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## THE IMPACT OF PREFERRED CHARACTERS IN TEACHING COMMUNITY SIGN READING TO STUDENTS WITH MODERATE INTELLECTUAL DISABILITIES

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THE IMPACT OF PREFERRED CHARACTERS IN TEACHING COMMUNITY  
SIGN READING TO STUDENTS WITH MODERATE INTELLECTUAL  
DISABILITIES

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THESIS

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A thesis submitted in partial fulfillment of the  
requirements for the degree of Master of Science in the  
College of Education  
at the University of Kentucky

By

Mallory Evans

Lexington, Kentucky

Director: Dr. Melinda Ault, Professor of Special Education

Lexington, Kentucky

2015

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## ABSTRACT OF THESIS

### THE IMPACT OF PREFERRED CHARACTERS IN TEACHING COMMUNITY SIGN READING TO STUDENTS WITH MODERATE INTELLECTUAL DISABILITIES

The purpose of this study was to determine the impact of using preferred characters with a constant time delay instructional procedure to teach community sign reading to three students with moderate intellectual disability with the definitions of the signs as non-targeted information. An adapted alternating treatments design was used to evaluate the effectiveness and efficiency of the preferred characters on acquisition of the community signs. Pre- and post- assessments were conducted on acquisition of the non-targeted definitions, as well as generalization of the signs and their meanings. The results indicated that all students learned the target signs and they learned all of the definitions of the signs when they were presented with a preferred character. Students did not generalize the meanings of the signs to community settings.

**KEYWORDS:** moderate intellectual disability, preferred characters, non-targeted information, constant time delay, community signs

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Mallory Evans

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November 30, 2015

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DISABILITIES

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## **Section 1: Introduction**

Students with moderate and severe disabilities (MSD) spend their school days in both special education and general education classrooms, as well as in the community learning academic, functional, vocational, and independent living skills. It is crucial that this population can demonstrate their acquired academic skills and apply those skills to real world settings in order to live as independently as possible and gain meaningful employment following high school (Collins, 2007). To teach these skills, teachers must identify instructional procedures that are both effective and efficient. Researchers have identified systematic teaching procedures found to be successful in teaching these skills to students with MSD and promoting generalization of skills to natural environments.

Constant time delay (CTD) is an evidence-based instructional strategy for students with intellectual disability (Browder, Ahlgrim-DeLzell, Spooner, Mims, & Baker, 2009). It is effective for teaching students across disability areas and ages, from mild (Chandler, Schuster, & Stevens, 1993) to severe developmental disability (Miller, Collins, & Hemmeter, 2002) in preschool students (Rogers, Hemmeter, & Wolery, 2010), elementary students (Fiscus, Schuster, Morse, & Collins, 2002) through secondary students (Seward, Schuster, Ault, Collins, & Hall, 2014).

CTD has been used to teach both functional skills and academic skills aligned to the general education curriculum (Collins, 2007). Researchers have used the CTD procedure to teach functional skills, like receptive identification of packaged food items, to secondary students with MSD. Following the time delay intervention, students could identify food items relevant to what they may shop for in a grocery store or cook with at home (Roark, Collins, Hemmeter, & Kleinert, 2002). In another study, investigators used

video prompting with CTD procedures to teach secondary students with moderate disabilities preparation of a food item on a stove, in a microwave, and on a counter top (Graves, Collins, Schuster, & Kleinert, 2005).

CTD has been used to teach academic content to students with moderate and severe disabilities, like high school science core content (Riggs, Collins, Kleinart, & Knight, 2013). In the investigation, secondary students with moderate to severe disabilities learned the principles of heredity, a core content standard similar to that which their general education peers were learning in science class. The CTD procedure with multiple exemplars was effective in teaching the science standard (Riggs, et. al., 2013).

With the growing demand on special education teachers to teach both core content standards and functional and vocational skills, educators must make their instruction as efficient as possible. One way to increase efficiency of instruction is to embed non-targeted or incidental information in the trial sequence. Non-targeted information refers to content that is presented consistently and systematically as an addition to an instructional trial in the antecedent or consequence; however, students are not asked to respond to the content and it is not a target of the instruction (Collins, 2007). Acquisition of the non-target information is typically assessed when skills targeted for instruction reach criterion (Riggs et al., 2013).

Embedding non-targeted information has been used in a variety of studies to teach a variety of skills. For instance, in the Roark et al. (2002) study on teaching students to identify packaged food items, instructors included a manual sign for each food item as non-targeted information. The participants acquired the manual signs of the food items as

well as the packaged food items themselves with 60% accuracy. Furthermore, in the investigation by Riggs et al (2013) on teaching the principles of heredity to students with MSD, the authors included meaningful related non-targeted information presented in the consequence of instructional trials. The non-targeted information related to the student's inherited traits that may not be seen, such as their risk for diabetes, or cancer. In post-intervention trials, all students acquired 100% of the non-targeted information.

Non-targeted information has also been embedded in small group instruction using response-prompting strategies, like CTD, with students with disabilities (Falkenstein et al., 2009). In a study by Falkenstein et al. (2009), students learned chained and discrete tasks as non-targeted information while learning discrete academic skills through small group instruction. Students also learned their group mate's targeted academic skills through incidental learning during the group instructional sessions.

One area that is unexplored in the literature is using high interest content when delivering non-target information to students. High interest content refers to content that relates to the students individual preferences. This may contribute to increased student motivation as well as acquisition of incidental information (Ledford et al., 2012).

Although not studied as non-target information, researchers have studied the use of highly motivating content during instruction. For example, Spencer, Simpson, Day, and Buster (2008) used a Power Card strategy to teach social skills to a 5-year-old student with autism. The Power Card utilized a preferred character on the visual support card as a means to encourage the participant to follow the steps listed on the card (Spencer et al.). The student's social skills (i.e., time spent on the playground and social interactions) improved following the Power Card strategy intervention.

Keeling, Myles, Gagnon, and Simpson (2003) used a preferred character of a 10-year-old child with autism to teach appropriate sportsmanship skills. This strategy was effective in using the preferred character (i.e., Power Puff Girls) to script appropriate behaviors, such as giving high fives and smiling after winning a game. The Power Puff girls also scripted what to do when you lose a game, such as take a deep breath and compliment the opposite team players. The participant generalized her sportsmanship skills to other settings (i.e., not just group games/sports), in which she sometimes becomes frustrated, such as recess.

Furthermore, Ohtake, Takeuchi, and Watanabe (2014) used video self-modeling (VSM) and a preferred character component to decrease public undressing during urination with an elementary-aged student with developmental disability. Following the VSM intervention, there was no change in behavior, so a VSM with preferred character component was implemented. Following this modification, the student mastered the skill of not fully undressing during urination.

## Section 2: Research Questions

Although the previous studies show the successful use of preferred characters as a means to teach functional and social skills to students with developmental disabilities, there is a lack of research in the area of using preferred characters with secondary students with moderate intellectual disability. There is also a lack of research in the area of using preferred characters in teaching non-targeted information. To add to the literature, the current study asked the following questions:

1. What are the differential effects of (a) constant time delay plus the delivery of non-targeted information *without* a preferred character component and (b) constant time delay plus the delivery of non-targeted information *with* a preferred character component on the increase in level and trend of community sign reading of middle school students with moderate intellectual disability?
2. What are the differential effects of (a) non-targeted information presented *without* a preferred character component and (b) non-targeted information presented *with* a preferred character component on the acquisition of the non-targeted information of middle school students with moderate intellectual disability?
3. What are the differential effects of (a) non-target information presented *without* a preferred character component and (b) non-target information presented *with* a preferred component on an increase in acquisition of the non-target information taught to other students in the group of middle school students with moderate intellectual disabilities?

## Section 3: Method

### Prerequisite Skills

Three students, all males, ranging in age from 12-15 were recruited for this study. Students in this study met the following criteria: (a) visual acuity to see the community sign when presented (i.e., students with visual impairment are still able to see the signs), (b) verbal ability to state the signs when they are presented, (c) adequate hearing to hear prompts (d) the ability to wait for a prompt for a minimum of 3 s, (e) the ability to match like signs (f) an attendance record with less than 8 absences for the current school year, (g) identified reinforcers, and (h) verbal imitation of a word or phrase.

