured for 100% of the sessions (M = 97%)
- Interobserver agreement was measured for at least 40% of the sessions (M = 100% for reading; M = 95% for CB)



# Preference Assessment

The purpose for this multistep assessment process was:

- (1) to ensure that the choice of text presented to each participant included only highly preferred text, and
- (1) to keep text preference constant across sessions and conditions in order to increase the likelihood that the impact of choice led to the possible changes in the outcomes during both treatment conditions, and not topic preference.

# Preference Assessment

- First, each student was given a **paired-stimulus preference assessment** (Fisher et al., 1992) to rank order (i.e. 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, etc.) broader reading topics (e.g. cells, American pioneers, computers, sea creatures, etc.)
- From the identified high preference topics, a **multiple-stimulus without replacement preference assessment** (MSWO; DeLeon & Iwata, 1996) was administered to identify the 3 highest-preference passages within each topic.
- Only passages identified as the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> highest preferred in a given topic were randomly selected and presented to the participants during all sessions (i.e., baseline, intervention, and return to baseline).

# Baseline

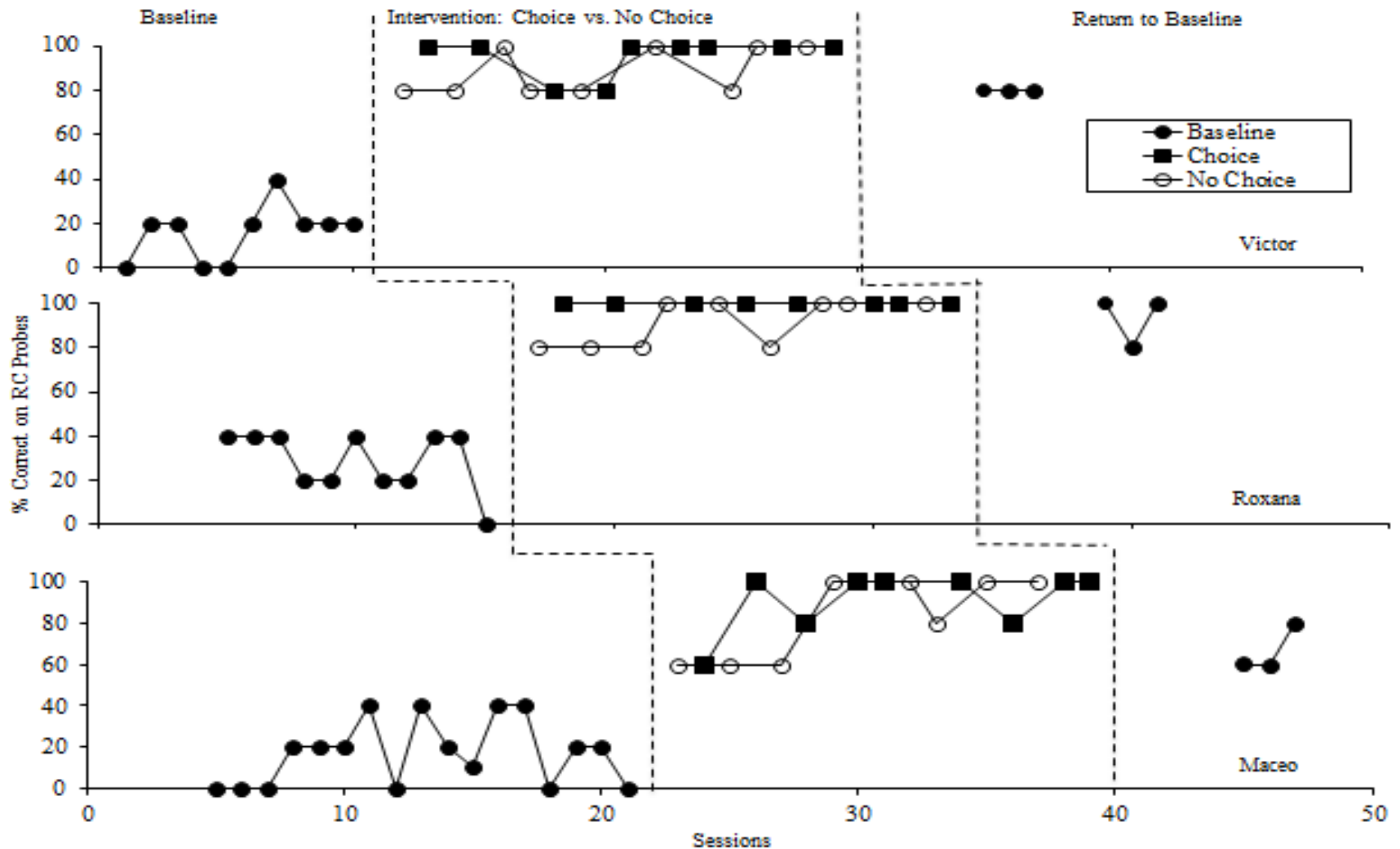
- 30-minute, teacher-led, business as usual sessions
- Participant read out loud or silently a randomly selected passage on his/her instructional reading level.
- Implementer provided directions to answer reading comprehension questions and delivered praise for correct responding and corrective feedback for inaccurate responses.
- 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
  - Structured task units through a “learning log”
  - Cooperative learning
- **Adaptations for ASD:** priming (tutorials), task analysis, self-monitoring (checklist), least-to-most prompting, and visual cues (pictures, video clips)
- **CSR-HS-C:** Identical to CSR-HS-NC procedures except for providing the target student with three passages to choose from.

