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A Comparison of a Discrete Trial Teaching Procedure and an Incidental Teaching Procedure to Help Children with Developmental Disorders Acquire Sight Word Reading Skills

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A COMPARISON OF A DISCRETE TRIAL TEACHING PROCEDURE AND AN INCIDENTAL TEACHING PROCEDURE TO HELP CHILDREN WITH DEVELOPMENTAL DISORDERS ACQUIRE SIGHT WORD READING SKILLS

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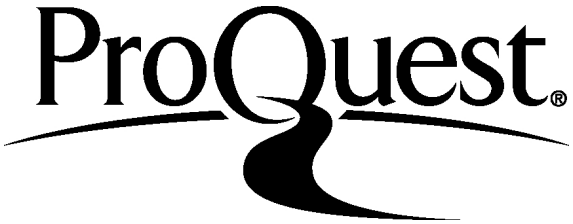

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An Abstract of the Dissertation Presented

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Knowing how to read words that are relevant and important has the potential to help individuals with developmental disorders gain independence within both school and community settings. The current study compares the effectiveness of two teaching procedures targeting reading skills in children with developmental disorders. Discrete trial teaching (DTT) is a commonly used method of teaching multiple pre-academic and academic skills to individuals with developmental disorders. It involves a systematic presentation of stimuli, a teaching procedure, and delivery of reinforcement, and is often delivered in a mass trial format. Incidental or naturalistic teaching, on the other hand, takes place in less formal settings that individuals commonly find themselves in and utilizes functionally and naturally occurring reinforcers. While incidental teaching (IT) procedures have commonly been used for teaching vocal and verbal language skills in

social settings, there is currently a dearth of evidence supporting the use of incidental teaching for reading instruction. The current study compared the effectiveness of discrete-trial and incidental instructional methods for sight word acquisition with children with developmental disorders. The two procedures resulted in three different response patterns across participants. Implications discussed include the role of functional assessment for academic instruction and its significance in best practices for academic instruction using a response to intervention model.

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Chapter 1: Introduction and Literature Review

Being able to read whole words is an important life skill, especially for individuals with developmental disorders. Knowing how to read relevant and important words has the potential to help individuals with disorders navigate settings and interact with their environment effectively. Whole word, or sight word, reading instruction has been studied extensively in the field of education and is thought to have many benefits for certain types of learners (Spector, 2011; Broun, 2004; Broun & Oelwein, 2007). The use of discrete trial teaching (DTT) is one of the most common methods to teach sight words to individuals with disorders (Browder, Wakeman, Spooner, Ahlegrim-Delzell, & Algozzine, 2006). Current research continues to show the effectiveness of DTT in the teaching of sight words and is predominantly focused on comparing different instructional methodologies as recommended by Browder and Lalli (1991). For instance, Van der Bijl, Alant, and Lloyd (2006) showed that traditional massed trial teaching, traditional orthography, and modified orthography are all effective methods of teaching sight words to individuals with moderate to severe mental disorders. Waugh, Alberto, and Fredrick (2011) compared traditional DTT with DTT instruction used with error correction during assessment probes and found that, for some learners, error correction resulted in a more rapid acquisition of sight words. According to reviews of instructional methodology related to teaching sight words to individuals with moderate to severe developmental disorders (Browder & Lalli, 1991; Browder & Xin, 1998; Spector, 2011), most sight word instruction involves massed practice DTT.

Discrete Trial Teaching

Discrete trial teaching (DTT) is a commonly used instructional methodology for teaching children with autism spectrum disorder (ASD) and other developmental disorders. The quintessential feature of DTT is the teacher's control over the teaching situation which includes giving the learner limited opportunities to respond, with those opportunities being wholly managed by the teacher (Ghezzi, 2007). Baer (2005) described DTT as: (a) the teacher preparing a set of problems to present to a student one at a time, (b) with the problems being presented in an optimal sequence for learning, (c) the student responding or failing to respond to each trial, (d) the teacher responding to the students' response with either rewarding correct responding, correcting incorrect responses, or ignoring or prompting nonresponses, (e) with the cumulative effect of imparting new skills, concepts, or integrated facts to the student. While DTT is the most ubiquitous method of instruction in Applied Behavior Analytic (ABA) settings, criticisms of this method include its: (a) inflexibility, (b) frequent incorrect implementation, (c) propensity for learners to respond in a rote manner, (d) nonfunctional nature, (e) teacher directed nature, and (f) artificial social nature (Steege, Mace, Perry, & Longenecker, 2007).

