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Examining the Impact of Web-Based Training Modules Among Special Educators and Paraprofessionals Who Support Students with Autism

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EXAMINING THE IMPACT OF WEB-BASED TRAINING MODULES AMONG SPECIAL EDUCATORS AND PARAPROFESSIONALS WHO SUPPORT STUDENTS WITH AUTISM

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TABLE OF CONTENTS

LIST OF TABLES

Table Page

LIST OF FIGURES

Figure Page

ABSTRACT

Although researchers have clearly identified evidence-based ABA practices for children with autism, the research-to-practice gap in implementation continues to exist in schools. This may be due to lack of staff development and knowledge in specific instructional methods (Odom, Collet-Klingenberg, & Hatton, 2010). Moreover, the delivery of training may be a factor in staff development. For example, workshops are one of the most common ways professionals access training (Brock, Huber, Carter, Juarez, & Warren, 2014). However, workshops often have limited impact on implementation of new knowledge. Advances in technology have made online training more accessible for educators as a delivery option. The present research study examines the impact of web-based modules among special education staff who support students with autism in self-contained classrooms.

CHAPTER I

INTRODUCTION

The primary objective of this doctoral research project is to examine web-based training modules among staff who work with students with autism in self-contained classrooms in a public school setting. This study utilizes an action research approach aimed at improving training practices in the autism program. During the 2015-16 school year, special education classroom teams in the autism program participated in web training modules which were directed by stakeholders. Modules consisted of a variety of topics including definition and characteristics of autism, principles of applied behavior analysis, and instructional teaching methodologies such as discrete trial. The autism program is rooted in the foundation of principles of applied behavior analysis to teach and support students with autism.

The purpose of this study is to examine the web-based training system, Rethink Autism, on the knowledge of selected principles of applied behavioral analysis and discrete trial training among staff who work with students with autism. Does the content knowledge in discrete trial training, principles of applied behavior analysis, specifically prompting and reinforcers, continue to be maintained after participating in the Rethink modules among special educators, paraprofessionals, and related service personnel? The source of data will include post-test results of each of the modules from the Fall of the 2015-16 school year to Winter of the 2016-17 school year. Is there an increase in

knowledge of reinforcers, prompting, and discrete trial training after participating in Rethink's Autism training modules among paraprofessionals? Source of data will include pre- and post-test results on the modules that will be explored. The utility of selecting web-based modules as a training tool based on the findings will be explored. The next steps on implementing research findings and ways to improve training needs in the autism program will be discussed.

CHAPTER II

LITERATURE REVIEW

Autism spectrum disorder (ASD) is a neurodevelopmental disorder that involves nonverbal communication and social interaction deficits, as well as the presence of restricted, repetitive patterns of behaviors and/or interests (American Psychiatric Association, 2013). The Centers for Disease Control and Prevention (CDC, 2014) and Autism and Developmental Disabilities Monitoring Network (ADDM) reported from their 2010 surveillance year that the overall prevalence rate of autism spectrum disorder (ASD) among children who were 8-years-old and living in the ADDM sites within the United States increased by 29% compared to their estimates back in 2008. This means that 1 in 68 children are estimated to be identified with having an autism spectrum disorder. According to the Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (American Psychiatric Association, 2013), 70% of individuals with ASD may also have at least one co-morbidity with a mental disorder. It is also common to have a co-occurrence with Attention Deficit Hyperactivity Disorder. Impact of symptoms of autism and comorbidity of a second diagnosis can result in compounding difficulties in adaptive, language, social relationships, learning, and/or mobility skills [Centers for Disease Control and Prevention (CDC), 2014]. These symptoms can cause clinically significant impairments, impacting overall functioning across both home and school environments throughout an individual's lifespan. Relatedly, the National Center for

Education Statistics reported that the number of students identified as having autism spectrum disorder receiving special education services in schools increased over the last two decades (Odom, Cox, Brock, & National Professional Development Center, 2013; U.S. Department of Education, 2015). The rise in prevalence rates of children with autism has resulted in more research being conducted with this population. Moreover, the number of published research on autism grew exponentially, especially since 2004 (Thompson, 2013).

To promote best practices and identify effective interventions for children with autism, the U.S. Department of Education began providing funding to the National Professional Development Center on Autism Spectrum Disorders (NPDC) over the past decade. Odom et al. (2013) defined evidence-based practices as, "specific-focused intervention strategies that have evidence of efficacy" (p. 234) which teachers incorporate when working with students with autism. Criteria to be considered evidence-based involves research studies to have the following: Participants who have a diagnosis of autism, outcome measures, results that show an increase in targeted skills, and findings that demonstrate evidence from at least two experimental or quasi-experimental group designs, at least five single case design studies, or a varied combination of both (Odom, Collet-Klingenberg, Rogers, & Hatton, 2010).

The NPDC identified 24 evidence-based practices (EBPs) that mostly involve behavioral approaches with primarily two subgroups consisting of behavioral teaching strategies such as discrete trial training (DTT) and positive behavior support strategies to reduce behaviors such as functional behavior assessments and differential reinforcement

(Odom et al., 2010). The identified EBPs in the NPDC database which incorporate behavioral teaching strategies or interventions are embedded within applied behavior analysis such as reinforcement and prompting (Wong, Odom, Hume, Cox, Fettig, Kucharczyk, & Schultz, 2014). The National Autism Center (2015) began the National Standards Project (NSP) in 2005 to conduct a comprehensive review of hundreds of research studies on ASD. In 2011, they conducted a second phase involving further reviews of additional research studies and identified 14 established interventions with evidence for individuals with ASD who are under 22 years of age. Examples of established interventions include behavioral interventions, modeling, language training, and self-management (National Autism Center, 2015).

Evidence-based practices are designed to improve a range of learner outcomes such as academics, behavior, communication, play, social, and/or transitions. For example, prompting is widely used in learning to control behavior and can involve different forms such as verbal, gestural, modeling, visual, and physical prompts. Reinforcement is another seminal principle used in the field of applied behavior analysis. By definition, reinforcement occurs when behavior is followed by a response that results in strengthening the behavior and therefore, increases the likelihood of occurring in the future. Both prompting and reinforcement procedures are considered the foundation of evidence-based, behavioral intervention strategies used to teach any skill and/or behaviors (Odom et al., 2010).

Applied Behavior Analysis (ABA)

Applied behavior analysis (ABA) is a discipline that incorporates behavioral strategies such as positive reinforcement, prompting, and other scientific methods to understand behavior, teach skills, and evaluate progress to obtain the desired outcome (Grey, Honan, McClean, & Daly, 2005). Moreover, applied behavior analysis is aimed at focusing on behavior change that is systematic and socially valid. Cooper, Heron, and Heward (2007) defined applied behavior analysis as, "the science in which tactics derived from the principles of behavior are applied systematically to improve socially significant behavior and experimentation is used to identify the variables responsible for behavior change" (p. 20). The field of applied behavior analysis continues to be a significant force in autism studies and an effective form of treatment for this population (Matson, Turygin, Beighley, Rieske, Tureck, & Matson, 2012). There is much research in areas of skill building and communication utilizing principles of applied behavior analysis. For example, prompting procedures can be used to teach communication skills such as answering questions or nonverbal communication such as hand raising. Steege, Mace, Perry, and Longenecker (2007) identified the following five ways that applied behavior analysis supports individuals with autism such as: Teaching new skills, reinforcing and maintaining skills, generalizing behavior across situations and/or settings, controlling learning conditions, and reducing problem behaviors. The National Research Council (2001) reported that there have been 40 years of single-subject design research that examines principles and methods of applied behavioral analysis to treat problem behaviors and teach specific skills to individuals with autism spectrum disorder. Not

only are ABA-based strategies used for learning desired new behaviors, but its emphasis on antecedent interventions focuses on preventative methods of problem behaviors. It also promotes generalization and maintenance by encouraging skills to be transferred to the natural environment. The comprehensive behavioral treatment for children is identified as one of the established interventions which was reviewed by the National Autism Center (2015). It utilizes principles of applied behavioral analysis such as prompting, reinforcement, and includes the use of discrete trial teaching.

The National Research Council (2001) identified several recommendations for educational programs after conducting a comprehensive examination of evidence-based practices for children with ASD. One of the recommendations involve teachers to be familiar with methods such as applied behavior analysis, communication, and data collection to follow best practices for children with ASD. However, many teaching certification programs do not include evidence-based practices specific to autism. Morrier, Hess, and Heflin (2011) surveyed 90 teachers on training in teaching strategies for students with autism and found that less than 15% of teachers reported training in university teacher certification programs and that 20% were trained via workshops. They also found that only 5% of teachers reported using evidence-based practices for students with autism. Thus, further training is needed to prepare educators to work with students, their families, and other team members. Moreover, there are few studies involving teacher training and implementation of evidence-based practices which can be related to lack of training in university programs (Alexander, Ayres, & Smith, 2015). Barnhill, Polloway, and Sumutka (2011) examined coursework on autism in teacher training

programs by analyzing responses from 87 college and universities across 34 states. Results indicated that 41% did not offer coursework in autism. Within the school programs that offered coursework, only 35% provided training in discrete trial.

Training in Principles of Applied Behavior Analysis (ABA)

Training in principles of applied behavior analysis includes instruction in content knowledge to acquire competencies for implementation. Luiselli, Bass, and Whitcomb (2010) examined training of ABA to 35 new hires of direct-care employees at a residential habilitation services organization for adults with developmental disabilities. Staff were trained through three modules: Measurement, Behavior Support, and Skill Acquisition. The format of the modules consisted of PowerPoint presentations with embedded video clips that demonstrated specific instruction, exercises, and video clips which demonstrated specific content such as prompting. Results from pre-post training test scores in the Measurement module increased from 76.8% pretraining to 92% posttraining. Average pretraining scores in the Behavior Support module was 75% and increased to 89% posttraining. The last module, Skill Acquisition, increased from 62% pretraining to 90% posttraining. Grey et al. (2005) reported that ABA methods are more challenging to implement within the school environment due to its intensity, 1:1 teacher-to-student ratio, and required training of staff members. The intensity is considered high due to the number of recommended hours involved in providing specialized instruction, typically between 25-35 hours per week. Grey et al. examined a teacher training program in applied behavior analysis. In their study, 11 special education teachers completed 45 hours of classroom instruction in applied behavior analysis (ABA), with an additional 45

hours of application in the natural environment over a seven-month period. Course content of ABA included topics such as overview and history of applied behavior analysis, ethics, behavioral principles, behavioral measurement, and interpretation of data, reinforcement, generalization, shaping, and treatment designs. This study utilized a single case AB design and measured target behaviors of 11 students with autism. Results of this study indicated that problem behavior in student participants were reduced by a mean change of 66.4%. Moreover, replacement behaviors increased by a mean change of 79.5% (Grey et al., 2005). Teachers also reported that they benefitted from learning about ABA methods, and parents reported that they saw a change in their child's behaviors after teachers received the training.