# Results

## Accuracy of Responding on Reading Comprehension Probes



# Results

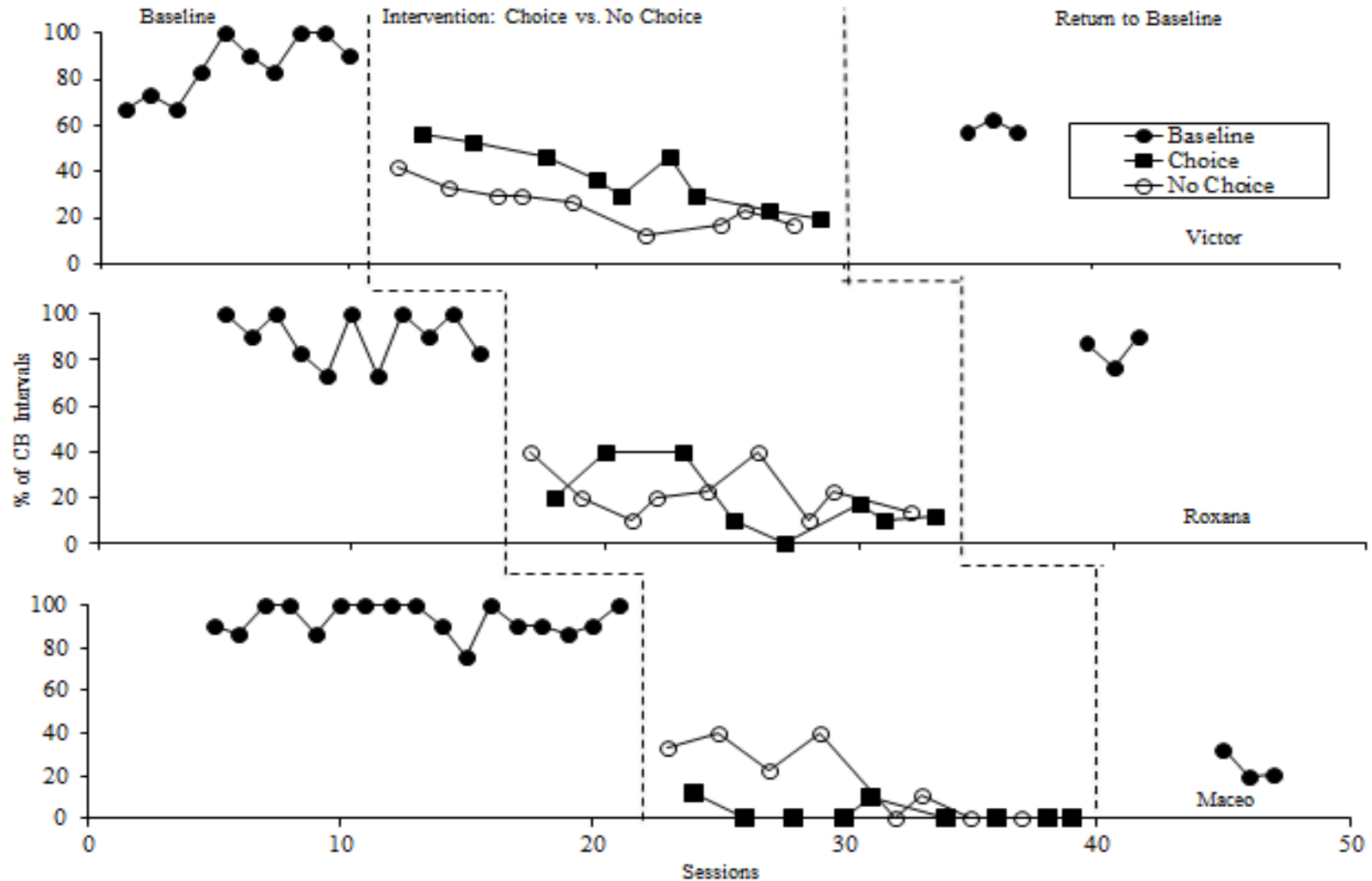
## Accuracy of Responding on Reading Comprehension Probes