Naturalistic Teaching

Naturalistic teaching, in contrast to massed practice DTT, refers to an opportunistic method of instruction in naturally occurring situations which is typically considered less formal and more learner directed, with the learner's motivation guiding aspects of instruction. It is considered an effective method of language instruction especially because it provides for more generalizability across interventionists, settings,

and time (Peterson, 2004). Naturalistic teaching encompasses incidental teaching along with variations often used in programs for individuals with developmental disorders (e.g., enhanced milieu, responsive parenting, mand model, time delay, milieu teaching, and modified incidental teaching) (Dunst, Raab, Trivette, 2011).

Incidental Teaching

Incidental teaching (IT) was first shown to be an effective instructional method when Hart and Risley (1968) used an IT procedure to teach disadvantaged preschoolers the use of descriptive adjectives (e.g., color, number, size, and shape). Hart and Risley made access to preferred materials (water and paint) in a preschool setting contingent on use of appropriate color noun combinations in a "free-play" setting during which numerous other materials (e.g., toys, books) were available. Access to preferred materials was provided when preschoolers used the correct adjective. As a result of having the outcomes of interactions determine reinforcer delivery, the teaching sessions were directed by the participants instead of the experimenter, resulting in higher motivation for the preferred items, and a more "natural" teaching setting compared to the "artificial" nature of DTT.

As an instructional methodology, IT has been demonstrated to be more effective for certain students in improving social skills than analog (i.e., contrived) instructional methods. For example, McGee, Morrier, and Daly (1999) utilized IT to improve spontaneous vocal emissions, time spent in close proximity to other children, verbal interactions with parents, social responsiveness to parents and other children, and levels of engagement in toy play for young children with ASD. McGee et al.'s IT procedure

emphasized environmental arrangements, a prompting procedure, and trials that almost always resulted in success for the student (i.e., access to the tangible item).

IT also has been shown to be an effective instructional strategy for helping individuals with ASD and other developmental disorders understand language, and communicate with those around them. For instance, McGee, Krantz, Mason and McClannahan (1983) used a modified IT procedure to teach receptive labels to two individuals with ASD while targeting other in-home living skills (e.g., cooking). The IT procedure involved prompts to hand caregivers certain items necessary for cooking while they were preparing lunch. The participants' language skills increased in number, while the new language skills generalized across novel settings and activities throughout the day.

In addition, IT has been used to increase expressive spontaneous language. Schepis et al. (1982) used a modified IT procedure to increase the use of manual signing for fifteen frequently asked for items in nine participants with developmental disorders and low language ability. Similarly, McGee and Daly (2007) used IT and systematic stimulus fading procedures to instruct students with ASD on the appropriate independent use of social phrases.

Incidental Teaching Compared to Other Teaching Procedures

There have been some comparisons of IT with other, more traditional, teaching procedures. Delprato (2001) reviewed the literature for studies comparing DTT and normalized behavioral (i.e., IT) language interventions. Of the ten studies reviewed, normalized language training was found to be more effective compared to DTT training for young children with ASD. Faster or at least equal acquisition was observed across all

studies, and generalization was found to occur significantly more during IT interventions. In addition to generalization, IT has the potential to increase spontaneous taught behavior. Charlop-Christy and Carpenter (2000) increased vocal imitation and spontaneous speech in three children with ASD while comparing a modified IT procedure to a traditional DTT procedure. The researchers found that while all of the children learned across conditions, modified IT solely resulted in generalization of target phrases across varying people and locations.

IT procedures have been found to provide robust results across time and settings when compared to DTT procedures. Miranda-Linne and Melin (1992) compared the effectiveness of DTT and IT procedures by teaching two children with ASD the expressive use of two color adjectives. DTT produced results more rapidly than IT, however IT resulted in greater retention, generalization, and spontaneous speech.

Teaching Reading Skills Through Incidental Procedures

An extension of IT procedures for reading skills was attempted by McGee, Krantz, and McClannahan (1986). A formalized IT procedure was used to teach functional sight word reading to two children (ages five and 13) with ASD. This study differed from previous research by teaching the participants to read the names of highly preferred reinforcers, and involved earning those reinforcers for accurate performance. Both participants repeatedly demonstrated acquisition of functional reading skills during free play in addition to demonstrating reading comprehension by locating desired items in novel locations during generalization.

Research Questions

While current research includes examinations of different methods of sight word instruction, and there is evidence of IT methods being effective for teaching sight word reading, there has been no comparison of traditional DTT and IT methods of teaching sight words to individuals with developmental disorders. The current study will seek to answer the following questions: (a) which is more effective and efficient: DTT methods or IT procedures (b) are there individual differences among learners with regard to which methods are more effective and efficient?

Chapter 2: Method

Setting and Participants

The study occurred at a special purpose private education program located at a specialized hospital-based inpatient facility for individuals with developmental disorders located in northern New England.