Students were assessed on prerequisite skills through teacher-made assessments prior to beginning the program.

### Participants

**Students.** All students received special education services provided in a classroom for students with moderate and severe disabilities and participate in the Kentucky Alternate Assessment Program. The first participant, Aaron, was 13 years old and in the seventh grade at his middle school. Aaron was diagnosed with multiple disabilities, including visual impairment and functional mental disability. He had been receiving special education services since age 5 in the areas of reading, writing, math, science, social studies, and vocational instruction. The reading, writing, and math subtests of the Kaufman Test of Educational Achievement-2 (KTEA-II) were administered in February 2014 to formally assess Aaron's academic skills (Kaufman, A. & Kaufman, N., 2004). He earned a Composite Reading Score of 57. His Composite Writing Score was 40 and his Composite Math score was 41. These scores fall in the far below average



range as compared to same age peers. The KTEA-II also indicated had an IQ of 50. An adaptive behavior score of 50 was obtained from the Vineland-II (Sparrow, Cicchetti, & Balla, 2005). Aaron was included in general education elective classes of art and physical education for 80 minutes per school day. He was familiar with systematic instruction, including CTD, as delivered from the classroom staff in his classroom.

Aaron's individual education program (IEP) goals were in the areas of reading, math, writing, and vocational skills. His reading objectives included reading a passage, reading survival/community signs, and answering reading comprehension questions following a passage read aloud. His math objectives included multiple-digit addition and subtraction problems using a calculator, counting bills and coins, and using the next dollar strategy to count bills and determine money necessary to pay for an item. His writing objectives included typing his personal information (i.e., full name, address, phone number, emergency contact). His vocational objectives involved staying on task without calling out and transitioning from one activity to the next without talking. Aaron's strengths were in math and vocational tasks. He struggled in the area of writing, due to his visual impairment, but he typed from a model. Aaron received 30 minutes of speech and occupational therapy weekly.

Another participant, Bryce, was 14 years old and in the eighth grade. Bryce had a diagnosis of functional mental disability and had been receiving special education services since preschool. Bryce was receiving special education services at the middle school in the areas of reading, math, writing, and vocational skills. The KABC-II (Kaufman, Lichtenberger, Fletcher-Janzen, & Kaufman, 2005) was administered to Bryce in May 2013 and he received an IQ score of 43, in the severely low range. He had an

adaptive behavior score of 50 from the Vineland-II (Sparrow, Cicchetti, & Balla, 2005). He attended general education elective classes, like art and physical education, for 80 minutes per school day. Bryce was familiar with systematic instruction, including CTD, from the classroom staff.

Bryce's IEP had goals in the areas of reading, math, writing, and vocational skills. His reading objectives related to reading survival and community signs and answering reading comprehension questions following a passage read aloud. His math objectives related to number identification and telling time from both analog and digital clocks. His writing objectives included writing his personal information, including his full name and his birthdate. His vocational objectives involved appropriate working behaviors (i.e., hands and feet to self; staying on task, meaning looking at work, when given an academic or functional task) during a set frame of time. Bryce's strengths were in the areas of reading comprehension and reading survival signs. Bryce's weaknesses fell in the areas of writing, as he needed verbal prompting for all writing tasks. He received 30 minutes of speech and occupational therapy weekly.

Evan, the third participant, was 14 years old and in the eighth grade. Evan had a diagnosis of multiple disabilities, including cerebral palsy, visual impairment, and functional mental disability. He had been receiving special education services since moving to the United States at the age of 8 years old. He received services in the areas of reading, math, writing, and vocational skills. The KABC-II (Kaufman, et. al., 2005) was administered to Evan in 2013 and he received an IQ score of 62, in the 1<sup>st</sup> percentile, or the low range. Evan had an adaptive behavior score of 50 according to the Vineland-II (Sparrow, Cicchetti, & Balla, 2005). Evan also went out to elective classes, art and

physical education for 80 minutes every school day. He was familiar with systematic instruction, including CTD, from the classroom staff.

Evan's IEP goals were in the areas of reading, math, writing, and vocational skills. His reading objectives included reading word phrases, reading survival/community signs, and answering reading comprehension questions following a passage read aloud. His math objectives included solving multi-digit mathematical equations with a calculator, counting bills and coins, and using the next dollar strategy to count out cash. His writing objectives included writing a sentence legibly from a model and typing a paragraph from a model. Evan's vocational objectives were completing functional and vocational tasks (e.g., sorting utensils) within an allotted period of time. He received speech and occupational therapy for 30 minutes weekly and physical therapy for 30 minutes twice per month. His strengths were in the areas of math, including using a calculator for computations and counting out dollar and coin amounts and using the next dollar strategy to determine the amount of cash needed to pay for an item. Evan's weaknesses were in reading comprehension and handwriting. Although he can write, his handwriting was often illegible, according to the special education teacher. Evan was familiar with systematic instruction, including CTD, from the classroom staff.

**Others.** The researcher, who was also the classroom teacher, conducted all training sessions. The teacher was in her fifth year of teaching and enrolled in a master's teacher leader program. She was familiar with systematic instruction and the CTD procedure due to previous teaching experience and an undergraduate degree in special education.

Another staff member in the classroom collected procedural fidelity and interobserver reliability data. This staff member was a special education paraeducator who had been in this special education classroom for the past 5 years. The staff member also had training from the classroom teacher and other special education professionals in using systematic instruction with students and she had been doing so for the past 5 years.

### **Dependent Variable**

The dependent variable was verbally reading signs that were found in community settings. A community sign was defined as a sign with a picture symbol as well as text describing a commonly found place or action in the community (e.g., stop; do not enter; walk; go). Each participant had the following objective for this program: When shown a collection of 4 community signs, the student will verbally read the signs with 100% accuracy for 3 consecutive sessions.

### **Rationale**

The rationale for teaching the target behavior of learning to orally identify community signs was due to the students' IEP present levels of performance as well as their participation in community-based instruction. All students participated in community instruction up to two times per month, practicing functional skills and working on objectives toward independence. If students can read community signs independently, they can manipulate the community with less dependence on others.

### **Precautions for Program Implementation**

A precaution existed for Bryce who exhibited aggressive behaviors a few (i.e., 2-3) times a week as a function of task avoidance. The teacher was familiar with his written

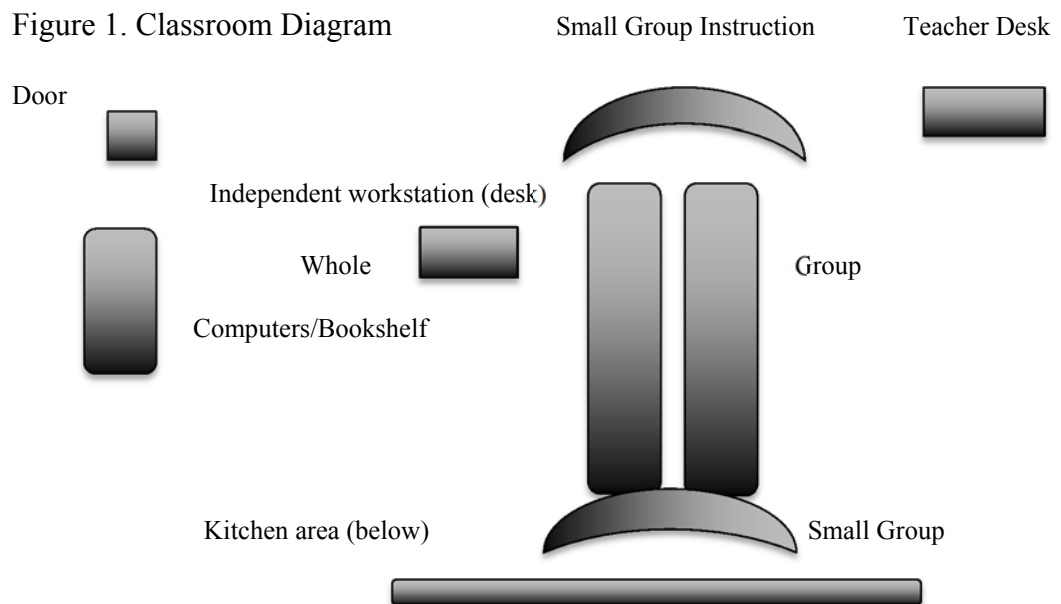
behavior plan, which was developed based on a functional behavior assessment. No other precautions existed other than those associated with typical classroom routines.