Luiselli et al. (2008) provided training to 47 paraprofessionals who work with adults with developmental disabilities at a habilitation services agency. The training curriculum consisted of principles of applied behavior analysis such as prompting, prompt-fading, and reinforcement that are needed for skill acquisition of learners. The ABA content and theory principles were divided into the following three content modules: *Basic Learning Principles* such as positive and negative reinforcement, "Three-term contingency" (Antecedents-Behavior-Consequences), *Instructional Strategies* such as discrete trial instruction, incidental teaching, task analysis, and *Prompting and Prompt-Fading Methods* (i.e., physical prompting, verbal prompting, prompt fading). Content modules were provided through PowerPoint slides. Procedures included a pre-test before receiving training on each module and then a post-test. The tests consisted of a multiple-choice, paper-and-pencil format of 10 questions. Findings

indicated that participants increased their knowledge of applied behavior analysis procedures by demonstrating increases in their average post-test scores. Results from pre- and post-tests in the module, Learning Principles, indicated that the average correct training test scores increased from 52% at pretraining to 86% post-training. The module, Instructional Strategies, had an average correct pretraining score of 64% and increased to 88.9% post-training. Results from the Prompting and Prompt-Fading Methods pretraining average scores was 64% and increased to 87.8% post-training.

Discrete Trial Training (DTT)

Discrete trial training (DTT) is one of the identified evidence-based practices and ABA-based interventions for students with autism (Boutot & Hume, 2012; Fleury, 2013; Wong et al., 2014). Discrete trial instruction (DTI) or DTT, which can be used interchangeably, is an instructional strategy consists of teaching specific skills that are broken down into small, discrete steps to the student. This procedure can be used to teach non-sequential skills (Steege et al., 2007). DTT consists of a "three-term contingency" which includes the antecedent, behavior, and consequence (Boutot & Hume, 2012; Cooper et al., 2007). For example, the teacher presents the letter "A" on a card and asks, "What letter?" (Antecedent), student verbally responds, "A" (Behavior), teacher responds, "Yes, this is the letter A!" (Consequence). A correct response is typically followed by a reinforcer that can be in the form of verbal or nonverbal praise (i.e., "high five"), edible (i.e., candy), and/or a tangible item (i.e., sensory toy) (Paden & Kodak, 2015). Cooper et al. (2007) defined reinforcer as, "a stimulus change that increases the future frequency of that type of behavior in similar conditions" (p. 702). If a

stimulus followed by a behavior such as a sticker were given and it did not result in an increase in the behavior, then by definition, the sticker is not a reinforcer.

DTT incorporates principles of applied behavior analysis and evidence-based behavioral strategies such as prompting and reinforcement. Prompting procedures can be in the form of physical, verbal, gestural, and/or modeling assistance to help acquire or complete any skill or behavior (Wong et al., 2014). Downs and Downs (2012) indicated that the technical skills required in discrete trial instruction involves utilizing prompting and reinforcers. Instructors need to know what types of prompting to use and when to ensure emit the desired behavior and providing the appropriate reinforcement magnitude. There are potential implementation errors in prompting and can be considered one of the more challenging technical aspects of discrete trial instruction.

A systematic approach is used in applied behavior analysis to teach specific skills in a variety of areas such as language, academic, joint attention, compliance, adaptive, social, play, and vocational skills (Fleury, 2013). This approach is often used to teach new skills for children with autism (Nosik, Williams, Garrido, & Lee, 2013). The landmark study was conducted by O. Ivar Lovaas at UCLA (1987) in which 19 children in the experimental group received 40 hours per week of discrete trial instruction and compared to two control groups of who received less than 10 hours per week of discrete trial instruction. Prior to receiving treatment, there was no significant difference between the experimental and control groups. Both groups received discrete trial instruction for almost 2 or more years and follow-up results indicated that the 47% of the experimental group had an average or above average IQ score (M=107, $p<.01$) on cognitive

assessments, whereas only 2% of children in the control groups achieved within the normal range. There was a statistically significant increase in IQ scores in the experimental groups compared to both control groups.

Further, a meta-analytic study conducted by Peters-Scheffer et al. (2011) examined 11 studies with 344 young children who received early intensive behavioral intervention using a discrete trial format. The experimental group consisted of receiving a range of 12 to 38 hours per week of receiving the intervention between 10 months to more than two years. The control group received less intensive intervention at either less than 10 hours per week, eclectic treatment, parent-directed ABA, or typical treatment such as early intervention or school-based intervention (Peters-Scheffer et al., 2011). The results indicated that the experimental group had a higher Full Scale IQ (Mean Difference=11.98, $p<.0001$), higher nonverbal IQ (MD=11.09, $p<.0162$), expressive (MD=15.21, $p<.0001$), and receptive scores (MD=13.94, $p<.0001$). The Mean Difference of 11.09 to 15.21 standardization points than the control group is considered to clinically significant and findings indicate the impact of intensive intervention.

Training in Discrete Trial Instruction (DTI)

One of the most common methods of training DTT to teachers is through behavioral skills training (Nosik et al., 2013; Pollard, Higbee, Akers, & Brodhead, 2014; Sarokoff & Sturmey, 2004). Behavioral skills training is utilized to teach a variety of skills and consists of multiple components such as instruction, feedback, rehearsal, and modeling (Sarokoff & Sturmey, 2004). One study by Sarokoff and Sturmey examined the effectiveness of a behavioral skills training package by training three special

education teachers in implementing discrete trial teaching with a preschooler with autism through a multiple baseline across subjects design. Results indicated that there was an increase in percentage of correct implementation of discrete trial skills from a baseline range of 43% to 49% to a post-training range of 97% to 99% across all three teachers. Although these findings indicate improvements in implementation skills, it is unclear which individual component such as instruction, feedback, rehearsal, or modeling in the behavioral skills training package was effective.

Principles of reinforcement strengthens a specific behavior or skill through an addition of a consequence. Common errors in discrete trial instruction is reinforcement procedures such as providing weak or incorrect reinforcers for responses (Steege et al., 2007). Downs and Downs (2012) incorporated the use of a Competency Checklist for Instructors in teaching discrete trial teaching to eight undergraduate instructors. The checklist included the necessary technical skills that an instructor needs such as the use of effective reinforcers and delivering correct prompting and prompt fading procedures.

Another method of teaching discrete trial training is through an interactive computer training (ICT) approach. Pollard et al. (2014) investigated the effects of ICT on implementation of discrete-trial instruction through a noncurrent multiple baseline design. Participants included four university students with no background or training in discrete trial instruction. They watched 13 videos within four modules of the following: Data collection and principles of applied behavior analysis such as managing antecedents, prompting, and managing consequences. Participants were provided with video examples of correct and incorrect procedures in discrete trial instruction. In addition, they

were presented with self-guided opportunities to practice components of discrete trial instruction. Implementation of discrete trial instruction skills were measured through role plays for twenty trials. Results indicated increases in pre-post scores on module quizzes (overall average of 38% to 93%) and increases in accuracy of discrete-trial instruction with an overall baseline average of 25% to posttest average of 93%.

Serna, Lobo, Fleming, Curtin, Foran, and Hamad (2015) examined an online training course in applied behavior analysis for paraprofessionals. Content areas include topics such as characteristics of ASD, principles of applied behavior analysis, reinforcement, prompting, and discrete trial training. The online training program also has an onscreen child to help with generalizability of skills. They recruited 19 participants for the experimental group and 31 individuals for the wait-list control group. Both groups were given a pretest in knowledge of subject matter from the content areas. The experimental group was expected to complete the course in two weeks and then given a posttest. The control group was allowed to take the course, but not required to complete it. Results indicated that the intervention group had significant main effect between the pre- and post-test score ($F(1, 47)=20.86$, $p<.0001$). Participants from the experimental groups completed a satisfaction survey and 78.9% of participants rated the quality of the course and close to 90% would recommend it to others (Serna et al., 2015).

Implementation errors in discrete trial include lack of application of timing within trials, incorrect prompting procedures, inadequate reinforcement, and mistakes in consequences can lead to escape extinction or aversive conditions (Steege et al., 2007). O'Guin (2010) investigated the effects of training in increasing accurate implementation

of discrete trial instruction by five paraprofessionals who work with middle school children with autism. A nonconcurrent multiple baseline research design consisted of three phases after participating in a two-hour didactic training which involved modeling, role-play, and discussion of discrete trial techniques. Phase 1 consisted of implementation of discrete trial instruction for at least two sessions. Phase 2 consisted of several discrete trial sessions with corrective verbal feedback if the criterion of 85% discrete trial training accuracy was not reached. Lastly, Phase 3 involved a combination of verbal and video feedback if the criterion was not reached. Results indicated that paraprofessionals were able to reach 85% accuracy of discrete trial implementation after receiving less than four hours of training and all the student participants made growth in their targeted language skills. Paraprofessionals who did not reach 85% criterion benefited from video and verbal feedback because they were able to increase their accuracy after receiving these components. These results were consistent with other findings on the effectiveness of training (Pollard et al., 2014; Sarokoff & Sturmey, 2004).

Research-to-Practice Gap

Despite the identification of these evidence-based interventions, there appears to be a research-to-practice gap in implementation of evidence-based practices within classrooms (Alexander et al., 2015). Odom et al. (2010) indicated that implementing evidence-based practices probably requires learning to adopt the new strategy or intervention. Barriers such as lack of teacher training in university programs and minimal on-the-job training opportunities are some factors contributing to the research-to-practice gap. Some states such as California recognize the need for teachers to have

adequate training in strategies for students with autism. For example, in 2010, California passed an Assembly Bill 2160 (AB 2160) which mandates special education teachers who have either a Mild/Moderate, Visual Impairment, Deaf and Hard of Hearing or Physically Handicapped credential and at least one student with autism to further obtain coursework in understanding autism spectrum disorder and evidence-based practices. Minimal states have this requirement, but this may be a growing trend in the future as more states recognize the need for specialized training among teachers to implement best practice strategies for students with autism.