Interventionists for the study included four members of the education staff (i.e., paraprofessionals, special education teachers, clinicians) of the special purpose private education program. All interventionists were required to complete the Collaborative Institutional Training Initiative (CITI) training on Human Subjects Research Ethics. Interventionists were trained to use intervention procedures through the use of: (a) didactic instruction, (b) reading protocol scripts, (c) role play, and (d) viewing a video while collecting data. Trainings sessions occurred during scheduled weekly professional development times.

Participants were selected on the basis of evidence of difficulty in the acquisition of sight word reading skills. After parent/guardian consent was obtained, each participant was asked whether he or she wanted to participate in the study and a witness signed to attest to the participant's answer. Upon obtaining consent and assent, prospective participants were screened for eligibility, based on a sight word reading pretest consisting of receptively identifying 12 common sight words from the Dolch noun sight word list. The first three participants for whom both consent and assent was obtained, and who demonstrated sight word difficulty, were enrolled in the study. Participants were not considered eligible if their behavioral stability could have put them at risk of injury or could have possibly interfered with the study. The amount of risk the participants were

exposed to was commensurate with the risk they were likely to experience in their normal day-to-day program at the hospital.

Beth[1] was an 8 year 6 month old female with a diagnosis of ASD as indicated by a social communication severity level 3, restricted, repetitive behaviors severity level 3, with accompanying intellectual impairment, and accompanying language impairment, associated with anxiety. Her most recent adaptive functioning level (07/02/2015) on the Vineland-II Parent Report consisted of the following standard scores: Communication 57, Daily Living 57, Socialization 51, and Adaptive Behavior Composite 56. In the community setting she was enrolled in a public school, where she received 1:1 paraprofessional support in a self-contained classroom, along with specialized art and gym classes. She participated with non-disabled children for 4% of her time in school which occurred during recess. She was admitted to the facility for worsening self-injurious behaviors which predominantly consisted of her hitting herself and biting herself.

Shane was a 7 year 0 month old male diagnosed with ASD as indicated by a social communication severity level 3, restricted, repetitive behaviors severity level 3, with accompanying intellectual impairment, associated with anxiety and attention deficit hyperactivity disorder. His most recent adaptive functioning level (03/17/2014) on the Adaptive Behavior Assessment System-2 (ABAS-2) consisted of the following standard scores: Conceptual 51, Social 55, Practical 45, General Adaptive Composite (GAC) 43. In the community setting, Shane attended school for half days, and participated in a self-contained program spending 15% of his time at school with non-disabled peers which

[1] All participant names are pseudonyms.

occurred during recess. He was admitted to the facility for worsening aggression (including hitting, head-butting, kicking, pushing, pulling) and self-injurious behavior (head banging on surfaces, hitting, diving to the ground).

Ricky was an 8 year 9 month old male with diagnoses of attention deficit hyperactivity disorder, intellectual disability – unspecified, Down syndrome, and hypothyroidism. The participant's exact level of adaptive functioning -- as defined by scores from standardizes tests -- was unavailable to the researcher; since the participant was diagnosed with intellectual disability, his adaptive level composite was understood to be significantly below a standard score of 70. In the community setting, Ricky was educated in a self-contained setting, spending 28% of his time with non-disabled peers during special classes, lunch, and recess. He was admitted to the facility for worsening aggression, self-injurious behavior, and elopement.

Reinforcement. Reinforcer selection was informed by caregiver interview, classroom observation, and free operant preference assessment (Roane, Vollmer, Ringdahl, Marcus, 1998). The schedule of reinforcement was individualized for each participant. Instructional sessions resulted in equivalent amounts of access to reinforcers, and occurred at almost identical durations and in a counterbalanced fashion in order to provide an equal amount of reinforcement. Reinforcement under the DTT condition was on a fixed ratio schedule, and matched the reinforcement used for other academic tasks for each participant. For example, a participant could have received tokens for every three trials on average, and access to a reinforcer for five minutes after earning a predetermined amount of tokens. Reinforcement under the IT condition occurred immediately after each trial on a fixed ratio one (FR1) schedule. For example, a

participant could have received 30 seconds of access to a reinforcer for an incorrect response and one minute of access to a reinforcer for a correct response for each trial. The magnitude of reinforcement was equal across treatment conditions; for example, DTT was reinforced with five consecutive minutes of reinforcement, while IT was reinforced with a cumulative total of five minutes of reinforcement. Identical reinforcers were available under both treatment conditions.

Response Measurement

Dependent variable. The dependent variable was the percentage of accurate responses. An accurate response was defined as pointing to the correct target word within five seconds of the given instruction (e.g., "show me [*target word*]"). The participants' response accuracy for each session was recorded and graphed daily in addition to being analyzed through the use of visual analysis. Primary data collection was completed by the interventionist in order to demonstrate the feasibility of implementing these interventions while collecting data in a real world application. Target words were selected for each participant from a developmentally appropriate sight word list (i.e., Dolch noun list); these words were novel to the participants. Two sets of paired difficulty stimuli words were created based on participants' performance on the initial screening. One set was used during DTT sessions, while the other set was used during IT sessions. At the start of the study one target word was chosen for each condition, with the intention of increasing the number of target words once mastery (three consecutive sessions with accuracy over 80%) was reached. Word difficulty was balanced between word sets by pairing words across sets by word length, and including only words that were three letters in length.