**Instructional Setting and Arrangement**

Every experimental session (i.e., screening, baseline, training, and maintenance) was conducted in the resource special education classroom for students in grades 6-8 with MSD. The teacher conducted screening sessions with the participants in a one-on-one setting. The instructional format during baseline, intervention and maintenance was a small group arrangement, with all three participants present.

The sessions took place at a kidney-shaped table in the back of the classroom. See Figure 1 for a diagram of the classroom. The instructor was the same for all sessions, while the time of day of the sessions alternated between morning and afternoon. To control for distractions, students were facing the instructor as well as facing the kitchen area; they were facing away from other staff and students in the classroom. The other students in the classroom were involved in activities supervised by paraeducators during this time to minimize distractions.

Figure 1. Classroom Diagram



## Materials and Equipment

Materials included community signs in the form of the sign seen throughout the natural environment with text in the appropriate spot according to the sign (e.g., a large letter “H” with the word “Hospital” underneath). These signs were on 14 cm x 10 cm cards. Students were exposed to many of these community signs during community-based instruction trips, although they could not read the signs. These real-world materials were age appropriate for middle school students. The visuals to teach the non-targeted information (i.e., the definitions of community signs) were on 18 cm x 23 cm paper, including the preferred characters. One visual was on 23 cm x 27 cm paper, for Aaron, the student with the most severe visual impairment. Figure 2 shows an example for the preferred character visual and an example for the non-preferred character visual.

Figure 2. Visuals for Preferred and Non-Preferred Condition

Preferred



Teen Titans Go! says...

You can cross the street when you see the walk sign.

Non-Preferred



You can cross the street when you see the walk sign.

Programming for generalization occurred throughout the intervention sessions by using multiple exemplars. Students were shown a community sign on the curriculum card, with the sign and the text, and then they were also shown only the text handwritten on a 5 by 10 cm index card.

As part of the ongoing management system in the classroom, the teacher distributed tokens on students' individual work cards during intervention sessions. Each student had a 22 x 28 cm work card with their expectations (i.e., rules for working) listed with corresponding picture symbols, as well as places for 5 tokens. At the bottom of the card was a place for students to select a reinforcer from a menu of items. Students placed a picture of what they were working for (e.g., rocking chair; computer) on the bottom of the card prior to the session.

### **Experimental Design**

An adapted alternating treatments design (AATD) was used for this study to evaluate the effects of multiple independent variables on multiple dependent variables. Experimental control was demonstrated when the dependent variable assigned to one intervention was acquired more rapidly than the dependent variables assigned to the remaining interventions regardless of the sequence of their application. The teacher analyzed the data during the comparison condition to determine if there was overlap in the data series and if the performance levels under one condition (i.e. preferred characters) were consistently different from and acquired more rapidly than the performance levels under a compared condition with no preferred characters present (Gast & Ledford, 2014).

### **General Procedures**

The AATD was used to evaluate the effects of multiple independent variables (preferred characters versus no preferred characters) on different, but equally difficult dependent variables of verbally reading community signs.

The teacher identified 4 target signs/words per condition (i.e. preferred condition and non-preferred condition) for each participant and evaluated if the students knew any of the community signs and their meanings for five sessions in a one-on-one format. The teacher assigned sets of words that were determined to be equally difficult to learn to the preferred condition and the non-preferred condition.

The teacher taught two sets of four different words per set per student in separate sessions, one set with the preferred component and one without the preferred component. Two sessions occurred per day, one in the morning and one in the afternoon. The morning and afternoon sessions were randomly counterbalanced with the preferred



component and without the preferred component in order to ensure students were receiving equal amounts of each intervention.

During the comparison condition, the students were in a group format and the CTD intervention and the addition of the preferred characters for each student was randomly alternated an equal number of times (i.e., a session with the preferred character, then a session without the preferred character) to teach the community signs and the non-targeted information. A visual card (i.e., Figure 2) was used with both the preferred character (i.e., a picture of the character) as well as without the preferred character to teach the non-targeted information. Assessment of the non-targeted information occurred prior to instruction and after criterion was achieved on both sets of words.

### **Screening Procedures**

The classroom teacher, along with the student's family, decided which signs would be most appropriate for the students to learn. To decide on target community signs, the teacher asked each student's parent, "What places in the community does \_\_\_\_\_ (student's name) frequent most often?" And, "Which signs should \_\_\_\_\_ (student's name) know based on these community places (e.g., walk sign, restroom)?" The teacher then toured the places listed by the families in order to see what signs were present.

All three participants participated in three screening sessions across 3 different school days. They were screened on 25 community signs total (i.e., about 8 community signs per session). Two trials per survival sign per session were conducted, as all students were able to sit and attend for this long.

The screening trials were conducted in a one-on-one format with one student facing the teacher. The teacher first gave the student an attending cue of, "Are you

ready?” and waited for the student to look and answer affirmatively or head nod, “yes.” Then, the teacher presented the student with the target community sign, asked, “What sign?” and waited 3 s for student response. If the student did not respond (i.e., said nothing), the teacher moved on to the next sign with no feedback. If the student responded correctly (i.e., verbally stated the correct name of the community sign), the teacher provided descriptive verbal praise (e.g., “Good! I like how you read the stop sign!”). If the student responded incorrectly within 3 s (i.e., verbally stated the incorrect name of the community sign), the teacher provided no feedback and moved on to the next sign. This continued for all of the targeted stimuli in the session. Data were recorded with a “+” for correct responses, a “-“ for incorrect responses, and a “0” for no response on the attached data sheet for screening and baseline sessions (see Appendix A). The teacher provided feedback at the end of the session, telling the student he did a nice job working. Each student went through 2 screening sessions. From the collection of signs that the student was unable to identify for 2 sessions, the teacher selected the training targets.

The same procedures listed in the instructional procedures section were used to screen students on the definitions of the community signs, as the teacher asked the student, “What does \_\_\_\_\_ (e.g., “enter”) mean?” and waited 3 s for the student’s verbal response defining the sign.

### **Assignment of Stimuli to Preferred and Non-preferred Conditions**

All of the targeted words and corresponding definitions were of equal difficulty to the students, as they were chosen based on their instructional level and relevance to their life at school and in the community. Another special education staff member worked with the classroom teacher to determine words/signs of equal difficulty, looking at the

number of words on each sign and the number of syllables. The teacher assigned words to the preferred condition that were equally difficult to words in the non-preferred condition. The teacher then randomly assigned the visual aids to the definitions of each sign by coin toss, whether it was a general visual or a visual of the preferred character.

### **Identification of Preferred Character**

Non-targeted information was planned in this study as the teacher presenting the definition of the signs following correct responses of the student during intervention. To determine the preferred characters to be used in the preferred condition, the instructor conducted a preference assessment. The preference assessment provided students with visual choices of characters to see which they chose (e.g., character from *Teen Titans Go!*). Ten visual choices were laid out in front of students, two at a time, and they were asked to choose which character they liked best. Based on which character was chosen most often for each student, this was his character assigned for the preferred condition. Preferred character pictures included: Finn and Jake (*Cartoon Network*), Team Umizumi (*Nickelodeon*), and *Teen Titans Go!* (*Cartoon Network*). All students were familiar and interested in these characters, as confirmed by their families.

### **Assessment of Non-targeted Information**

Non-targeted information was included as the definitions of the four targeted community signs within the instructional sessions, following the student's response when asked, "What sign?" Two of the four survival sign definitions were written out and presented as solely the definition, with a picture to aid in comprehension, while the other two definitions were written out and paired with a picture of the student's preferred character (i.e., *Teen Titans Go!*; Finn and Jake). For instance, the preferred picture was on

a card along with the definition, and the teacher stated, “Finn (or other preferred character name) says follow the walk sign and only cross the street when you see this sign appear.”