Other variables that contribute to the gap are the lack of confidence that teachers feel in in their ability to implement a strategy or intervention. Brock et al. (2014) examined professional development needs of implementation of evidence-based practice by surveying 456 special education teachers and administrators in Tennessee. Results indicated that teachers reported being "little to somewhat" confident in their abilities to implement at least 15 out of 24 evidence-based practices. For example, they expressed moderate confidence levels in discrete trial training. Survey responses also indicated that special education teachers who had more experience instructing students with autism were less interested in professional development.

Another issue in research-to-practice implementation is the lack of training for paraprofessionals. Within the past decade, there has been an increased need for paraprofessionals to provide support for students with disabilities within classrooms (Jones, Ratcliff, Sheehan, & Hunt, 2012). A paraprofessional is defined as a position within an educational environment that provides instructional support to students (No

Child Left Behind Act, 2002). Carter, O'Rourke, Sisco, and Pelsue (2009) surveyed 313 paraprofessionals who work with students with disabilities to examine training needs found that there are increasingly more responsibilities in supporting classrooms today. More than half of the respondents reported that on a daily or weekly basis they may engage in 13 out of 25 possible tasks such as providing 1:1 instruction, facilitate social relationships, provide small group instruction, implement behavior management programs, providing instruction in the community, administration of formal or informal assessments, lesson plans, and clerical work. These results also indicate the broad variety of skills that are expected of paraprofessionals.

The No Child Left Behind Act of 2001 (NCLB, 2002) introduced new requirements for paraprofessionals to be "highly qualified" which involves additional education credit hours beyond a high school diploma, prompting a need for paraprofessionals to be well-prepared in their roles and responsibilities to serve students with various disabilities. These requirements indicated a need for growth in skills such as instructional support and behavior improvement strategies (Keller, Bucholz, & Brady, 2007). Although the Illinois State Board of Education (ISBE) requires paraprofessionals to hold a valid license to work in a public school setting, it does not currently require professional development units to maintain their license. There were no changes with these expectations even when the Every Student Succeeds Act (2015) was replaced with NCLB. However, many school districts offer ongoing professional development training extended to its paraprofessionals as a best practice approach to school improvement [Illinois State Board of Education (ISBE), 2016]. Identifying key areas or tasks that

paraprofessionals feel the least competent can also be targeted as areas of training needs. Further, for evidence-based implementation strategies to be carried out with fidelity requires training across staff.

Burns and Ysseldyke (2009) examined evidence-based instructional practices in special education by surveying 174 special education teachers from members of the Council for Exceptional Children Journal and 333 school psychologists from at least 41 states. A total of 500 surveys were randomly selected and distributed to special education teachers and 1,000 school psychologists who were members of the National Association of School Psychologists. When both groups were asked to rank order frequency of implementing instructional strategies for students with disabilities, direct instruction was reported to be the most frequently used and applied behavioral analysis ranked fifth out of eight practices. Moreover, teachers reported that they implemented social skills training more frequently than applied behavior analysis even if it had less empirical support. Loiacono and Palumbo (2011) surveyed 51 elementary school principals in Southeast New York on their knowledge and confidence in ABA. A majority (86%) of their students with autism receive instruction in general education classrooms. Their findings indicated that 61% of principals who reported that they have not completed any coursework in applied behavioral analysis lacked confidence in evaluating and supporting teachers who serve students with autism in inclusive environments. Sixty-one percent of these principals who reported lack of confidence reported needing more training in the area of applied behavior analysis. Moreover, Brock

et al. (2014) indicated that low confidence levels of practitioners may be related to lack of opportunity for training in those areas.

Professional Development

Professional development is one of the common methods for providing ongoing training for teachers and paraprofessionals. The Every Student Succeeds Act (2015) updated the definition of professional development to activities that are ongoing, developed with input from educators, evaluated on a regular basis, and provided for all staff including paraprofessionals. It also recommends administrators to develop professional development programs that are aimed towards improving student learning and high quality instruction that includes students with disabilities (National Association of School Psychologists, 2016). Continuing the effort to improve programs for students with autism is vital. Professional development can vary in its delivery such as through workshops, individual or self-instruction, webinars, college courses, conferences, and individual group coaching (Alexander et al., 2015; Brock et al, 2015). One study that examined training needs of 313 paraprofessionals across 77 elementary, middle and high schools through a survey found that common forms of training were on-the-job training and in-services (Carter et al., 2009). Brock et al. (2014) surveyed 456 teachers and administrators from Tennessee and reported that although 52% of teachers reported that they will "quite or very likely" attend workshops, they will "less likely" have access to coaching within the next year. They reiterated that single-event workshops have little impact on implementation of skill compared to coaching and attributed this phenomenon to lack of exposure to other professional development avenues.

Increase in prevalence rates of autism in special education indicates a need for further training for paraprofessionals. Breton (2010) reported findings that there is a need for school districts to provide quality professional development to adequately train special education paraprofessionals. Patterson (2006) examined the perceptions of 22 paraprofessionals regarding their roles within a classroom environment of children with disabilities. Findings suggested that 54% of paraprofessionals indicated a lack of training given their responsibilities to serve students who exhibit disruptive behaviors. Thus, indicating a need for adequate ongoing professional development training in specific skills such as behavior management and instructional support strategies (Jones et al., 2012; Patterson, 2006).

The National Professional Development Center on Autism Spectrum Disorders (NPDC) presented a systematic framework for implementing evidence-based programs for students with autism (Odom et al., 2013). They identified a two-year model implementation of evidence-based practices which includes a self-assessment by teachers of the twenty-four evidence-based practices and utilization of the goal attainment scale to assess student outcomes. They also developed the Autism Program Environment Rating Scale (APERS), which provides an overall quality program rating and allows teams to identify strengths and needs, as well as identify goals based on these needs (Odom et al., 2013). The APERS consists of 11 areas such as class environment, structure, positive school climate, family involvement, teaming, and transition planning and is commonly administered in the Fall and Spring. The NPDC model was implemented in 58 school programs from preschool to high school across nine states. Teachers completed the

Evidence-Based Practice Inventory, which lists the 24 evidence-based practices. Results indicated increases in scores on the APERS and percentage of frequently used evidence-based practices. Odom et al. (2013) recommended delivering professional development and coaching to support evidence-based practices.

Alexander et al. (2015) reviewed 23 studies on teacher training and evidence-based practices for children with autism. They found that categories of training were in areas such as behavioral intervention strategies, naturalistic interventions, discrete trial training (DTT), and positive behavioral support strategies. Training was also divided into three different categories of deliveries including self-instruction, individual instruction, and group instruction. Findings indicate that most studies fell into the category of individual instruction which involved 1:1 consultation or coaching with a teacher and included methods such as feedback, roleplaying, and modeling. Most of the training topics fell under behavioral intervention strategies. However, only a third of the total number of studies examined generalization and maintenance, indicating a need for further outcome measures in these areas.

Web-Based Training

Innovations in computer information systems and internet technology over the past decade have allowed accessibility and flexibility of learning remotely to become a cost-effective and feasible method which has spread globally. Elliott (2017) defined online professional development as, "any internet-based form or learning or professional growth process that an educator can engage in" (p. 119). Utilizing technology through online learning such as webinars, modules, and self-study have been common deliveries

for professional development opportunities. Moreover, distance learning programs in higher education across a variety of disciplines have been an increasing trend. With these increasing technical trends in the field of education, more research is needed to examine its effectiveness. For example, Rakap, Jones, and Emery (2015) evaluated the effects of a new web-based professional development program called Project Autism Competencies for Endorsement (ACE) on the knowledge and skills of teachers who work with children with autism. Thirty-three teachers were separated into two groups: 17 teachers were in the Project ACE and 16 teachers in the Professional Development Program (PDP) group. Participants in the Project ACE group were asked to complete four online courses and two field experiences within a year, whereas participants from the PDP group were expected to only complete four online courses. Courses consisted of an overview of ASD, communication and social development intervention, assessment and diagnosis of ASD, and behavior management/positive behavior supports. Each course consisted of weekly discussions, assignments, and quizzes through a web-based, online platform. Through a measurement of pre- and post-test of six targeted self-assessment competency areas (e.g., overview of ASD, assessment, communication, instructional strategies), all participants increased their perceived knowledge and skills in all the targeted areas (range of p-values=.000 to p-value=.014) with no significant differences between the two groups. This indicates that participants feel competent in working with students with autism even with or without additional field experiences. Moreover, when given a survey of perceived comfort levels (ranging from 1=*not comfortable at all* to 4 =*very comfortable*) in their utilization of teaching strategies they learned through the training,

both groups of teachers reported “adequate” comfort levels (M=3.39) such as the use of visuals, classroom management, communication skills, social skills, and handling challenging behaviors. Although teachers who received additional field work training were slightly higher in their comfort levels, there were no significant differences between the two groups. These findings indicate how using self-reports of knowledge and competence can be limiting and conducting further research such as pre- and post-tests of selected content knowledge areas is needed.

Web-based modules as a form of professional development has been increasingly more common. Hollingsworth and Lim (2015) defined web-based modules as, “a set of instructional resources focused on a single topic and accessible via the Internet” (p. 77). They examined the use of web-based modules and learner knowledge among 19 college students who are predominantly Early Childhood majors. They developed pre- and post-surveys as instruments to evaluate the rate of each student’s level of knowledge and competence or use of the targeted modules. Results indicated that web-based modules significantly improved their knowledge and competence.

Douglas, McNaughton, and Light (2013) also investigated the effects of web-based, online training modules for paraeducators to facilitate communication among preschoolers with a communication disability. A single subject multiple probe design was utilized across three paraeducator-student dyads was conducted in three phases: Baseline, Training, and Maintenance. Baseline consisted of at least five, 12-minute play sessions in which paraeducators were asked to play with the child. The web-based, online training components involved five training modules, video modeling of the steps,

application of play activities, and reflection of strategies as a method of training for the paraeducators. Maintenance sessions included dyad play sessions similar to baseline with a minimum of five follow-up sessions. Results indicated that the number of communication opportunities and appropriate responses increased following the combination of online instruction and application of live practice of skills. The nonoverlap of all pairs (NAP), which measures effect size, indicated a range of .98 to 1.0 (Douglas et al., 2013). Moreover, the online training format was also perceived to be beneficial by the paraeducators.