Stimulus cards were 7.62 by 12.7cm standard index cards with the words printed in a 72 point Comic Sans MS font.

Independent variable. Participant accuracy during DTT and IT sessions was compared. Each experimental session included at least nine (for the DTT condition) or at least six (for the IT condition) but not more than fifteen trials. Trial number differences between sessions were tolerated in order to allow flexibility for the treatment durations and logistical requirements necessary for IT. No more than four experimental sessions occurred per day, lasting no more than twenty minutes each. Sessions occurred at times chosen by the classroom special education teacher in order to minimize disruption to the participants' day.

Interobserver Agreement. Interobserver agreement data were collected by an independent observer for at least 90% of sessions for each participant. Agreement was calculated by dividing the total number of trials of agreement by the total number of trials. Mean agreement for all trials for Beth, Shane, and Ricky was 99.5% (range, 87.5% to 100%), 99.3% (range, 89% to 100%), and 100%, respectively. All trials with the primary investigator acting as the interventionist included inter observer agreement observations.

Treatment Integrity. In order to ensure treatment integrity, interventionists followed scripts (see Appendices A and B) which included a detailed step-by-step breakdown of the procedure for each condition. One or two (for inter-observer agreement sessions) script checklists were filled out for each instructional session. Treatment integrity data were taken on 94.6% of treatment sessions, indicating a mean treatment integrity of 99.3%.

Procedure

Experimental Design. A within-subject alternating treatments design (Barlow & Hayes, 1979) was used to compare the relative effectiveness of increasing sight word mastery using IT and DTT methods.

Baseline. Baseline sessions consisted of probes of the two lists of target words. The interventionist provided an academic instruction (e.g., "show me [*target word*]") and waited 5 s for a response. If an incorrect response was given, the interventionist recorded an error, provided no feedback, and moved to the next instruction. If a correct response was given, the interventionist recorded a correct response, provided no feedback, and moved to the next instruction.

Discrete Trial Teaching. DTT sessions followed the traditional procedures first described by Lovaas, Koegel, Simmons, and Long (1973), expanded by Koegel, Russo, and Rincover (1977), and further conceptualized by Ryan and Hemmes (2005) as twelve responses. Ryan and Hemmes' twelve target responses for interventionists include: (a) a distraction free environment, (b) correct materials, (c) attending behavior, (d) verbal direction, (e) voice tones, (f) waiting for a response, (g) praise statements, (h) contingent reinforcer(s), (i) prompting and correction procedures, (j) an inter-trial interval, (k) incidental or additional teaching responses, and (l) data recording. DTT occurred primarily in a group classroom and occasionally in an individual treatment room as determined by the acuity of the treatment milieu.

Incidental Teaching. The defining aspects of the IT condition are the informal, distributed, and learner-driven nature of instruction; this differs significantly from teacher-led "table based" discrete trial instruction. IT sessions occurred in a free operant

type setting as described in McGee et al. (1986). The interventionist and participant sat together on the floor or at the participant's work area facing each other while multiple reinforcers were dispersed in the participant's view. Upon the participant's gesture or request for an item, the interventionist implemented a prompting procedure in combination with a stimulus fading strategy in order to teach the target sight words. IT sessions occurred primarily in a group classroom and occasionally in an individual treatment room, as determined by the acuity of the treatment milieu.

Chapter 3: Results

Beth participated in a total of 20 experimental sessions. Her reinforcers as established by a free operant preference assessment were: Dora the Explorer maps, and a Dora the Explorer sound book; other items present but not utilized by her were two other Dora the Explorer books, a Piano Book, and pictures of preferred characters. Beth achieved baseline stability after 8 sessions. No sessions were terminated due to interfering behavior. Beth's accuracy data showed no deviation between treatment conditions, and was within what would be expected by random chance as shown in Figure 1.