**Pre-test.** A pre-test was conducted with each participant prior to instruction in which the teacher asked students to define each community sign one time for all four words. These sessions were similar to baseline sessions, in which students were only given feedback for correct responses (i.e., correct definitions) and at the end of the session for attending. A correct response was defined as the student verbally stating at least two words of the definition of the sign (i.e., “the walk sign means cross street”). A “+” was given for correct responses. An incorrect response was defined as stating part of the definition, but not all, or stating an incorrect definition of the sign. This was recorded with a “-“. No response for the definition of the sign meant that the student did not say anything when asked to define the target community sign. Following the pre-test, the data indicated that none of the students knew any of the definitions of the targeted community signs. The target stimuli and non-target information presented for each participant is shown in Table 1.

Table 1. Non-targeted Information Pre- and Post-Test

<b>Name</b>	<b>Target Stimuli (preferred)</b>		<b>Non-target definitions (preferred)</b>		<b>Target Stimuli (non-preferred)</b>		<b>Non-target definitions (non-preferred)</b>	
Aaron	Women’s Restroom		Only women or girls use this bathroom		In		You can go in this way	
	Elevator		You can get on the elevator here		Go		Tells us which way to go	
	Danger		Stay away when you see this		Poison		Do not touch it	

	Out		Go out this way		Fire Station		We call 911 if there's fire	
Bryce	Bus stop		Where we wait for the bus		Keep out		Stay away when you see this	
	Caution		Be careful		First aid		Tells us where to get band-aids or medicine	
	Stop		Do not go. You must wait		Stairs		Tells us where the stairwell is	
	Office		The way to the office		Emergency		How to get help	
Evan	Closed		We cannot go in		Hot water		Don't touch it	
	Do not enter		Stay back		Up/Down		Which way to go	
	Walk		Cross the street		Enter		We go in this door	
	Exit		We go out this door		Girl's Restroom		Only girls use this restroom	

During each intervention trial with each student, the teacher presented the definitions of non-targeted information after they responded and feedback was provided. Following identification of the signs, the teacher told each student in a round robin format, "The \_\_\_\_\_ sign means...." The teacher delivered the non-targeted information. The teacher provided verbal praise for working behaviors during the delivery of non-targeted information (i.e., eyes on teacher; hands and feet to self).

**Post-test.** The instructor conducted a post-test of non-targeted information following the students meeting criterion in each condition. The post-test was conducted exactly as the pre-test, as the teacher asked students to define each community sign one time for all four words. Similar data collection procedures were used to determine if students could verbally state the meaning of each target community sign from each

condition. The students must say at least 2 words of the non-targeted information, as listed in the above table, in order to have a correct response when asked to define the sign.

See Appendix D for the data collection sheets that were used to determine acquisition of definitions of targeted survival signs. Students were asked, “What does this sign mean?” in the post-test. The table below demonstrates how data was collected on both the student verbally reading the community sign as well as stating the sign’s definition.

Table 2. Non-Targeted Information

Student Name: \_\_\_\_\_ Instructor Name: \_\_\_\_\_  
 Objective: When given community signs and one verbal prompt, the student will read the signs independently and state the meaning of the sign with 100% accuracy for 3 consecutive sessions.

Session (circle): Preferred or Non-Preferred  
 Date: \_\_\_\_\_ Stimulus: “What does \_\_\_\_\_ sign mean?”

Community Sign/Definition	Verbally defines sign	Does not verbally define sign
1. Community sign 1:		
2. Community sign 2:		
3. Community sign 3:		
4. Community sign 4:		

Summary of all responses: \_\_\_\_\_

**Baseline Procedures**

A minimum of five baseline sessions were conducted until data were stable. Baseline sessions were conducted with the community signs with all students prior to intervention, in a small group setting with all three participants at the kidney table. Each

student learned different stimuli based on the signs he was unable to identify in screening sessions. Sessions were conducted in the middle of the students' school day, a time in their schedule in which they knew it was time to work at the table in a small group. Four target stimuli were assessed per session. Each stimulus was assessed three times, with a total of 12 trials per session per student and 36 trials for the group.

The teacher started the session by asking each student, "Are you ready?" and waited for their eye contact and a verbal answer of "yes". Following their answer the teacher asked the students one student at a time, (Name), "what sign?" and presented the target community sign. The teacher waited 3 s for a response before she moved on to the next student and the next target stimulus, in a round robin sequence. If a student responded correctly (i.e., verbally stated the name of the survival sign) within 3 s, the teacher provided descriptive verbal praise (e.g., "Great job! This sign does say 'walk'"). If a student responded incorrectly within 3 s (i.e., says the wrong sign), the teacher provided no feedback and moved on to the next student and stimulus. If the student provided no response within 3 s (i.e., the student did not verbalize within 3 s), the teacher moved on to the next student and stimulus and again, provided no feedback. This procedure was repeated until all students were asked to identify each of the 4 target stimuli for three separate trials within the session. The teacher told students on the average of every third trial (i.e., VR3 schedule), "I like the way you're working" or "I like the way you're looking at our community signs" throughout the session to promote on-task behaviors.

The teacher recorded the data with a “+” for correct responses, a “-“ for incorrect responses, and a “0” for no response on the attached data sheet for baseline sessions (see Appendix B).

### **Instructional Procedures**

The teacher used constant time delay (CTD) to teach the community signs. CTD was implemented during instructional/intervention sessions in the middle of the school day. These sessions were conducted in a small group format, as all three students faced the instructor at the kidney-shaped table. At minimum, four sessions per week were conducted with criterion for conducting the sessions being that at least two of the three students were present in order for the session to occur. There were four target community signs assigned to each condition (i.e., preferred and non-preferred), and each sign was presented three times, creating a total of 12 trials per session for each student. The teacher conducted the sessions using a round robin format, starting with the student on her left and rotating around the kidney-shaped table. The students did not always sit in the same seat at the kidney table. Each session was either a preferred session, with the preferred character present, or a non-preferred session, without the preferred character present. Preferred and non-preferred sessions were counterbalanced, with one session on one day in the morning and the other in the afternoon, then the timing of those sessions being flipped the next day, and so on.

**Zero second delay sessions.** Two 0 s delay sessions were conducted. In these sessions, the instructor started the session by asking each student, “Are you ready?” and waiting for his eye contact and a verbal answer of “yes.” Following the student’s answer, the teacher gave the task direction, starting with the student on the left, stating his name,



and asking, “What sign?” while she presented the target community sign. The teacher immediately delivered the controlling prompt (i.e., a verbal model of the community sign), and waited 3 s for the student to respond. Possible student responses during 0 s sessions and teacher consequences included (a) student responded correctly after the prompt by saying the name of the sign presented and the teacher praised students for responding correctly, (b) student responded incorrectly after the prompt by saying a name other than the sign presented and did not receive any feedback from the teacher, and (c) the student did not respond after the prompt, or the student said nothing, and the teacher did not provide feedback. During 0 s sessions, three response types were possible. Students either responded correctly following the controlling prompt (+A) (i.e., he said the correct community sign after the prompt), or responded incorrectly following the controlling prompt (-A) (i.e., said something other than the prompt), or the student did not respond following the controlling prompt (0) (i.e., no verbal response). Non-targeted information was not included during this phase.

**Delay sessions preferred condition.** Following two 0 s delay sessions with 100% correct responses after the prompy, and in all subsequent trials, the instructor provided 3 s delay trials, in which the instructor waited 3 s for a response prior to delivering the prompt. The teacher gave an attending cue and then the task direction, “(Student Name), what sign?” The student could respond correctly before the prompt (+B). This was defined as the student verbally stating the correct response within 3 s after delivery of the task direction and before the teacher delivered the prompt. If a student responded correctly (i.e., verbally stated the name of the community sign) within 3 s, the instructor provided descriptive verbal praise and stated the definition of the sign and showed the

visual with the preferred character (e.g., “Great job! This sign does say, ‘do not enter’ and that means you cannot go in”). An example of the visual used for the preferred character with nontargeted information is shown in Figure 2. Second, the student may have responded correctly after the prompt (+A) (i.e., said the presented community sign after the task direction and after the teacher’s delivery of the prompt). If the student responded correctly after the prompt, then the teacher said, “Yes, this is names sign”. Third, if the student responded incorrectly before the prompt (-B), the teacher delivered the prompt and ended the trial by saying, “Wait if you don’t know and I will help you”. Fourth, if the student responded incorrectly after the prompt (-A), the teacher gave the prompt and provided no feedback. Finally, if the student did respond after the prompt (0) (i.e., said nothing within 3 s of delivery of the prompt), no feedback was given.