Video Modeling

Video modeling involves watching a model of someone performing a specific skill correctly and then given the opportunity to demonstrate the targeted skill in a similar situation (Collins, Higbee, & Salzberg, 2009; Wong et al., 2014). Video modeling has been shown to be an effective tool to increase knowledge and implementation of specific instructional skills such as discrete trial training to students with autism (Cardinal, 2012; Pollard et al., 2014; Wiech, 2014, Wong et al., 2014).

An online, web-based, commercial video modeling program called Rethink Autism (http://www.rethinkfirst.com) provides on-going training to practitioners who work with students with autism and parents. Rethink Autism provides online modules in instructional methods such as discrete trial training and principles of applied behavior analysis such as reinforcement, prompting, generalization, and fading. Training modules include application videos of implementation of DTT and principles of ABA. After watching the videos, participants take a post-test which is set at 90% criterion for passing.

Cardinal (2012) examined the effectiveness of training videos from Rethink Autism through a multiple baseline design across four paraeducators who had little training in principles of applied behavior analysis in teaching four students with severe autism. Procedures consisted of the following three phases: Phase 1 consisted of video modeling lessons in which paraeducators watched the first step of the lesson video from the Rethink Autism website and then teach the lesson to their student. Phase 2 consisted of watching the DTT video and then teaching the lesson. Phase 3 consisted of the same components as Phase 2 with the addition of direct verbal feedback from a coach. Cardinal reported that at baseline, the average skill level of DTT among paraeducators ranged from 27% to 43%. By the end of Phase 3, the average skill level of DTT among paraeducators increased with a range of 85% to 95%. There were also large effect sizes (range of ES=2.76 to 3.54) for all four paraeducators for acquisition of DTT skills for all the paraeducators. Moreover, there was increased growth in student skill levels with reported improvement of 130% with an average treatment score of 80% (Cardinal, 2012).

Similar findings were found by Wiech (2014) with the investigation of effects of a multi-component training package consisting of online training videos, verbal feedback, and coaching/modeling through a multiple baseline approach of three student-teacher dyads. The combination of online training videos with the coaching and modeling components increased implementation of mand training skills of two of the student-teacher dyads who provided early intervention to students with autism. Mands are one of the first verbal operants to teach an early language learner and mand training involves teaching a request a need or want (Cooper et al., 2007). Mand training consists of using

principles of applied behavior analysis including prompting, fading, and differential reinforcement. A feedback protocol was utilized to provide systematic feedback procedures. Results indicated that fidelity of mand training across all teachers were at 98% to 100% in accuracy. Although there were no overall significant increases in mand repertoire by the student participants, there was an increase in spontaneous mands during the coaching/modeling phase of the training package.

Catania, Almeida, Liu-Constant, and Reed (2009) examined the effectiveness of video modeling as a training tool to increase discrete trial instruction skills among staff who work with students with autism in a private school setting. Video modeling consisted of watching a seven-minute video simulation of a mock discrete trial session with a teacher and student who displayed procedures involving skills such as presenting of a discriminative stimulus, providing the appropriate prompt level, and delivering a reinforcer after a correct response rather than an incorrect response. Results indicated that the percentage accuracy of performances among staff increased from a range of 21-63% accuracy at baseline to 85-98% accuracy after participating in video modeling. Moreover, one-week follow-up maintenance probes continued to be maintained at 99% accuracy.

Brock and Carter (2015) examined a professional development training package that consists of video modeling and coaching for 25 paraprofessionals who work with children with disabilities through a randomized control design consisting of an experimental and comparison group. The experimental group consisted of 12 paraprofessionals who received the training package that consisted of video modeling

involving watching a 15-minute video on a constant time delay procedure. The comparison group consisted of 13 paraprofessionals who received video modeling by watching a video on social inclusion and coaching through natural support strategies. All participants attended a workshop on prompting and time delay procedures and received a one-hour coaching session on implementation of the time delay strategy. Both prompting and time delay are considered evidence-based strategies for students with autism (Wong et al., 2014). Prompting procedures are used to assist individuals to acquire or complete a specific skill. Time delay consists of fading the use of prompts in a systematic manner with a fixed amount of time. Results indicated that the effects of the training package on implementation fidelity were statistically significant ($F(1, 23)=43.77$, $p<.001$) and magnitude considered large ($d=2.67$; $p<.001$) (Brock & Carter, 2015). The impact of video modeling alone was not statistically significant, but video modeling and coaching components combined were effective.

Video modeling can be utilized to teach a variety of skills as part of training staff. For example, Collins et al. (2009) investigated the effects of video modeling to implement a 7-step problem-solving intervention utilized by six staff members to de-escalate hostile clients with developmental disabilities in a group home setting. This study consisted of utilizing a noncurrent multiple baseline design. The problem-solving intervention involved steps such as prompting the client to identify the problem, identify at least three solutions, and identify at least one consequence of the solution. Results indicated that all of the participants' skills of correct implementation (Mean= 91%) of problem-solving steps increased after training. Maintenance and generalization probes

following weeks after the treatment phase for all six participants continued to meet criterion.

Moreover, video modeling provides a visual, step-by-step sequence of how specific instruction should be carried out. Online video modeling features also allow educators to watch videos multiple times during times that are convenient. Thus, video modeling is viewed as a promising training tool for educators who work with children with autism.

Generalization and Maintenance

Maintenance of skills are important in continuing to provide accurate implementation of instructional strategies to students with autism. Cooper et al. (2007) define maintenance as the term for "behavior changes that persist after an intervention has been withdrawn or terminated" (p. 616). It is important that trainings can maintain the newly acquired skill or knowledge over long periods of time. Miller, Crosland, and Clark (2014) evaluated the effects of a booster training to maintain classroom management skills. Three teachers were given behavioral skills training consisting of instructions, modeling, rehearsal, and feedback. Within the year, teacher skills on three tools were decreased. After one year following the initial training, teachers were given booster training that involved the same steps as the initial training, but tailored to focus on steps that they got incorrect during the pre-booster assessment. A multiple baseline design showed an increase in percentage of steps performed correctly across all teachers post-booster.

Generalization is defined as, "the learner emitting the target behavior different than the instructional setting" (Cooper et al., 2007, p. 617). Training can provide generalization of skills across students, settings, and time. For example, Bolton and Mayer (2008) examined training in DTT skills among three paraprofessionals. Training consisting of didactic instruction, modeling, and feedback. Findings from the study showed that DTT skill implementation was maintained at 90% accuracy for periods between 16 and 23 weeks of supervision in different environments. Another study by Cardinal (2014) found that Rethink's web-based program also increased generalization of DTT skills among paraeducators. Participants watched training modules on basic DTT skills and were later videotaped during a novel DTT lesson and recorded the percentage of correctly demonstrated DTT skills. Average pre-test scores for the four paraeducators was 40% and the average post-test score was 82.5%, indicating growth across all paraeducators.

Generalization of skills can also be maintained through training of other evidence-based practices. For example, Robinson (2007) examined the effects of a training package to four paraprofessionals on increasing implementation fidelity and generalization of pivotal response treatment to 8 students with autism. Pivotal response training is an intervention that is one of the identified evidence-based practices for students with autism (Wong et al., 2014). It involves principles of applied behavior analysis to build on learner interests within the natural environment to develop communication, language, and social skills. It also involves prompting and

reinforcement procedures within each discrete trial session (Hall, Grundon, Pope, & Romero, 2010).

Similar to other studies, video feedback and modeling were components of the training to paraprofessionals with no training experience in pivotal response training. The study also involved four students in inclusive school settings to determine whether skills of paraprofessionals were generalized post-training. Results indicated that following training, all paraprofessionals implemented correct procedures with fidelity, ranging from a 7% baseline mean to 89% post follow-up across activities. Moreover, results from the 4-8 week follow-up probes indicated that all four of the paraprofessionals could generalize and maintain their skills with an average range of 75-100% (Mean= 89%). All four students improved their targeted, social communication skills following paraprofessional training. Moreover, the training package that was relatively short with an average amount of time that each paraprofessional received was approximately an hour and a half.

Hall et al. (2010) examined maintenance and generalization of pivotal response training procedures in a multiple baseline design across settings for six paraprofessionals who work with children with autism. Participants attended a workshop and then 2-3 weeks later received written and oral feedback of skill implementation in their natural work setting. Results demonstrated that when paraprofessionals tried to generalize their skills to their work environments such as the classroom or home setting, as well as maintain their skills over multiple sessions, the percent of correct prompting procedures decreased. However, when feedback was provided, the accuracy of prompting increased.

Research Questions

The purpose of this action research study is to examine the impact of the web-based training modules through the website platform, Rethink Autism, on the knowledge of selected principles of applied behavioral analysis and discrete trial training among teachers, paraprofessionals, and related service personnel such as social workers, speech and language pathologists, and an occupational therapist who work with students with autism in self-contained classrooms. It is aimed towards improving current practices of teaching and supporting students with autism.

The following questions are proposed for the current study:

1. The autism program provided training for its staff by allowing access to 11 web-based modules on autism and related instructional practices during the Fall 2015-16 school year. The following question is proposed: Does the content knowledge in principles of ABA (prompting, reinforcers) and discrete trial training continue to be maintained the following school year (Winter 2016-17) among special education team members (teacher, paraprofessionals, social workers, occupational therapist, and speech and language pathologists)?
2. Do the Rethink Autism training modules increase content knowledge in principles of ABA and DTT among special education paraprofessionals?

The following are the proposed hypotheses:

Hypothesis 1: Knowledge of discrete trial instruction and principles of applied behavior analysis, namely prompting and reinforcers, is maintained one-year post-training.

Hypothesis 2: The Rethink Autism training modules will increase content knowledge in principles of applied behavior analysis (prompting and reinforcers) and discrete trial instruction among paraprofessionals.

CHAPTER III

METHODS

This study examines knowledge of applied behavior analysis, specifically prompting and reinforcers, and discrete trial training through the Rethink Autism training modules among special education educators, paraprofessionals, and related service personnel who work with children with autism in a school-based setting.

Setting

Participants in this study work in an autism program which is part of a special education cooperative district with boundaries that consist of 18 school districts. The cooperative district provides specialized services to approximately 6,442 students with low incidence disabilities between 3 and 21 years old. Approximately 55-58 students were enrolled in the autism program at the time of the study. All students have a medical or an educational diagnosis of autism.