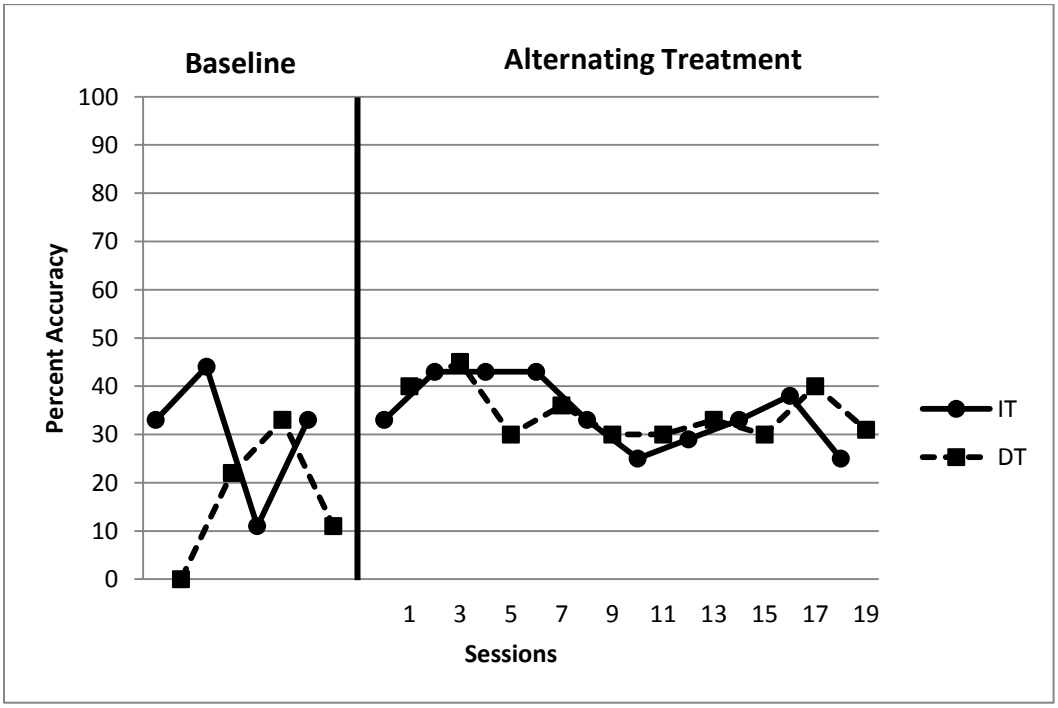

Figure 1. Percentage of accurate responses of sessions for Beth during discrete trial and incidental teaching instruction across baseline and treatment sessions.

Shane participated in 18 baseline and 22 treatment sessions. A free operant preference assessment yielded drawing on paper with various writing instruments (different colors and styles of pens and markers) to be the most preferred activities. No sessions were terminated due to interfering behavior.

Figure 2 shows that Shane's accuracy data initially did not exhibit differentiation between conditions, however differentiation was observed during the last eight sessions, with accuracy during the IT condition sessions at higher levels compared to the DTT condition sessions.

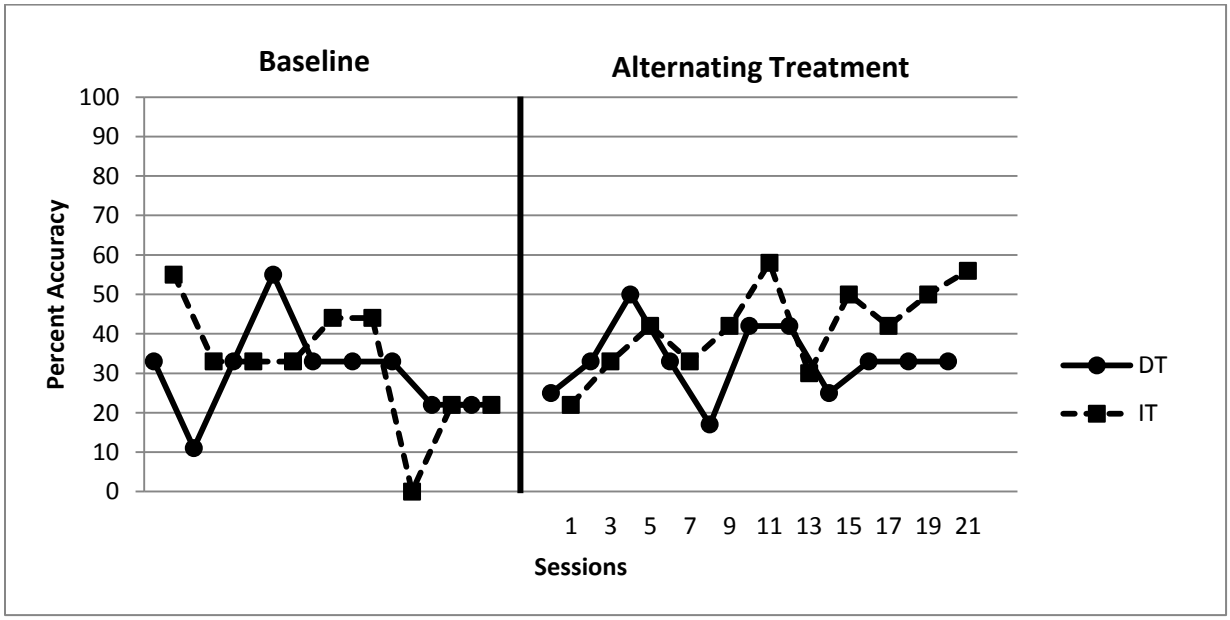

Figure 2. Percentage of accurate responses of sessions for Shane during discrete trial and incidental teaching instruction across baseline and treatment sessions.