Only following a correct response before the prompt, non-targeted information was embedded into intervention sessions in the consequence of the trial during this phase. For instance, for the sign, “enter” the classroom teacher asked the student, “What does ‘enter’ mean?” and wait 3 s for a response before delivering the non-targeted information of the definition (i.e., “Enter means you may go inside the door or building”). Details about the non-targeted information are included in the non-target section.

Appendix C shows the data sheet that was used during instruction. Criterion was reached when the student read the target community signs independently with 100% accuracy for 3 consecutive sessions. Reinforcement was given on a continuous schedule, with descriptive verbal praise for correct responses and tokens on the work card for appropriate work behaviors every 3 minutes, until criterion was met for 2 sessions, when

praise was faded to a variable reinforcement of 3 schedule, and the tokens still given for every 3 minutes.

**Delay sessions non-preferred condition.** These sessions were conducted with the same procedures as delay sessions in the preferred condition, with the exception that only the stimuli assigned to this condition were taught, and the non-targeted information were delivered using a visual that did not contain the students preferred character.

**Control condition.** The control stimuli, four community signs per student, were presented once a day. The teacher presented these signs and the procedures were the same as those in baseline sessions.

### **Maintenance Procedures**

Once all students reached criteria, maintenance data were collected on all students one week after criterion was met, then every 2 weeks thereafter for 6 weeks. The teacher collected data during the maintenance sessions in a group format with all students. Procedures were the same during maintenance as they were in baseline sessions.

### **Generalization Procedures**

Programming for generalization occurred throughout the intervention sessions by using multiple exemplars. Students were shown a community sign on the curriculum card, with the sign and the text, and then they were also shown only the text handwritten on an index card. These handwritten cards were presented to students following intervention sessions in order to see if students could read the text alone and to program for generalization.

Scenarios in natural environments were also set up for students to demonstrate generalization of the community signs. A pre-test and a post-test were conducted prior to

and following intervention to see if students could apply knowledge of the community signs to natural settings (i.e., not walking in a door that has a sign on it saying, “do not enter”; finding the appropriate restroom).

These sessions were conducted like baseline sessions, but the paraeducator conducted them. Although baseline and intervention were in a small group format, generalization sessions were conducted one-on-one with students. The paraeducator took a student past a sign to see if the student would respond accurately to the sign. For example, the student and paraeducator walked up to a “do not enter” sign, and the paraeducator waited 3 s to see if the student continued to walk through the doorway. If the student stopped and turned the other way, this was a correct response. If the student continued to go through the doorway with the sign on it, this was an incorrect response. These scenarios were repeated with 2 target community signs per student to check for generalization.

### **Reliability**

The teacher trained the special education paraeducator to collect reliability data for this study through verbal instructions and role-play until the paraeducator could accurately enter data on the reliability data sheet with at least 80% accuracy. At any time during the study, if the reliability data were to be lower than 80%, the teacher re-trained the paraeducator to ensure data were being collected accurately.

**Dependent variable reliability.** The teacher calculated dependent variable (i.e., community signs verbally stated) reliability by using point-by-point interobserver reliability agreement (IOA) with the following formula: number of agreements divided by number of agreements plus disagreements multiplied by 100 (Gast & Ledford, 2014).

**Independent variable reliability.** The paraeducator calculated procedural reliability using the following formula: number of observed instructor behaviors divided by number of planned instructor behaviors multiplied by 100 (Gast & Ledford, 2014). The observed teacher behaviors for baseline and intervention included having materials ready, delivering an attending cue, delivering the task direction (i.e., “What sign?”), waiting the correct delay interval, providing the correct prompts as needed, correct teacher consequences for student responses, and delivery of non-targeted information with or without the preferred character. See Appendix E for the reliability data collection sheets.

## **Section 4: Results**

The results indicated that the intervention was effective in increasing level and trend of naming community signs in each of the middle school students with moderate intellectual disability, with little to no differentiation between conditions.

### **Reliability**

IOA data averaged 98.6% and ranged from 88% to 100%. IOA data were collected on 80% of the baseline sessions and 80% of the intervention sessions, and during one of the maintenance sessions. The disagreements occurred when one student, Evan, was difficult to understand in the beginning of the intervention sessions due to his speech and language disability.

Procedural reliability during baseline and intervention was 100% across all sessions. Procedural reliability was collected across 80% of baseline sessions and 100% of intervention sessions.

### **Effectiveness Data**

The effectiveness data are summarized below in Figure 1 for Aaron, Figure 2 for Evan, and Figure 3 for Bryce. The baseline condition, comparison condition, and maintenance condition are illustrated in each graph.

In baseline sessions, Aaron was unable to identify any of the target stimuli in the preferred and the non-preferred conditions. Following the 0 s delay sessions, Aaron showed a dramatic increase in level and trend in intervention sessions which continued through criterion in both conditions. Aaron was able to maintain criterion in both conditions.

Evan was unable to identify any of the target stimuli during baseline sessions in the preferred and non-preferred condition. Following the 0 s delay sessions, he showed a dramatic increase in level and trend in intervention sessions and this continues through criterion in both conditions. Maintenance sessions indicated that Evan continued to meet criterion in both conditions.

In baseline sessions, Bryce was unable to identify any of the target stimuli in the preferred and the non-preferred condition. Following the 0 s delay sessions, Bryce showed a dramatic increase in level and trend in intervention sessions which continued through criterion for the non-preferred condition. In the preferred condition, it took Bryce four sessions before his level and trend increase toward criterion. He increased to 75% for three sessions until he met criterion at session 18, later than his peers in the group. He was able to maintain criterion in both conditions.