Participant	Baseline (%)	CSR-HS-C (%)	CSR-HS-NC (%)	Return to BL (%)
Victor	16	96	89	80
Roxana	15	100	91	91
Maceo	16	91	82	67

- Performance on reading comprehension probes improved upon implementation of CSR-HS for the 3 participants.
- Levels of performance were higher during the CSR-HS-C condition in comparison to CSR-HS-NC for the 3 participants.
- Less differentiation between conditions was noticed during the final sessions of the intervention.
- A decrease in % correct was detected for the 3 participants upon “return to baseline”.

# Results

## Occurrences of Challenging Behaviors



# Results

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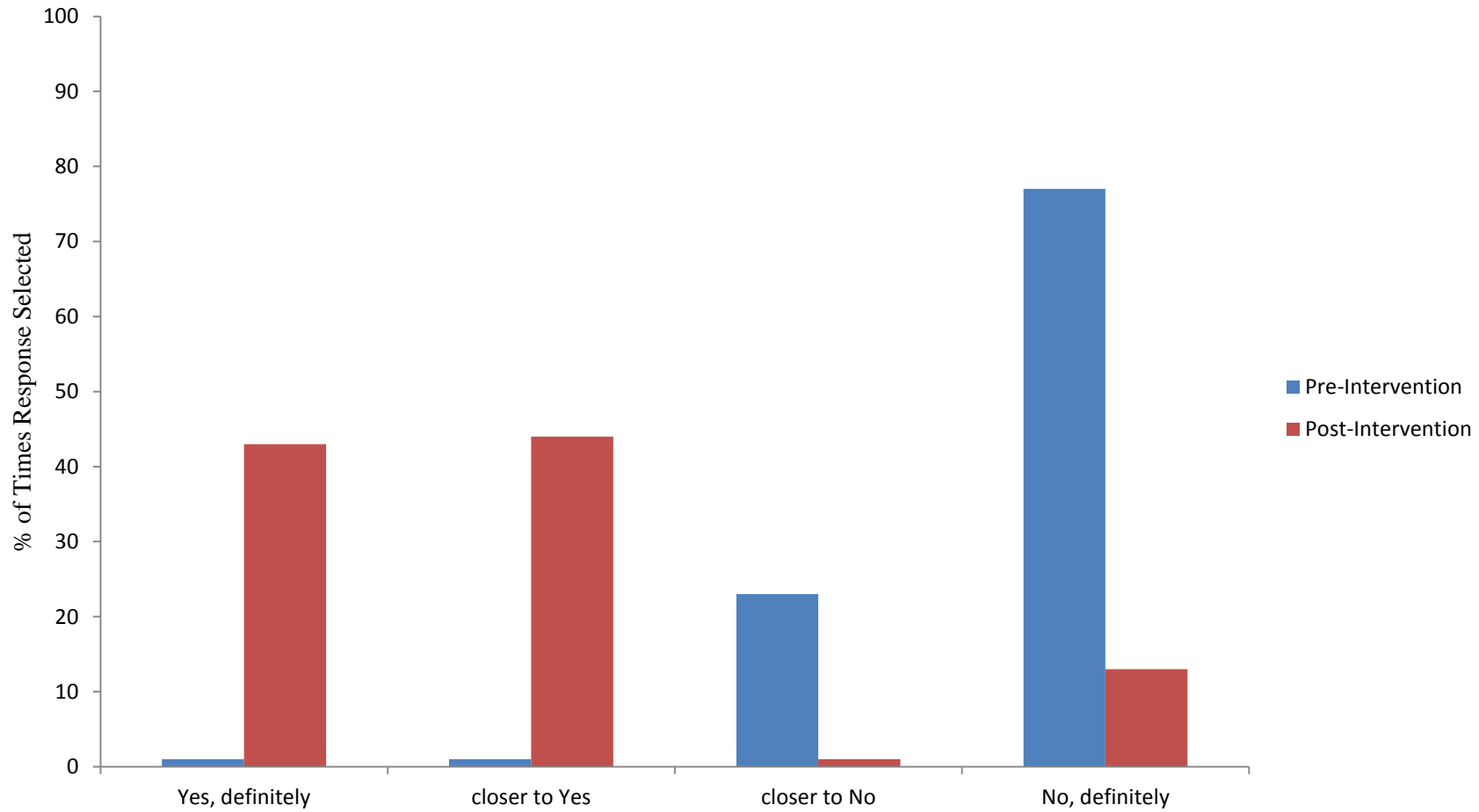
Participant	Baseline (%)	CSR-HS-C (%)	CSR-HS-NC (%)	Return to BL(%)
Victor	85	30	19	59
Roxana	90	22	17	85
Maceo	93	2	16	24

- Occurrences of challenging behavior (CB) decreased upon implementation of CSR-HS for the 3 participants.
- Levels of CB were higher during the CSR-HS-C condition in comparison to CSR-HS-NC for Victor, yet the opposite was detected for Maceo.
- No CB data differentiation between conditions was noticed for Roxana.
- An increase in CB was detected for the 3 participants upon “return to baseline”.