During the 2015-16 school year, the autism program consisted of six self-contained cluster-grade classrooms: Four elementary (Kindergarten through second grade, second though fourth grade, third through fourth grade) and two middle school classrooms (Fifth through sixth grade, and seventh through eighth grade) located across one middle school and three elementary schools. During the 2016-17 school year, there were seven self-contained classrooms. Three primary and intermediate classrooms were located across three elementary schools and two classrooms in a middle school. Each

classroom has approximately one special education teacher and 3-4 paraprofessionals. Related service personnel include one behavior analyst, three occupational therapists, three speech and language pathologists, two social workers, a nurse and a school psychologist within the program. A special education coordinator oversees the autism program. The autism program operates on a transdisciplinary model in which related personnel such as speech therapists and social workers collaborate with teachers and paraprofessionals to provide high quality instruction and evaluate progress on individual student and classroom goals.

This study primarily took place in self-contained classrooms across one middle school and two elementary buildings during a non-attendance day for students, before or after school when students were not present.

Participants

All participants are employees of a special education cooperative district and assigned to the autism program. Participants were recruited in their classrooms during meetings. Employees who were absent were given the informed consent letter by the administrator of the program. Participants in this study consisted of paraprofessionals, teachers, and related service personnel (social workers, speech and language pathologists, occupational therapist) who work in a K-8 autism program in a suburban special education cooperative district. All paraprofessionals who are employees of the autism program were recruited for participation of this study. Staff members who participated in the Rethink modules during the 2015-16 school year were also recruited.

A total of 28 participants were recruited from a special education cooperative located in the suburbs of a major U.S. city. Ninety-three percent of the participants were female and 7% were male. Ethnicity demographics of the participants include 93% Caucasian and 7% African-American. Participants range in number of years employed at the special education cooperative from less than a year to 10+ years. Approximately 29% (n=8) of the participants are assigned to a classroom located at the middle school, 68% (n=19) are at elementary schools, and 4% (n=1) in both middle and elementary school classrooms.

Participants were divided into two groups for this study: Group 1 and Group 2. Group 1 participants consists of 58% certified and 42% non-certified personnel. Overall breakdown of this group consisted of the following: Two classroom teachers, two speech and language pathologists, two social workers, one occupational therapist, and five paraprofessionals. Group 1 participated in the Rethink Autism training modules in Fall 2015-16 school year and took a post-test during Fall 2015-16 school year (see Figure 1). During the following 2016-17 school year (February 2017), Group 1 subjects participated in a second post-test. They did not watch any video modules during the 2016-17 school year. Group 2 consists of 16 paraprofessionals who did not participate in the Rethink Autism training modules during Fall 2015. Rather, they participated in the pre-/post test of the 3 selected online modules during the Winter of the 2016-17 school year (see Figure 2).

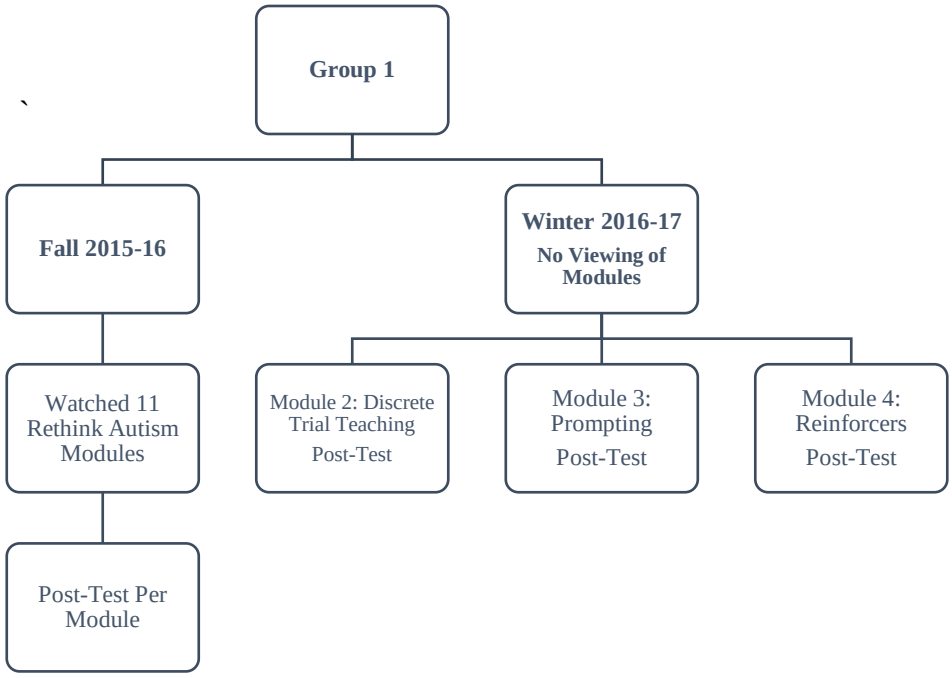

Figure 1. Group 1 Module Participation

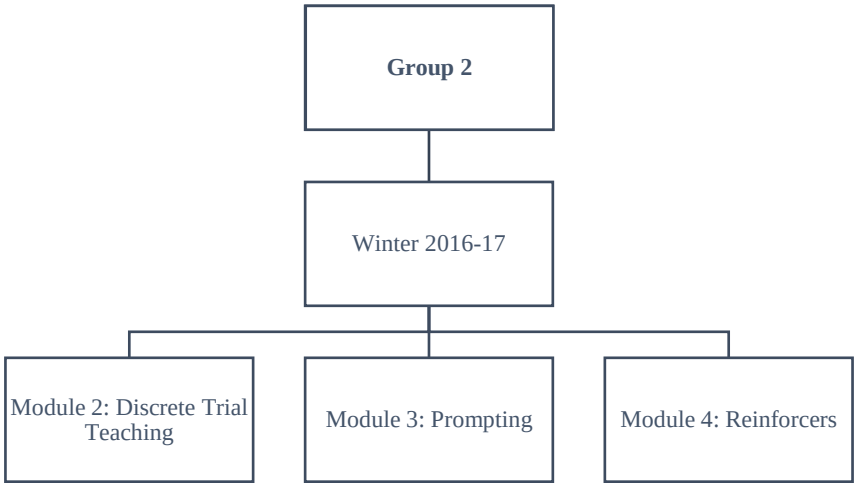

Figure 2. Group 2 Module Participation

Instrument

Rethink Autism Training Modules

Each training module assessed for this study was through the Rethink Autism platform (www.rethinkfirst.com). Duration of each training module was under 10 minutes (e.g., Discrete Trial Teaching: Approximately 6.5 minutes; Prompting: Approximately 7 minutes; Reinforcers: Approximately 7 Minutes). The training modules ranged in duration from 6.5 to 7 minutes (see Figure 3). Training modules also incorporated various video clips of examples of concepts and implementation of skills by practitioners with children with autism. At the end of each module, the platform directed the learner to take a post-test consisting of 10 questions related to the content of the modules (see Appendix A). Each module consisted of at least one video clip test question in which participants are asked to watch a brief video and answer a related question. The platform allows participants to be given approximately 30 minutes to complete each post-test. Modules are automatically scored through the platform and presented after the last question. Mastery is considered a score of 90% per module. Participants are not informed which question they got incorrect, but the platform provides a prompt to which portion of the module they should re-visit. The platform also automatically scores how many times a test is taken.

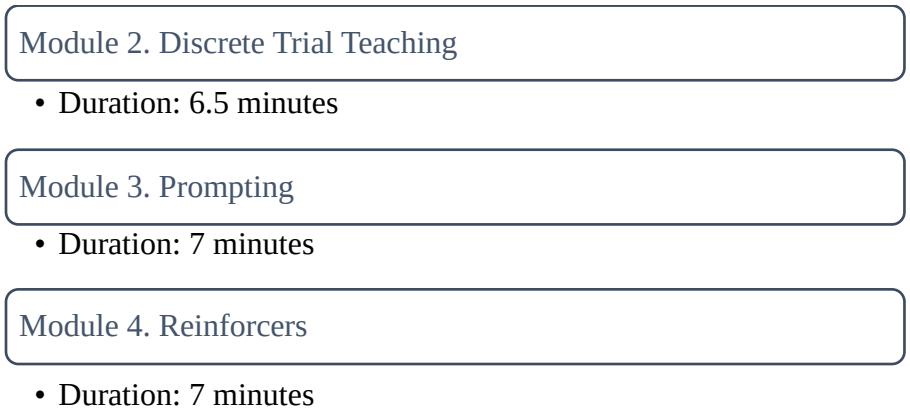

Figure 3. Duration of Selected Modules

Fall 2015 Modules

During the 2015-16 school year, three teachers utilized Rethink Autism as a progress monitoring data system tool for their students. Archival data for this study are from Fall 2015 module quiz scores of 12 participants (Group 1). Three classroom teams viewed 11 training modules time through the Rethink platform and took a post-test after each module. The training modules consisted of a variety of topics (see Figure 4).

Module 1. Introduction to Autism
Module 2. Discrete Trial Teaching
Module 3. Prompting
Module 4. Reinforcers
Module 5. Incidental Teaching
Module 6. Generalization
Module 7. Maintenance
Module 8. Recording Results
Module 9. Problem Behavior
Module 10. Incidental Teaching for Expanding Language
Module 11. Teaching Complex Tasks

Figure 4. Rethink Modules Group 1 Participated in During 2015-16 School Year

In September 2015, each staff member was asked to reach the criterion of at least 90% per module to obtain mastery and complete all 11 modules by November 2015. Criterion for mastery at 90% accuracy was selected by Rethink. Viewing of the modules were conducted in a self-pace manner. Staff also had access to review sheets titled, "Guided Notes" for each module through the Rethink Autism website. These notes were "fill in the blank" sheets where staff filled in key parts of definitions of concepts or steps of the lesson while viewing each module. An example of the Rethink Autism Guided Notes for the DTT module is the following: "Step 4: Reinforce the student's response. Give the student something after they respond to make them more likely to respond

again. This is called a _____. Reward the student with something he likes immediately after he responds _____" (www.rethinkautism.com). The website platform also recorded the highest score and the number of times the participant took the module test.

Maintenance

To test maintenance of staff knowledge, all participants from Group 1 completed three module quizzes (Prompting, Reinforcer, Discrete Trial Instruction) through the Rethink website platform during Winter 2016-2017. The autism program selected modules on prompting and reinforcers because they are key principles of applied behavior analysis that are incorporated into discrete trial instruction. They are also considered evidence-based practices used to teach skills to individuals with autism (Wong et al., 2014).