Figure 3. Aaron: Graph of Results

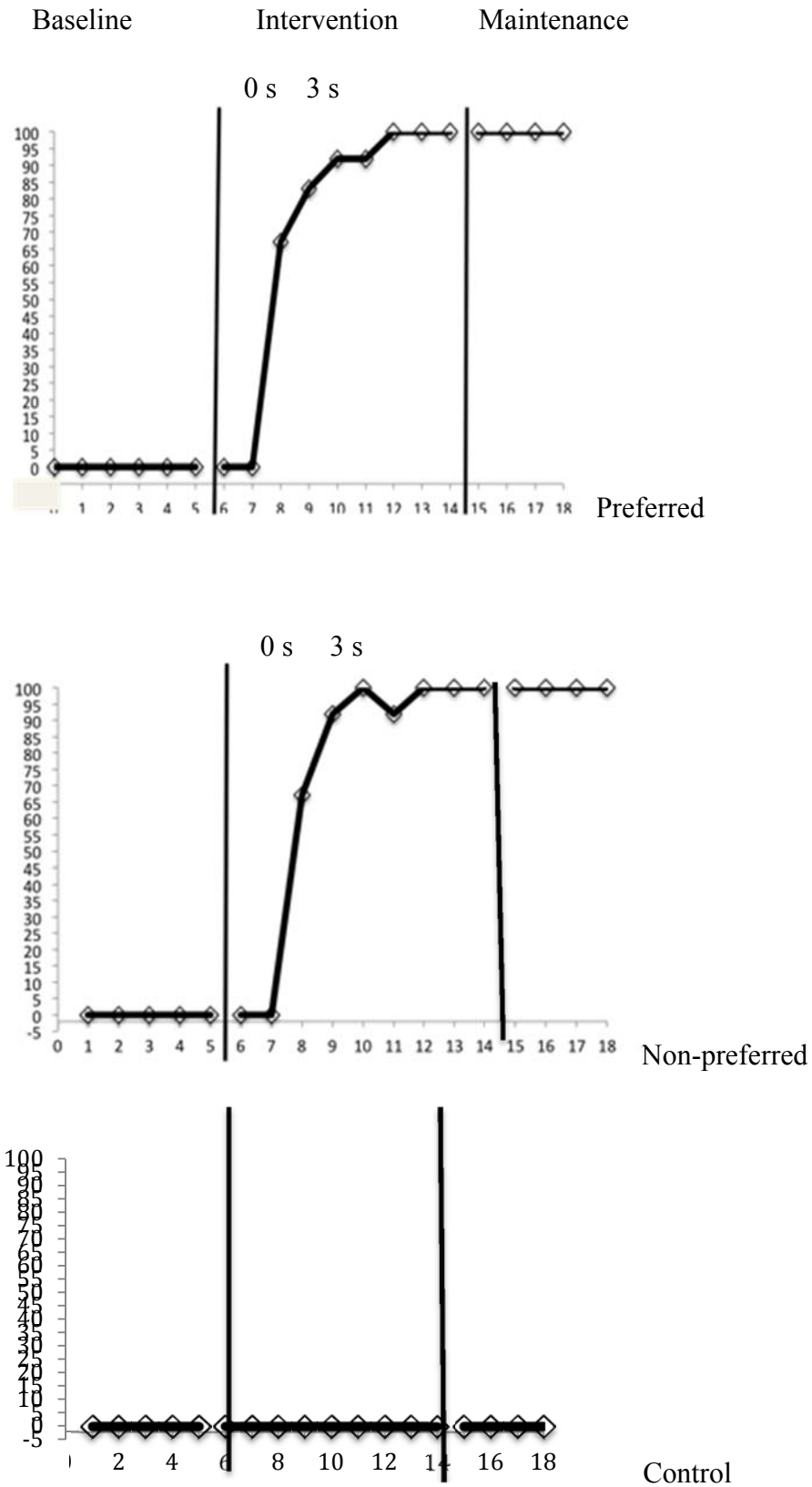
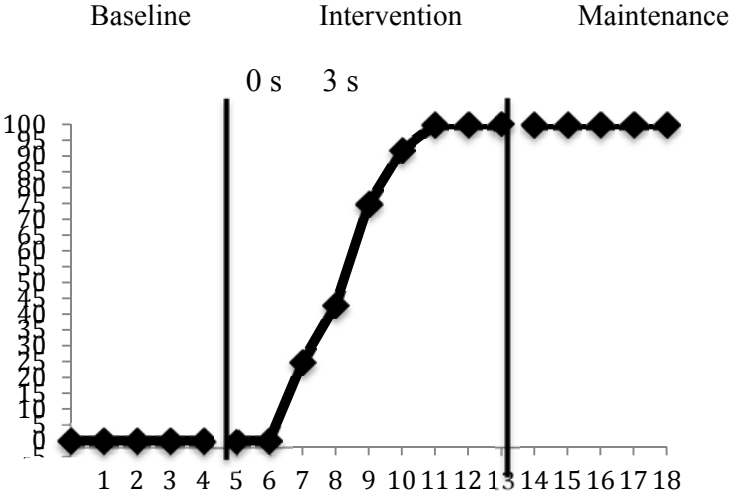
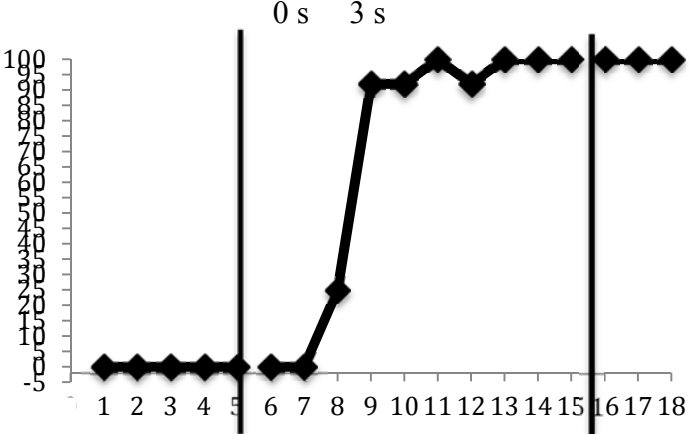




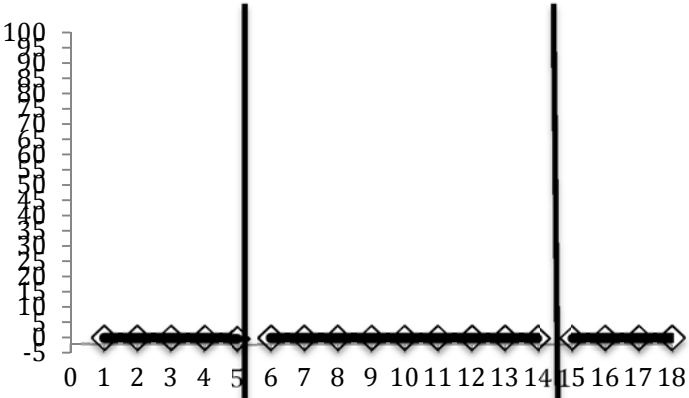
Figure 4. Evan: Graph of Results



Preferred

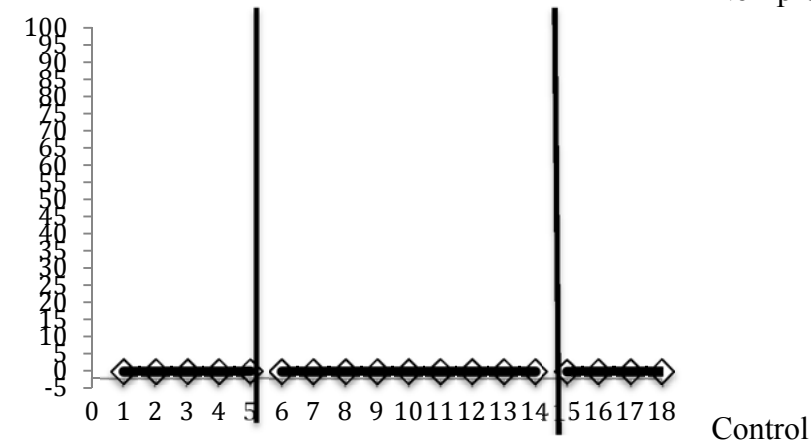
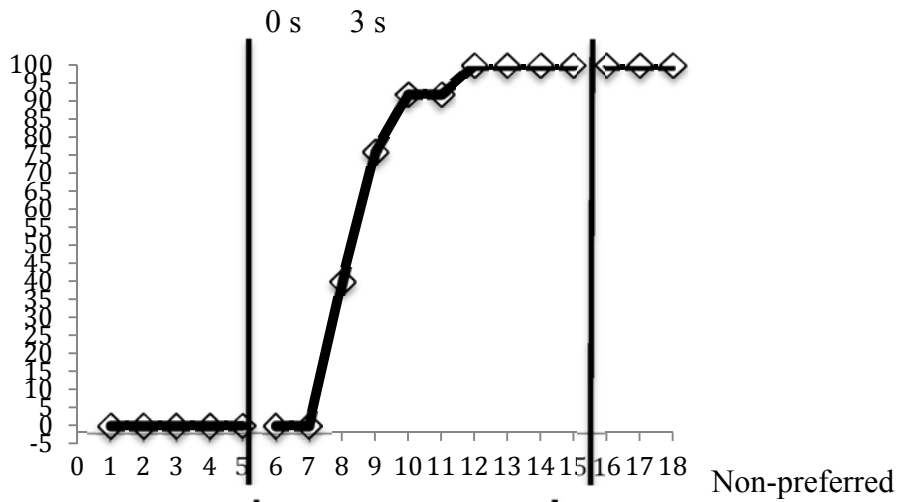
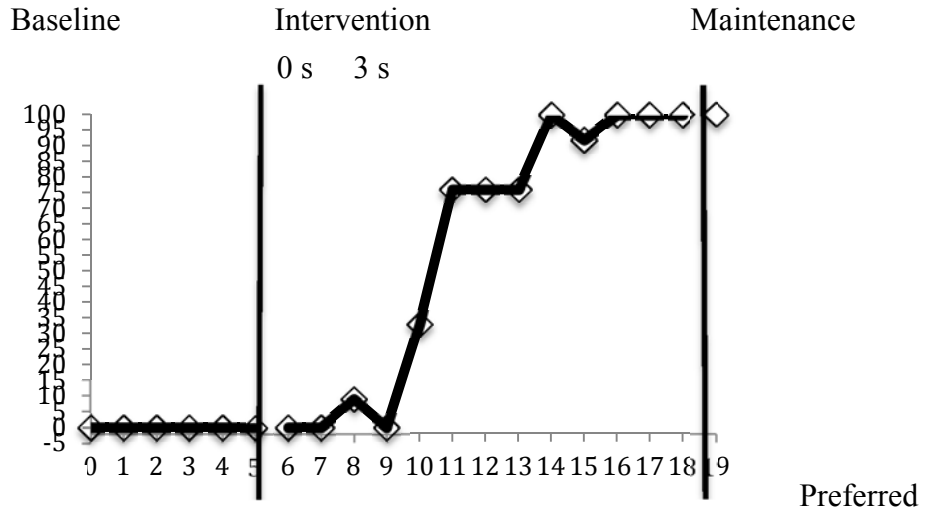


Non-preferred



Control

Figure 5. Bryce: Graph of Results



## Efficiency Data

Table 3 shows the efficiency data in terms of the number of errors and the number of trials/sessions to criterion for each student.