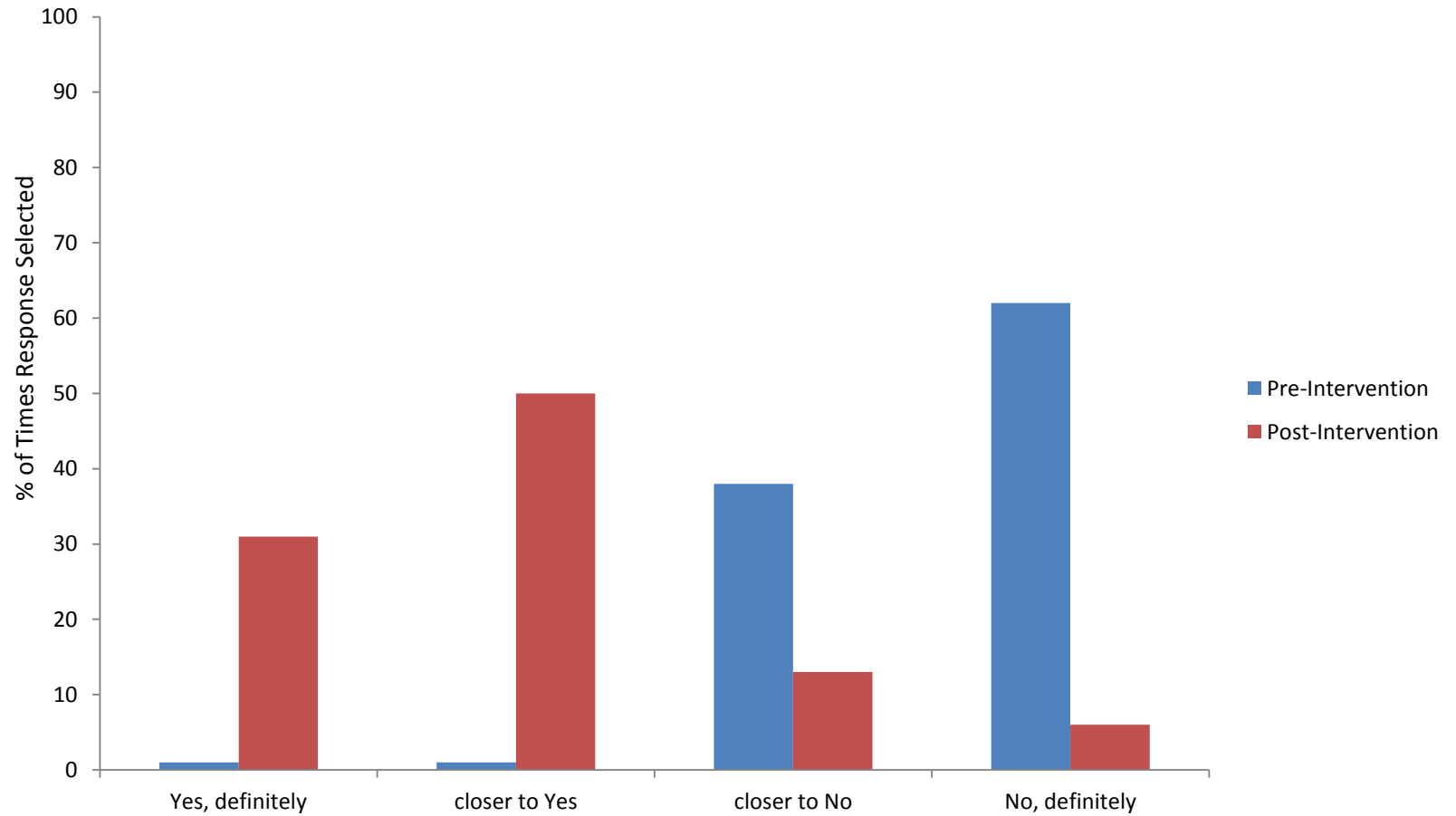
# Results

## Victor's Social Validation Scores



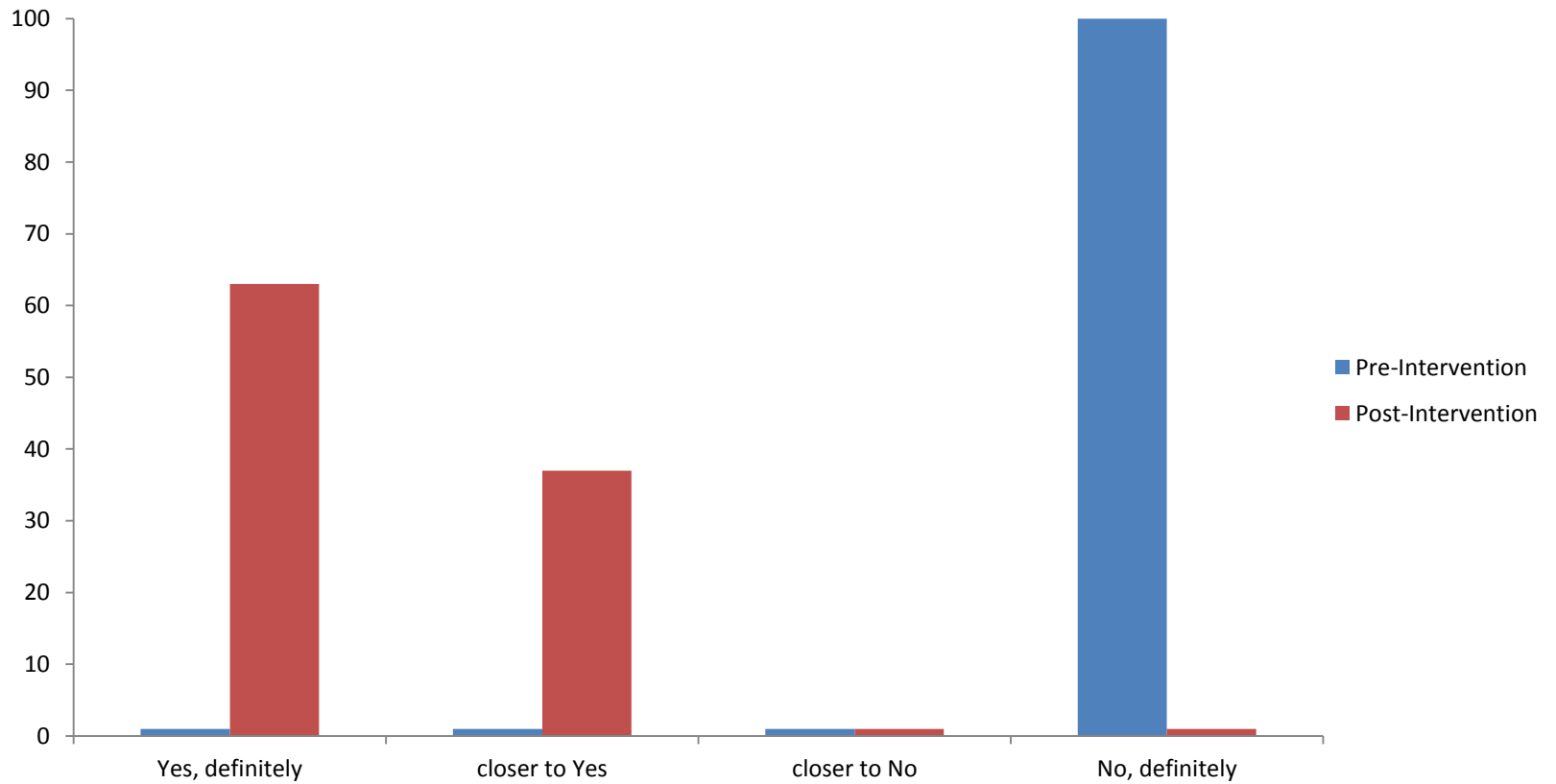
# Results

## Roxana's Social Validation Scores



# Results

## Maceo's Social Validation Scores



# Implications

- Strategy instruction and peer-mediated instruction are promising approaches to enhancing reading comprehension for this population.
- Multicomponent interventions that incorporate ABA-based techniques may improve academic performance and reduce incidences of challenging behaviors in students with ASD.
- Providing students with opportunities to make choice is a promising antecedent-based intervention to enhance academic performance for students with ASD.
- A modified version of CSR-HS was shown to be associated with more positive student attitude towards each of the participant's own reading abilities and experiences.

# 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 generalization of CSR-HS effects across settings and content areas.
- Future research efforts are also needed to examine the effects of each approach employed through component analysis.
- Further investigations are warranted to establish evidence-based practices particular to enhancing reading comprehension performance in students with ASD.