Pre- and Post-Test Modules

Data sources consisted of pre-and post-test scores from February 2017 module quiz scores of Group 2 participants. Participants were asked to log on to the Rethink platform (www.rethinkfirst.com) with their unique ID and take a pre-test, watch a module, and then take a post-test. Criterion for mastery selected by Rethink is 90%.

Training modules also incorporate various video clips of implementation of skills by practitioners with children with autism. Each module test has 10 questions in which participants have approximately 30 minutes to complete (see Appendix A). Modules are automatically scored through the platform. Scores appear at the end of each module test.

Procedure

This research study was granted approval by the Institutional Review Board (IRB) at Loyola University. Approval by the administrators of the special education cooperative district was also obtained by the Director and Executive Director of Programs, Administrator of the Autism Program, Director of Human Resources, Director of Technology, and Board of Control of the Special Education Cooperative.

Data sources collected for this study was approved by the Institutional Review Board of Loyola University Chicago. Group 1 participant post-test scores (Fall 2015, Winter 2017) from the Rethink training module quizzes were collected from the Rethink Autism website platform (see Figure 5). Group 1 scores include only the selected modules (Discrete Trial Training, Prompting, and Reinforcers) and the number of times participants took it to reach 90% accuracy. Group 2 pre- and post-test scores were collected from the following modules: Discrete Trial Training, Prompting, and Reinforcers. All participants did not have access to the Rethink Autism Guided Notes.

All subjects participated in the modules in February 2017. Participants were provided with iPads, laptops, and/or desktop computers located in the classrooms. New earbuds were also offered to be used to limit distractions from their neighbors. They were instructed to log on to the Rethink website (www.rethinkfirst.com) and wait for instructions. Once participants were on the same webpage, they were asked to log in with their unique ID and Password. Group 1 participants were directed to follow instructions on which modules quizzes to complete and were specifically instructed not to watch any videos. Group 2 participants were given directions to take the pre-test before watching

the module, and then taking the same quiz again. They were only allowed to take the pre- and post-test per module only once.

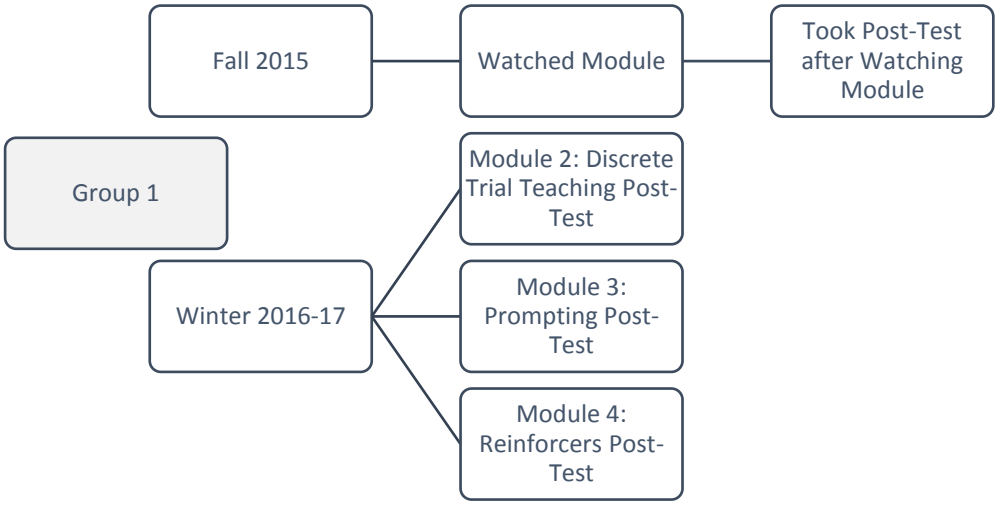

Figure 5. Group 1 Module Post-Test Sequence

Group 2 participants completed a pre-test of Module 2 (Discrete Trial Instruction), watched the module, then took a post-test. This was repeated for Module 3 (Prompting) and Module 4 (Reinforcers) (see Figure 6). The post-test is comprised of the same multiple-choice and True-False questions as the pre-test, but in random order. Both also involve questions in which a video scenario is presented. However, the platform randomly varied the order of the questions. Participants did not know which question they got incorrect.

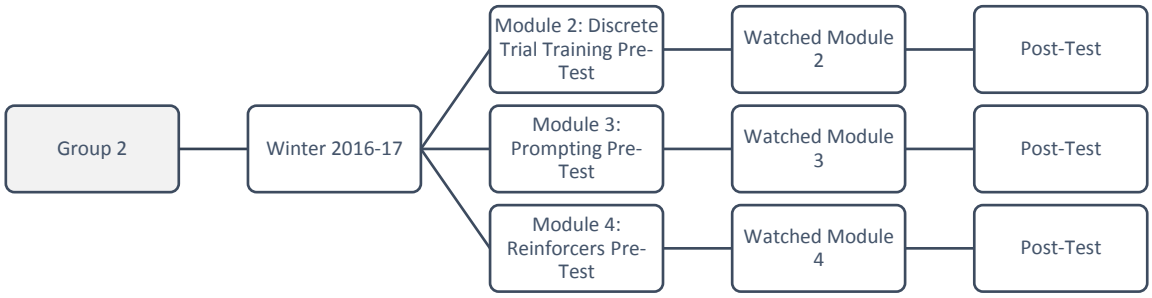

Figure 6. Group 2 Module Pre-/Post-Test Sequence

All participants were instructed to click the "X" button at the top right hand of the screen to exit the website upon completion of all the module quizzes. Participants were thanked for their time and given Target gift cards as compensation for their participation. Overall scores were accessed through the administrator account at a later date. Confidentiality for all participants were maintained by an assigned unique ID number.

Research Design

The current action research study utilized a non-randomized, two group design. Twenty-six participants completed the selected three module quizzes. Group 1 participants completed a total of 3 module quizzes (Module 2 Discrete Trial Instruction, Module 3 Prompting, and Module 4 Reinforcers) through the Rethink Autism platform. Quizzes were proctored either by the program administrator, program behavior analyst, or the primary researcher. Participants completed the quizzes within the same session. All participants were coded with a unique ID so that their scores remain confidential. Participants received a gift card for their voluntary participation upon completion of all

three module quizzes. Group 1 participants received a $15 gift card for their participation.

Group 2 participants completed a pre-test (module quiz) through the Rethink Autism platform, watched the Rethink training module (Discrete Trial Instruction), and then completed a post-test (same module quiz). This was repeated for Module 3: Prompting and Module 4: Reinforcers. Each video module was approximately 7 minutes with 10 minutes to complete each module quiz. Module viewing and quizzes were proctored by the program administrator, behavior analyst, or the primary researcher. After completion of each module quiz, participants signaled that they were finished, and the participants wrote their pre- and post-scores anonymously and put it in a sealed envelope. There was no identifiable information on the data document. Participants took the pre-test, watched the modules and took the post-test within the same session. Only two participants from Group 2 had time constraints and were only able to complete the last module a week later. No participant had an incomplete test or stopped watching a module within a session. Coding consisted of assigning a unique number ID to all participants. All Group 2 participants received a $25 gift card for their voluntary participation. Consent forms (see Appendices C-E) were completed by Group 1 and 2 employees who work in the autism program prior to participation.

Data analysis of results will consist of descriptive statistics including range, change scores, and mean of the module scores. A paired sample t-test between the post-module scores from the 2016-17 school year and 2015-16 school year will be conducted. A t-test of the mean percent change between pre- and post-test scores of the Group 2

participants will also be conducted. The number of how many participants scored at the mastery criterion (at least a score of 90%) will also be examined.

CHAPTER IV

RESULTS

Research Question 1

Maintenance of Knowledge

Post-test average scores (percent correct) across all three modules for both school years are illustrated in Table 1. Initial Fall 2015 average scores for all 3 modules ranged from 94.55% to 96.36% (Mean=95.5%). For Module 2: Discrete Trial Training, Group 1 participant (n=12) post-test scores ranged from 90% to 100% (*M*=95.5%). The average number of times taken to reach 90% mastery was 2.64. For Module 3: Prompting, post-scores ranged from 90% to 100% (M=94.6%) correct. The average number of times taken to reach 90% was 2.36. For Module 4: Reinforcers, Group 1 participants post-scores ranged from 90% to 100% (*M*=96.4%) correct. The average number of times taken to reach 90% correct was 2.82.

Table 1

Percentage Correct Responses by Group 1 Post Module Quiz Scores

Modules	Post-Test 2015 M (SD)	Post-Test 2017 M (SD)	Post-Pre Change M (SD)	*t*
Discrete Trial Training	95.45 (5.22)	94.55 (9.34)	-2.18 (14.10)	.782
Prompting	94.55 (5.22)	95.45 (9.34)	.001 (10.56)	.782
Reinforcers	96.36 (5.04)	95.45 (12.14)	-2.73 (16.18)	.822

Note. N=11

Winter 2016-17 post-test scores (n=11) ranged from 94.6% to 95.45% (M=95.2%). For Module 2, post-test scores ranged from 70% to 100% (*M*=94.6%). One participant was dropped from the sample due to technical errors in which the selected modules during the Fall 2015-16 school year were not recorded, thereby spoiling the data from the 2016-17 selected modules. A paired sample t-test was conducted to evaluate the impact of the change between the post-module scores from the two different school years. There was a slight decrease in the second post-test score (*M*=-2.18, SD=14.10) and no significant difference between the two scores (t (11)=0.782, p<.05). In Winter 2016-17, Group 1 participant post-test scores in Module 3 ranged from 70% to 100% (M=95.5%) correct. Module 3 2016-17 mean post-test scores slightly increased from the 2015-16 post-test score. The change percentage Mean was 0.1% (SD=10.56). There was no significant difference between the two scores (t (11)=0.782, p<.05). For Module 4: Reinforcers, participant post-test scores ranged from 60% to 100% correct (*M*=95.5%). The overall mean percentage had a slight decrease from 96.36% to 95.45% (Mean percent change= -2.73, SD=16.18). There was no significant difference between the two scores (t (11)=0.822, p<.05). A visual depiction of the average post-test results across all three modules from both school years are summarized on Figure 7.