Table 3. Efficiency Data

<b>Name:</b>	<b># Sessions to criterion (preferred)</b>	<b># Sessions to criterion (non-preferred)</b>	<b># Errors to criterion (preferred)</b>	<b># Errors to criterion (non-preferred)</b>
Aaron	9	9	7	4
Bryce	13	9	22	9
Evan	9	10	17	11
<b>Total across participants:</b>	31	28	46	24

As shown in the table, students did not learn at a faster rate with their preferred character present, and they did not have fewer errors to criterion with their preferred character present. Students learned the community signs at a faster rate and with fewer errors to criterion when the preferred character was not present.

## Non-Targeted Information Results

**Non-targeted information.** Students acquired non-targeted information in both preferred and non-preferred sessions, but they learned more non-targeted information (i.e., definitions of the target signs) in the preferred character sessions. All students acquired 100% of their non-targeted information presented with the preferred characters, according to the post-test. Aaron acquired 100% of his non-targeted information in the non-preferred sessions, while Bryce and Evan acquired 75% of their non-targeted information in non-preferred sessions, as shown in Table 4.

Table 4. Non-targeted Information Results

Name	% non-targeted information prior to instruction (preferred)	% non-targeted information prior to instruction (non-preferred)	% non-targeted information following instruction (preferred)	% non-targeted information following instruction (non-preferred)
Aaron	0%	0% 100%		100%
Bryce	0%	0% 100%		75%
Evan	0%	0% 100%		75%

**Incidental non-targeted information results.** The increase in acquisition of the non-target information taught to other students in the group of middle school students with moderate intellectual disabilities was also assessed through a post-test, and data indicated that Aaron learned 100% of Evan and Bryce’s non-targeted information for preferred and non-preferred sessions. Bryce learned 50% of the others’ non-targeted information (i.e. both preferred and non-preferred sessions), and Evan learned 75% of the others’ non-targeted information during preferred sessions, and 50% of the others’ non-targeted information in non-preferred sessions.

Non-targeted information results from all sessions (i.e. preferred and non-preferred) are shown in Table 5 with the percentage of their classmates non-target information the students could state before intervention in the pre-test and what percentage of non-targeted information the students could state after intervention. Students did not know any of their classmates’ non-targeted information in the pre-test,

but they could recall at least 50% of their classmates' non-targeted information in the post-test.

Table 5. Incidental Non-targeted Information Results

<b>Name:</b>	<b>% classmates non-targeted information prior to instruction (preferred) Pre-test</b>	<b>% classmates non-targeted information prior to instruction (non-preferred) Pre-test</b>	<b>% classmates non-targeted information following instruction (preferred) Post-test</b>	<b>% classmates non-targeted information following instruction (non-preferred) Post-test</b>	<b>Summary of Pre-test across subjects</b>	<b>Summary of Post-test across subjects</b>
Aaron	0%	0% 100%		100%		
Bryce	0%	0% 50%		50%		
Evan	0%	0%	75%	50%	0%	71%

**Generalization results.** The students' generalization of the non-targeted information was assessed in natural environments, during one community-based instruction trip to a bakery. The students were each asked by the teacher to find two of their target community signs, like restroom or exit. None of the 3 students generalized the meanings of the target community signs to the natural environment, although 2 of the students could generalize reading the signs using multiple exemplars, one student at 13% accuracy and one student at 60% accuracy

## **Section 5: Discussion**

The purpose of this study was to evaluate the efficiency of two interventions, CTD with a preferred character component and CTD without a preferred character component, both used to teach reading community signs to three students with moderate intellectual disabilities. The results indicated that the CTD procedure was effective in teaching students all of the target community signs. Throughout this study, all students responded quickly to the intervention, regardless of whether or not their preferred character was present in the session. All students met criterion and were able to maintain what they learned over time. Prior to this study, students could not identify any of the signs or explain what any of the signs meant. Students learned 100% of their non-targeted information (i.e., definitions of target signs) in the preferred character condition as a result of the study.

The addition of non-targeted information in the consequence of the trial sequence during instruction can enhance the efficiency of instruction for teachers. Although they knew 0% of their classmates' non-targeted information prior to intervention, students learned 50-100% of their classmates' non-targeted information when given a post-test. By including the non-targeted information in this study, students not only learned definitions of their target community signs, but also learned some or all of the definitions of their classmates' community signs. While the objective was for the students to learn to name community signs, they were able to read the sign and state the sign's definition as a result of delivering the non-targeted information.

During generalization probes in the community, students were unable to generalize the target signs to real-world settings. According to the teacher, many factors

could have influenced the inability to generalize, such as the visual impairment in two of the student participants, and prompt dependence in the students to wait for an adult or peer direction.

This study provides evidence that students may not learn more efficiently with preferred characters. While students may have been more engaged during preferred sessions, they were not acquiring the targeted signs more accurately or efficiently. According to the teacher, the students were sometimes distracted by the addition of the preferred character, as they would look at their preferred character instead of looking at the instructor and group mates.

This study demonstrates how instruction can be more efficient with the addition of non-targeted information, as students learned their non-targeted information and incidentally, they learned the non-targeted information of their group mates. In the future, teachers or researchers could assess the observational learning of all students with more targeted community signs and corresponding non-targeted information for each student. Furthermore, researchers could use a less powerful intervention in order to evaluate the differences in the data when students have more sessions to criterion and therefore more exposure to the non-targeted information.

In future research by teachers or investigators, data could be collected on student behaviors during both preferred and non-preferred conditions. Specifically, researchers could collect data on engagement, on-task, and disruptive behaviors during both conditions (i.e., eyes on teacher or classmate, calling/yelling out during instruction, etc.). Investigators could also look at participants with other disabilities, like autism, to compare and determine differences in the effectiveness and efficiency data.

In summary, the CTD instructional procedure facilitated the student learning of the community signs. There was a dramatic change for each participant in the level and trend of reading each of the community signs once intervention began. Students also learned their non-targeted information as a result to it being added to the consequence after each instructional trial. Students recalled the non-targeted information told to their peers, although only one participant learned 100% of the non-targeted information told to other students in the group. Students maintained what they learned over time, as they continued to meet criterion in reading the community signs.

### **Limitations and Conclusions**

One limitation to this study was the opportunity for community-based instruction in order to probe for generalization. Students only go on community-based instruction every two weeks. When criterion was met students had an upcoming community-based instruction trip in which the teacher probed for generalization, but due to time constraints, this was the only opportunity. Another limitation was the structure of the classroom. Staff (i.e. other paraeducators) and peers were coming in and out of the classroom during intervention, causing students to become distracted when the door would open and shut. A “testing” sign was hung on the door during the third week of intervention to minimize interruptions during instructional time.

In this study, non-targeted information was delivered only for correct responses before the prompt, and research indicates that students acquire non-targeted information when it is presented following correct responses after the prompt, as well. If the study were to be continued, the teacher would deliver non-targeted information following correct responses both before and after the prompt. This provides the participants with



more exposure to their non-targeted information as well as the non-targeted information of their classmates.