Ricky participated in 10 baseline and 15 treatment sessions. A free operant preference assessment resulted in a high preference for using an electronic tablet computer, and sorting classroom calendar tiles. Additional reinforcers later requested by,

and made available to, the participant included coloring on blank paper and playing with toy cars. No sessions were terminated due to interfering behavior.

Ricky's data initially did not show differentiation between treatment conditions, however differentiation was observed during the last eight sessions, with accuracy during the DTT condition sessions at higher levels compared to the IT condition sessions as seen in Figure 3. Anecdotally, Ricky vocalized his preference for DTT sessions during later IT sessions where he requested doing "the other one" while pointing towards where his token board was stored.

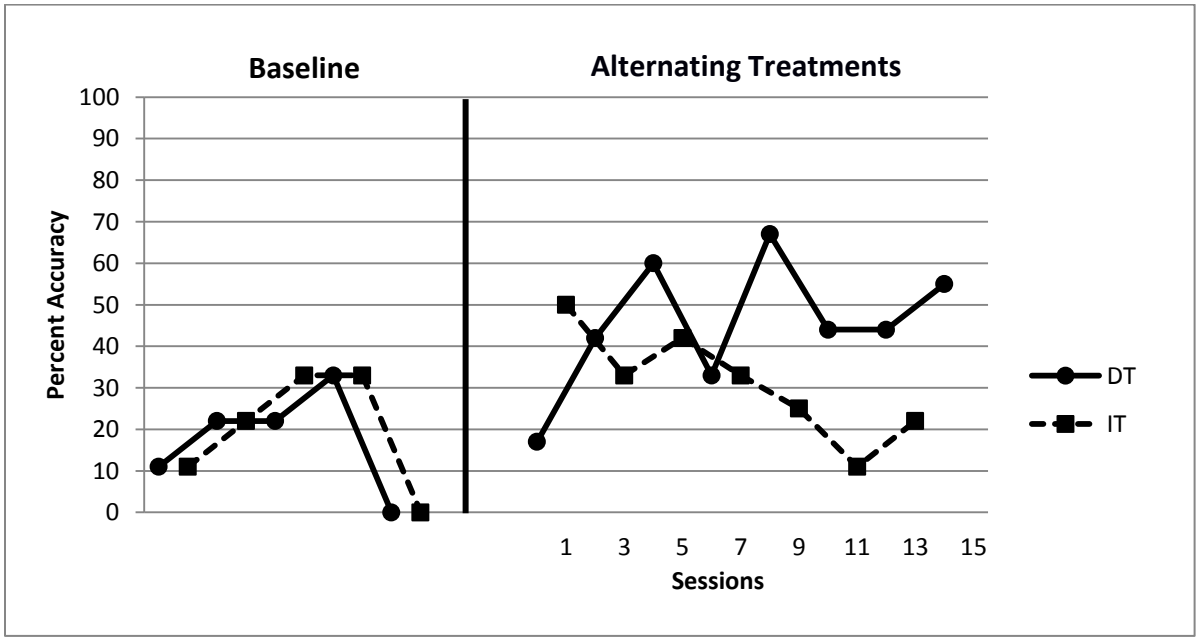

Figure 3. Percentage of accurate responses of sessions for Ricky during discrete trial and incidental teaching instruction across baseline and treatment sessions.

Chapter 4: Discussion

The purpose of this study was to compare the relative effectiveness of two evidence-based instructional methods relative to sight word acquisition with students with developmental disorders. In the current study, the two procedures (i.e., DTT and IT) resulted in three different response patterns across participants. With Beth, neither of the two instructional methods were effective in increasing sight word acquisition. With Shane, the IT method was more effective than the DTT method in increasing sight word acquisition. In contrast, with Ricky, the DTT method was found to be more effective than the IT method.

Whereas it has been well established that individualized treatments for severe behavioral disorders (e.g., aggressive, disruptive, self-injurious behaviors) should be based on the results of current functional assessments (e.g., Iwata, Dorsey, Slifer, Bauman, & Richman, 1982; Iwata et al., 1994; Fisher, Piazza, & Roane, 2011), the same might not be true for academic instruction. Given the BACB ethical stipulation for the necessity of completing current assessments prior to recommending intervention (Behavioral Analyst Certification Board, 2014), it appears that such assessment would also be warranted in the case of academic interventions. The current study contributes to a relatively sparse body of research that supports the functional assessment of academic performance as the basis for prescribing individually-tailored instructional methods.