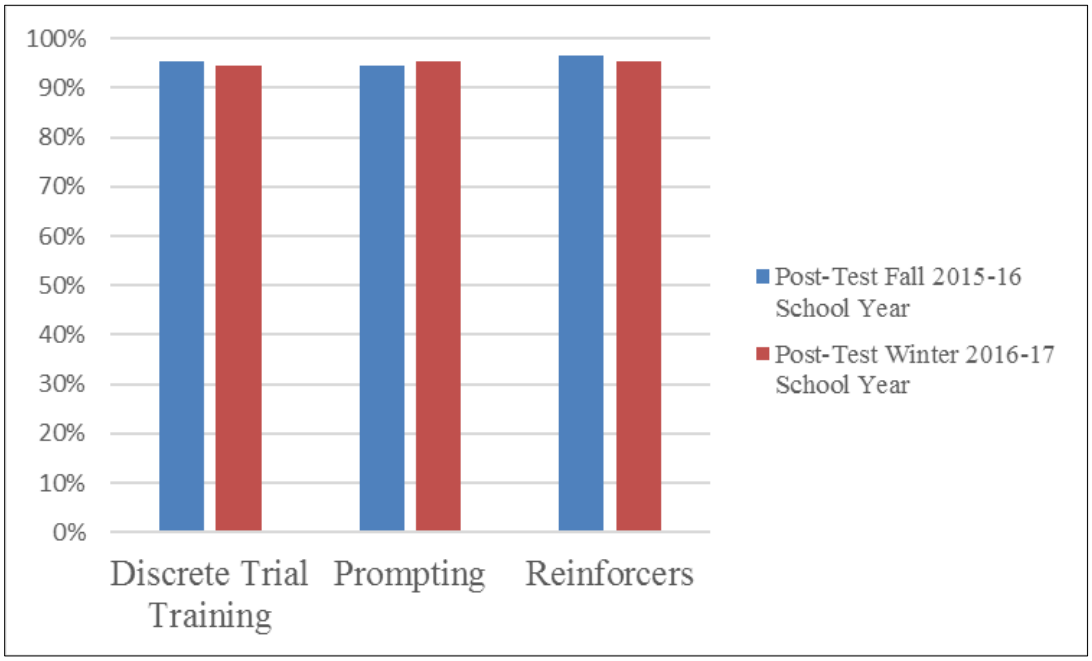

Figure 7. Group 1 Average Post Module Quiz Scores (percent correct) Per Module

The percentage of meeting the mastery criterion of 90% per module test was conducted for the Winter 2016-17 post-test scores. For all three modules, 91% of the participants met the mastery criterion on the first try (Module 2=91%; Module 3=91%; Module 4=91%). These results are presented in Table 2.

Table 2

Group 1 Percentage to Reach Mastery Criterion from 2016-17 Post-Test

Modules	Post-Test
Discrete Trial Training	91%
Prompting	91%
Reinforcers	91%

Note. N=11

Research Question 2

Pre- and Post-Test Module Test Scores from Single Training

Pre- and post-test average scores (percent correct) across all three modules are presented in Table 3. For Module 2: Discrete Trial Training, pre-test scores ranged from 10% to 80% (*M*=65.3%). Post-test scores ranged between 60% to 100% (*M*=85.3%). This indicated an increase in Module 2 post-test scores, with the mean percent change of 23.5%. A paired sample t-test was conducted to evaluate the pre- and post-test scores. There was a significant increase in post-test scores from the pre-test (*t* (15)=.0038, *p*<.01). For Module 3: Prompting, pre-test scores ranged from 40% to 90% (*M*=74.7%). Post-test scores ranged from 70% to 100% (*M*=86.7%) which showed an increase. The mean percent change was 13.90 (SD=11.54). Paired sample t-test showed no significant difference (*t* (15)=5.052, *p*<.05). For Module 4: Reinforcers, pre-test scores ranged from 50% to 100% (*M*=80.7%). Post-test scores ranged from 70% to 100% (*M*=94%). Post-test scores showed an increase and the mean percent change was 14.55 (SD=8.78). Paired sample t-test showed a significant increase in the Module 4 post-test score from the pre-test (*t* (15)=.007, *p*<.05). Figure 8 shows the mean percentage of pre- and post-test scores (percent correct) across all three modules for Group 2 participants (n=15). One participant was dropped from the sample due to technical errors which resulted in viewing of the modules before the pre-test.

Table 3

Percentage Correct Responses by Group 2 Pre- and Post-Module Test Scores

Modules	Pre-Test *M* (SD)	Post-Test *M* (SD)	Change *M* (SD)	*t*
Discrete Trial Training	65.3 (20.7)	85.3 (12.5)	23.53 (20.47)	.0038
Prompting	74.7 (20.7)	86.7 (12.5)	13.90 (11.54)	5.052
Reinforcers	80.7 (13.9)	94.0 (11.2)	14.55 (8.78)	.007

Note. N=15; p<.05

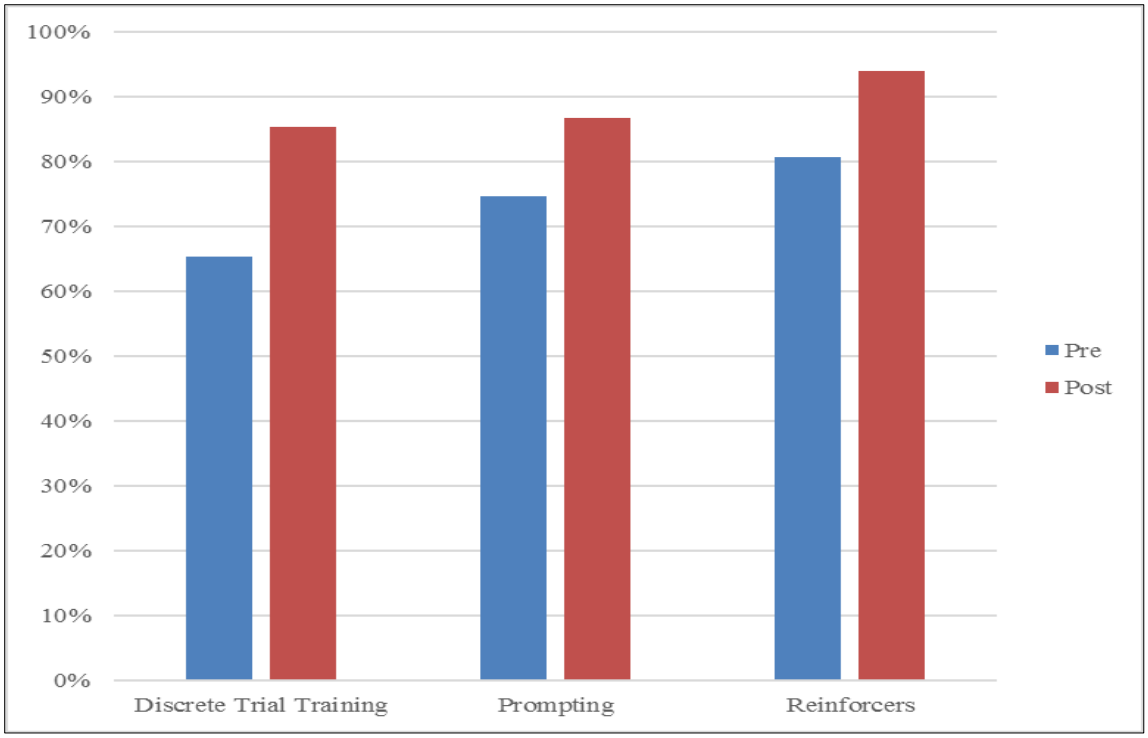

Figure 8. Group 2 Average Pre- and Post-Test Scores (percent correct) Per Module

The percentage of meeting the mastery criterion of 90% per module test was also conducted. Results showed an increase in percentage of meeting the mastery criterion at

post-test from pre-test scores (Module 2=6.8% to 66.7%; Module 3=20% to 60%; Module 4=60% to 80%). These results are presented in Table 4.

Table 4

Percentage of Group 2 participants to Reach Mastery Criterion (90% or Above)

Modules	Pre-Test	Post-Test
Discrete Trial Training	6.8%	66.7%
Prompting	20%	60%
Reinforcers	60%	80%

Note. N=15

CHAPTER V

DISCUSSION

There are a limited number of studies that examine online modules through Rethink Autism as a training tool. This action research is unique in which it examines online modules specifically on topics in prompting, reinforcers, and discrete trial training among staff who support students with autism in a classroom setting. The following data and data analysis was conducted to answer the following research questions:

1. Is there maintenance of prompting, reinforcers, and DTT knowledge among special education staff (n=11) who participated in the Rethink training modules in Fall 2015?

Figure 7 shows the mean percentage of post-test results of each of the modules from Fall 2015-16 school year to Winter 2016-17 school year. Although not statistically significant, participants slightly increased their scores in Winter 2016-17 for the Prompting module. For the other two modules, only 11% had a score decrease. However, results also show how the mean percentage data of all modules continued to meet the mastery criterion (Mean range of 94.6% to 96.4%). During Fall 2015-16, participants took the test an average of 2.61 times to achieve mastery criterion of 90%. Data from 2016-17 post-test scores show that 91% of participants were able to maintain the mastery criterion of 90% even though they were only able to take the post-test once. Thus, the overall results demonstrate how maintenance was achieved for prompting, reinforcers,

and discrete trial instruction for the majority of the special education staff. These findings indicated that staff were able to retain knowledge from the training modules and reach mastery during the 2015-16 school year.

2. Is there an increase in knowledge of prompting, reinforcers, and DTT after participating in Rethink's Autism training modules among paraprofessionals?

Overall results showed how participants demonstrated an increase in the correct percentage score for all the post-test modules (Module 2 percent change=23.5%; Module 3 percent change: 13.9%; Module 4 percent change: 14.6%). These expected findings indicated how training is needed to increase knowledge on topics related to specialized instruction for students with autism.