Research has shown that a CTD procedure is effective in teaching both academic and functional skills to students with moderate intellectual disabilities. This study adds to the literature by replicating quick acquisition of the targeted skill following CTD intervention: naming community signs. It also adds to the literature on preferred characters and strategies like the Power Card strategy, which use a child's preferred character to teach appropriate social skills and behaviors.

Further research should be considered in order to replicate this study across different participants, settings, and stimuli. Further research should also be considered to measure the efficiency of CTD intervention with preferred characters versus intervention without preferred characters in teaching other content, including academic skills across ages and disability areas. Additionally, further research should replicate the study to see if different generalization outcomes and an increase in learning non-targeted information of peers within the group occur with different students, settings, and stimuli. More opportunities for generalization in community settings must also be considered in order to determine if students can apply what they have learned to real-world settings.

While researchers have determined which systematic instructional procedures should be used with students with moderate intellectual disabilities to teach a skill such as reading community signs, effective strategies are needed to determine in which ways students can learn most efficiently and generalize what they know to natural environments.

Appendix A: Screening Data Sheet

Student Name:

Date:

Attentional Cue: "Are you ready to work?"

Task Direction: "Tell me the survival sign. What sign?"

- |                  |   |   |   |
|------------------|---|---|---|
| 1. Walk          | + | - | 0 |
| 2. Stop          | + | - | 0 |
| 3. Don't Walk    | + | - | 0 |
| 4. Phone         | + | - | 0 |
| 5. Women's RR    | + | - | 0 |
| 6. Elevator      | + | - | 0 |
| 7. Emergency     | + | - | 0 |
| 8. Fire Station  | + | - | 0 |
| 9. Wrong Way     | + | - | 0 |
| 10. Hospital     | + | - | 0 |
| 11. Danger!      | + | - | 0 |
| 12. Buckle Up    | + | - | 0 |
| 13. Do Not Enter | + | - | 0 |
| 14. Slow         | + | - | 0 |
| 15. Up/Down      | + | - | 0 |

% Correct: \_\_\_\_\_

Key: + Correct (independent) response  
- Incorrect response  
0 No Response

Appendix A (continued): Screening Data Sheet

Student Name:

Date:

Attentional Cue: "Are you ready to work?"

Task Direction: "Tell me the survival sign. What sign?"

16. Bike Route	+	-	0
17. Poison	+	-	0
18. Signal ahead	+	-	0
19. School Xing	+	-	0
20. Bus Stop	+	-	0
21. No Parking	+	-	0
22. 911	+	-	0
23. Speed Limit	+	-	0
24. Yield Ahead	+	-	0
25. Flood Gauge	+	-	0

% Correct: \_\_\_\_\_

Key: + Correct (independent) response  
- Incorrect response  
0 No Response

Appendix B: Baseline Data Sheet

School/School Year: \_\_\_\_\_

**Goal:** When shown a survival/community word/sign and task directed, “what word/sign?”, Student will verbally state the word/sign within 3 seconds of the task direction with 100% accuracy for 3 consecutive days.

Name: _____ Date: _____			Name: _____ Date: _____			Name: _____ Date: _____		
Instructor:			Instructor:			Instructor:		
Stimulus	before	after	Stimulus	before	after	Stimulus	before	after
1.			1.			1.		
2.			2.			2.		
3.			3.			3.		
4.			4.			4.		
5.			5.			5.		
6.			6.			6.		
7.			7.			7.		
8.			8.			8.		
9.			9.			9.		
10.			10.			10.		
11.			11.			11.		
12.			12.			12.		
<b>Summary of responses:</b>			<b>Summary of responses:</b>			<b>Summary of responses:</b>		
<b>% correct before prompt:</b>			<b>% correct before prompt:</b>			<b>% correct before prompt:</b>		
<b>% correct after prompt:</b>			<b>% correct after prompt:</b>			<b>% correct after prompt:</b>		
Name: _____ Date: _____			Name: _____ Date: _____			Name: _____ Date: _____		
Stimulus	before	after	Stimulus	before	after	Stimulus	before	after
1.			1.			1.		
2.			2.			2.		
3.			3.			3.		
4.			4.			4.		
5.			5.			5.		
6.			6.			6.		
7.			7.			7.		
8.			8.			8.		
9.			9.			9.		
10.			10.			10.		
11.			11.			11.		
12.			12.			12.		
<b>Summary of responses:</b>			<b>Summary of responses:</b>			<b>Summary of responses:</b>		
<b>% correct before prompt:</b>			<b>% correct before prompt:</b>			<b>% correct before prompt:</b>		
<b>% correct after prompt:</b>			<b>% correct after prompt:</b>			<b>% correct after prompt:</b>		

KEY: + Correct Response; - Incorrect Response; 0 No Response

Evans 2015

Appendix C: Intervention Data Sheet

**School/School Year:** \_\_\_\_\_

**Goal:** When shown a survival/community word/sign and task directed, “what word/sign?”, Student will verbally state the word/sign within 3 seconds of the task direction with 100% accuracy for 3 consecutive days.

Name: _____ Date: _____			Name: _____ Date: _____			Name: _____ Date: _____		
Instructor: _____			Instructor: _____			Instructor: _____		
Stimulus	before	after	Stimulus	before	after	Stimulus	before	after
1.			1.			1.		
2.			2.			2.		
3.			3.			3.		
4.			4.			4.		
5.			5.			5.		
6.			6.			6.		
7.			7.			7.		
8.			8.			8.		
9.			9.			9.		
10.			10.			10.		
11.			11.			11.		
12.			12.			12.		
<b>Summary of responses:</b>			<b>Summary of responses:</b>			<b>Summary of responses:</b>		
<b>% correct before prompt:</b>			<b>% correct before prompt:</b>			<b>% correct before prompt:</b>		
<b>% correct after prompt:</b>			<b>% correct after prompt:</b>			<b>% correct after prompt:</b>		
Name: _____ Date: _____			Name: _____ Date: _____			Name: _____ Date: _____		
Stimulus	before	after	Stimulus	before	after	Stimulus	before	after
1.			1.			1.		
2.			2.			2.		
3.			3.			3.		
4.			4.			4.		
5.			5.			5.		
6.			6.			6.		
7.			7.			7.		
8.			8.			8.		
9.			9.			9.		
10.			10.			10.		
11.			11.			11.		
12.			12.			12.		
<b>Summary of responses:</b>			<b>Summary of responses:</b>			<b>Summary of responses:</b>		
<b>% correct before prompt:</b>			<b>% correct before prompt:</b>			<b>% correct before prompt:</b>		
<b>% correct after prompt:</b>			<b>% correct after prompt:</b>			<b>% correct after prompt:</b>		

**KEY: + Correct Response; - Incorrect Response; 0 No Response**

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Appendix D: Non-targeted Information Data Sheets

Student Name: \_\_\_\_\_ Date: \_\_\_\_\_

Attentional Cue: "Are you ready to work?" Preferred or Non-Preferred

Task Direction: "This community sign is \_\_\_\_\_ (verbally tell student the presented sign). What is the definition of this sign?"

- |                            |   |   |   |
|----------------------------|---|---|---|
| 1. Community sign 1: _____ | + | - | 0 |
| 2. Community sign 2: _____ | + | - | 0 |
| 3. Community sign 3: _____ | + | - | 0 |
| 4. Community sign 4: _____ | + | - | 0 |

% Correct (total number of + signs divided by 4): \_\_\_\_\_

Key: +Correct (independent) response  
- Incorrect response  
0 No Response

Appendix E: Reliability Data Sheet (Procedural Fidelity)

**Observer Name:** \_\_\_\_\_ **Student Name:** \_\_\_\_\_

Session: Baseline / Intervention / Maintenance Preferred or Non-Preferred

Materials Ready? Yes No Preferred Materials Used? Yes No

Attentional Response Ensured? Yes No Attentional Cue Given? Yes No

Stimuli	Present Stimulus (what word?)	Wait delay (0s or 3s)	Provides prompt as needed	Before	After	Delivers consequence	Delivers non-target (if needed)	
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								

# steps completed correctly divided by total # of steps in each column:

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