The data from this study are consistent with the body of research demonstrating the relative effectiveness of different types of instructional procedures (e.g., Daly & Martens, 1994; Majdalany, Wilder, Greif, Mathiasen, & Saini, 2014). Majdalany et al., (2014) compared three different types of DTT for increasing academic performance with

students with ASD. Their study showed that a massed-trial instructional method was more effective than distributed trial and task interspersal methods. Daly and Martens (1994) directly compared the relative effectiveness of instructional methods (e.g., listening passage preview, taped words, and subject passage preview) and found differential effectiveness across subjects.

The current study compared the relative effectiveness of two potentially robust treatments, with the results showing differential effects across participants. The results of the current study illustrate the importance of selecting academic instruction on the basis of individual performance as opposed to practitioner preference or institutional practices. For example, some programs serving students with developmental disorders and ASD rely on DTT as the preferred method for teaching academic skills (Steege, Mace, Perry, & Longenecker, 2007). Such *a priori* decisions might result in ineffective or inefficient acquisition of skills for those students for whom an IT method might be more effective. The results of the current study suggest that prior to selecting an instructional method, practitioners should compare two or more evidence-based treatments and select the one that is the most effective with the individual student.

These findings also contribute to research regarding best practices for academic instruction using a response to intervention model. Specifically, these findings support the importance of "test driving" interventions in order to find the most effective and efficient method of instructing learners (Brown-Chidsey & Steege, 2010; Pratt, 2010). By "test driving" interventions, instructors can ensure that their learners are receiving the best intervention possible, and in the long run, that they will learn to the extent of their full potential.

Lastly, the minimal nature of interfering behavior during the study can be attributed to the participants' relative familiarity with academic instruction, in addition to rapid reinforcer delivery in the IT condition. The participants' safety while being exposed to creative and "out of the box" instructional strategies suggests that these types of strategies, and the ability to "test drive" them in order to inform intervention have a place in the public school and community school setting.

Limitations and Future Directions

One major limitation of this study was the length of time that participants' behavioral stability was at an acceptable level allowing their participation in the study due to the inpatient treatment setting. It is worth noting that since the primary programmatic goals of the program where the study took place (i.e., in-patient treatment) were to decrease polypharmacy and find the right medication regimens for patients, high levels of aggression, self-injury, and dysregulation were common throughout much of the time that the participants spent at the hospital. Importantly, participants who participated in this study were past the early stages of their stays, stabilized on the correct medication regimen, and preparing for discharge. Nonetheless, the length of time available for intervention might have been the reason that the participants did not demonstrate more significant skill improvements. If a student was non-responsive to either treatment in a community school setting, a practitioner could consider: (a) extending the comparison for several more sessions, (b) increasing the number of learning trials per session, (c) increasing the reinforcement for accurate responding, or (d) using alternative strategies such as errorless learning among others.

Another possible limitation of this study could have been a weak instructional match between the participants and academic materials. While the participants were screened for the study with the guidance of a special education teacher and through the use of a screening measure, lack of instructional match could have occurred due to the inaccuracy of the screening measure to help with the selection of study candidates who would be likely to respond well to these interventions.

Future studies utilizing an alternating treatment design for sight word reading instruction across a larger number of sessions and participants are needed to examine patterns of differentiation across learners more closely. In situations where the instructional match between learners and material is clear, the research could benefit from the implementation of brief experimental analysis (Daly, Bonfiglio, Mattson, Persampieri, & Foreman-Yates, 2005; Daly, Bonfiglio, Mattson, Persampieri, & Foreman-Yates, 2006; Daly, Witt, Martens, & Dool, 1997) for academic intervention. Future researchers could also consider implementing additional reading interventions such as modified orthography (Van der Bijl, Alant, & Lloyd, 2006) in an attempt to maximize intervention efficiency. Another possibility for future study is the use of an instructional hierarchy during sight word instruction with individuals with developmental disorders. The literature could also benefit from continuing an examination of the main finding from this study: demonstrating the feasibility of test driving academic interventions for teaching children with developmental disorders in order to make empirically informed decisions on differentiating academic instruction.

Chapter 5: Summary

In summary, the present study showed highly differential effects among participants with developmental disorders who were being taught to read sight words utilizing a commonly used form of instruction, DTT, and a less commonly used intervention, IT. Neither treatment condition was effective for Beth, the IT treatment condition was more effective for Shane, while the DT treatment condition was more effective for Ricky. None of the participants' interfering behavior was to the severity requiring discontinuation of any sessions, demonstrating the feasibility of implementing these types of interventions in numerous settings.

The results highlight the need to extend the individualization of interventions and "test driving" them to examine the results from typically individualized interventions (i.e., behavioral) to other less commonly individualized and "test driven" interventions like academic interventions. The current study added preliminary evidence on the feasibility of test driving interventions with lower functioning participants to the established body of research on academic interventions. Further, the current study expanded the body of research by demonstrating an uncommonly used academic intervention, IT, for the use of acquiring sight words in individuals with developmental disorders. Lastly, this study posited that in ethical practice academic interventions should be treated with the same earnestness as behavioral interventions since we as a profession possess the technology for effective intervention that has significant social impact.

Appendix A. Script and data sheet for discrete trial teaching

Participant ID: _____ Date/Time: _____
Session Type_____ Observer's Name ____

Discrete Trial Teaching Step	Accuracy Data	Observer Treatment Integrity (Tally)
1. Arrange a distraction free area		Yes: No:
2. Have materials available (pre-arrange stimulus cards on discrimination board)		Yes: No:
3. Attending: establish appropriate attending response (sitting, with hands and feet still, eye contact with instructor and materials)		Yes: No:
4. Verbal Direction: Show stimulus materials. Clearly articulate when giving instruction using a "directive" voice a. Say "Show me *XXXX*" where *XXXX* is the target word		Yes: No:
5. If: a. **Response is correct**: mark response as correct (+) and provide positive reinforcement (vocal praise with an enthusiastic tone, and token every *individually determined amount* of trials) b. **Response is incorrect or no response for 5 seconds**: mark response as incorrect (-), do not provide reinforcer: i. provide correction procedure: point to correct word while reading the stimulus card "*XXXX*", rearrange stimulus cards, and provide verbal direction again ("Show me XXXX"). If correct, provide lower intensity vocal praise and a token at half the rate of being correct in step 5 and go to step 6. ii. if incorrect again: provide gentle physical assistance to touch correct stimulus card while reading the stimulus word "XXXX". iii. provide lower intensity vocal praise and a token at half the rate of being immediately correct		Yes: No:
6. Pause for inter-trial interval of about 5 seconds between all trials		Yes: No:

Adapted from: Ryan and Hemmes (2005)

Appendix B. Script and data sheet for incidental teaching

Participant ID: _____ Date/Time: _____
Session Type_____ Observer's Name: _____

Incidental Teaching Step	Accuracy Data	Observer Treatment Integrity (Tally)
1. Arrange a free operant area (room with preferred items)		Yes: No:
2. Have materials available (pre-arrange stimulus on discrimination board).		Yes: No:
3. If: a. Child **initiates** (gestures, moves) towards preferred item – code (I) and continue to step 4. b. Child **does not initiate** towards preferred item within 10 seconds, present the items one by one for 5 seconds each, and prompt the child to choose one. i. if child initiates, code (P) and move to step 4. ii. if child does not initiate, code (X) and discontinue the session, leaving at least 1 hour before reattempting instruction.		Yes: No:
4. Attending: establish appropriate attending response (staying within the defined area, within 3ft proximity of the instructor & materials, and eye contact with instructor and materials)		Yes: No:
5. Verbal Direction: Present stimulus. Clearly articulate when giving instruction using a "directive" voice a. Say "Show me *XXXX*" where *XXXX* is the target word		Yes: No:
6. If : a. **Response is correct**: mark response as correct (+) and provide positive reinforcement (vocal praise with an enthusiastic tone, and access to preferred item from Step 3 for 60 seconds) b. **Response is incorrect or no response for 5 seconds:** mark response as incorrect (-) i. provide correction procedure: point to correct word while reading the stimulus card "*XXXX*", rearrange stimulus cards, and provide direction again ("Show me XXXX"). If correct, provide access to preferred item from step 3 for 30 seconds and go to step 7. ii. if incorrect again: provide gentle physical prompt to touch correct stimulus card while reading the stimulus word "XXXX". iii. provide access to preferred item from step 3 for 30 seconds and go to step 7.		
7. Pause for inter-trial interval of about 5 seconds between all trials		Yes: No:

Adapted from: Ryan and Hemmes (2005); and McGee, Krantz, McClannahan (1986)

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The author was born in Wrocław Poland, graduated from Pomperaug High School in Southbury, Connecticut, and graduated from the University of Connecticut, Storrs, with a Bachelor of Arts degree (Major: Psychology) in 2007. He obtained a Master of Science degree in Educational Psychology with a concentration in Applied Behavior Analysis from the University of Southern Maine in 2012. The author has worked with individuals with developmental disorders, and emotional and behavioral disorders in school, community, and inpatient settings. His professional interests include academic instruction with individuals with developmental disorders, training staff to effectively work with individuals with developmental disorders and emotional and behavioral disorders, and training and supporting families and caregivers of individuals with developmental disorders to ensure success in community settings. He is a candidate for the degree of Doctor of Psychology in School Psychology from The University of Southern Maine in May, 2016.