One surprising finding is that overall, there were less participants in Group 2 who reached mastery criterion compared to Group 1. For example, in the DTT module, 66.7% of Group 2 paraprofessionals reached mastery criterion compared to 91% of Group 1 participants (Winter post-test). Group 1 consists of a mix of 58% certified and 42% non-certified personnel. However, there were 11%-31% less participants within Group 2 who met the mastery criteria. Due to the small sample size, it is difficult to interpret whether this may due to the slightly higher number of certified professionals in Group 1. It is important to note that certified staff are required to complete professional development hours toward their licensure renewal and have much more hours of formal coursework and training than paraprofessionals. There is insufficient information in this study on whether certification increases knowledge on post-test modules. However, teachers and speech and language pathologists of the autism program are expected to have a strong

background in applied behavior analysis and discrete trial instruction to produce student progress. Pre-test performances on DTT show that a low number (6.8%) of paraprofessionals reached mastery which indicates how complex the procedure is. This suggests further need for training on this procedure. Discrete trial instruction involves technical procedures which can easily result in errors. Although studies have shown that instructors do not need any foundational skills in DTT to be able to learn the procedure (Downs & Downs, 2012; Pollard et al., 2014), appropriate training is needed to adequately implement these skills with fidelity.

Implications for Practice

This investigation from an action research perspective has many implications for practice. Results from this study showed an increase in knowledge related to discrete trial instruction, prompting, and reinforcers among paraprofessionals from online modules. Further research can include whether paraprofessionals maintained their knowledge in these areas. The majority of staff also maintained the mastery criteria even after more than a year later. These findings show promising results that indicate how the modules can be utilized as a training tool for staff. There are a limited number of studies that involved a blend of certified and non-certified staff who solely support an autism program. Moreover, other studies (Cardinal, 2012; Pollard et al., 2014; Wiech, 2014, Wong et al., 2014) have shown how video modeling can increase knowledge and implementation of discrete trial training. Moreover, the benefits of online training are that it is self-paced, delivered anywhere, and cost-effective (Barnes & Levine, 2011; Douglas, et al., 2013; Stone-MacDonald & Douglass, 2015).

In previous studies to address the research-to-practice gap in implementation of evidence-based practices for students with autism within classrooms, barriers such as lack of paraprofessional training and varying degrees of confidence levels were identified (Odom et al., 2010; Jones et al., 2012; Brock et al., 2014). Sleezer, Russ-Eft, and Gupta (2014) indicated that a gap performance analysis can be identified by using a systematic approach. A knowledge and skills assessment identifies the knowledge and skills that individuals need to be an effective performer. This approach will be helpful in identifying specific skills that are needed to close the gap and tailor training needs. Findings can contribute to a strategic and comprehensive long-term professional development plan.

Limitations

There were several limitations in this study. A variety of potential threats to internal validity including selection, history, and attrition were present. Selection was a potential threat due to the lack of randomization with the sample. Moreover, 93% of the participants in this study were female and Caucasian which illustrates a homogeneous sample thereby limiting its generalizability to the remaining population. History may be a threat to internal validity due to unknown variables of how much training participants received outside of the work environment. It is unknown how much training in applied behavior analysis and discrete trial training the staff had prior to participating in the modules. Approximately 14 months have elapsed between the Fall and Winter post-tests among the Group 1 Participants. Employees of the autism program may have engaged in additional training in principles of applied behavior analysis. All employees of the

autism program were also required to participate in physical management training and an in-service on a proactive approach to classroom management. Attrition was another limitation as some participants who participated in the Fall modules in 2015 did not return to the district the following school year. There were also technical issues that occurred during the study which resulted in attrition for two participants. For example, the connection to the designated website platform did not work for one of the computers.

Another limitation is the small number of participants in this study. The small sample size for each group limits the generalizability to other settings, indicating a need for a larger sample. The sample may have been extended to other staff in the multi-needs program which also serves students with autism and cognitive impairments and/or offered to other self-contained autism classrooms within the special education cooperative district. The groups for this study were non-matching samples. Further research is needed to examine maintenance of content knowledge among the paraprofessionals. Also, this study utilized a paired t-test to examine if there were any differences between the module test results. However, future studies might utilize a non-parametric test such as the Mann-Whitney U test to examine two groups that do not have a normal distribution.

Lastly, participants were not interviewed or surveyed to examine their perceptions of web based modules or their confidence in instructional support skills. Moreover, varying degrees of implementation of the "new" knowledge participants acquired were not measured which limits any evidence of whether staff were able to apply their new knowledge or skills from what they learned into practice within the classroom setting.

Alexander et al. (2015) found that only 8 out of 23 research studies on teacher training on evidence-based practices for children with autism included measures in generalization and maintenance of skills. Steege et al. (2007) reported that one of the drawbacks of discrete trial training is that it can promote more rote skills in children with autism, requiring an additional set of procedures to teach generalization across settings.

Suggestions for Future Research

The current action research study examined web-based training among special education staff who support students with autism in self-contained classrooms. Further research is needed to analyze the implementation of "knowing" into practice. One of the drawbacks from single session workshops or trainings have been that the specific skills learned have not been able to be demonstrated within the instructional setting. Effective training components include not only increase in knowledge, but also implementation of new knowledge. Procedures in discrete trial such as prompting are prone to error and require training to be implemented correctly and with fidelity. Expected skills during these procedures can be operationalized and broken down onto data sheets to ensure adequate measurement. For example, Downs and Downs (2012) developed discrete trial competency checklists to investigate instructor proficiency. They identified skills into five different areas such as preparation of work session, student engagement, technical skills including presentation of the discriminative stimulus and consequences such as prompting and reinforcement. Results indicated that instructors increased their skills in implementation of technical skills in discriminative stimulus and reinforcers from an average of 52% to over 90% after five sessions of individual supervision and

performance feedback over a span of two months. They also found that it was more difficult for instructors to reach competency in the area of prompting. Instructors reached 80% accuracy one time over the course of six sessions. These findings indicate a need for further training and coaching in skills such as prompting which are more complex and difficult to implement. A single case design can be utilized to evaluate implementation of skills. For example, multiple baseline designs are used in most research study designs in examining evidence-based practices (Wong et al., 2014) and can be used to further extend the current action research study.

Effects of modules with coaching on implementation fidelity of discrete trial instruction can also provide further information on instructor skills and competency. It may be valuable to examine how supplemental coaching can enhance knowledge and skills of teachers. Alexander et al. (2015) reviewed 23 research studies that classified teacher training deliveries into categories including self-instruction, individual instruction, and group instruction. Findings indicate that trainings that include coaching that includes performance feedback were more likely to result in implementation of evidence-based practices compared to traditional group instruction through workshops. Nosik et al. (2013) compared a behavioral skills training package that involves instructions, modeling, rehearsal and feedback to a computer based training consisting of Power Point slides, video modeling, and feedback. Information following the individual's specific performance is considered feedback. Findings demonstrated that the three participants who received the computer based training increased their discrete trial instruction skills from a baseline of 40% or below to 50%-75% in the natural

environment, whereas three participants who received the behavioral skills package increased their skills from 40% or below baseline to above 80% in the natural environment. They also found that participant skills were less accurate in the natural environment involving direct work with clients, indicating a need for further training to generalizing skills across multiple environments. Hall et al. (2010) indicated that findings from surveying six paraprofessionals showed that participants viewed training and feedback as valuable and confident in using specific instructional strategies.

Another possibility of future direction is to examine student outcomes after receiving web-based training for teachers. The Every Student Succeeds Act (ESSA) places an emphasis on accountability and on positive student learning outcomes. U.S. Department of Education (2017) reported that ISBE professional learning standards focus on "learning opportunities should be robust and have the opportunity for both application and reflection on the educator" (p. 111). Moreover, highly effective educators should be supported through greater resources and high quality professional learning. Cardinal (2012) found that video modeling training on discrete trial through the Rethink Autism platform demonstrated an increase in targeted student skills. As the field of education moves towards evidence of student outcomes embedded in data-based accountability, further studies are warranted. Moreover, the present research study examined only three modules, thus, it may be beneficial to extend training and analysis to all 11 modules. This broader scope may provide further understanding of how it can impact not only student learning, but also implementation of staff skills.

Another suggestion is that web-based learning can not only be provided for staff, but extend its accessibility to parents of students in the autism programs. Family-school collaboration is valuable, mutually engaging, and ongoing. Children with autism can have significant adaptive functioning deficits that affect daily living skills. Teaching parents evidence-based practices may help empower parents to utilize effective behavior strategies that are based on principles of applied behavior analysis. Examining the impact of online modules among parents also is an area needed for further research.

One study by Barnes and Levine (2011) utilized a web-based format to investigate if it impacts knowledge of learning disabilities, including parents of children with learning difficulties. A private, Kindergarten through fifth grade university laboratory school began a new program for students with disabilities and results from a pre-test survey indicated a need for further training in the knowledge of instructional strategies on students with learning difficulties. Thirty participants including parents, teachers, paraprofessionals, and graduate students were offered five different web-based modules on a curriculum on learning disabilities and support strategies. Tutorials were also provided as an option if participants wanted additional training in how to navigate through the web-based modules. The perceptions of participants to identify training needs on knowledge of students with learning differences through web-based modules were examined. Results from the pre- and post-test survey indicated that all participants had an increase in knowledge of students with learning disabilities with parent participants as the highest group with increased knowledge of 80%. These findings indicate the importance of providing training in various applied behavior analysis topics

to parents as a key partner. Moreover, by empowering parents with training can be one of the ways to promote parent engagement and collaboration. Parent workshops on various topics have been offered several times throughout the school year within the autism program. However, attendance has been a challenge. Staples and Diliberto (2010) provided a realistic reminder that parent work schedules and extended family responsibilities may impact parent involvement. By offering online modules as another option of training delivery, it may alleviate transportation, childcare, and scheduling stressors. Moreover, parent participation may promote a sense of connectedness to the school community.

Finally, further research is needed to collect evidence of social validity. One method to measure social validity is to survey the staff on how their perceptions of the special education staff about how confident they feel about their current knowledge and skills of applied behavior analysis and discrete trial instruction, as well as implementation of these areas. This can be conducted through focus groups and surveys. Brock et al. (2015) examined perceptions of 456 teachers and administrators across 89 school districts and found that teachers 41.6% rated websites as beneficial from accessing training and 48.8% of administrators indicated coaching and 41.9% responded websites as beneficial. Findings suggest that training topics should be selected in a strategic manner aimed toward achieving positive student outcomes. Jones et al. (2012) discussed the importance of follow-up activities after each PD session to encourage reflection and implementation of what paraprofessionals learned. It is important to examine perceptions of paraprofessionals to improve content and delivery of professional development sessions.

Conclusion

This action research study examined the knowledge of selected principles of applied behavior analysis and discrete trial instruction using a quantitative approach among special education staff who work with students with autism in a public school setting. Findings suggest several implications such as the importance of ongoing training for staff. Odom et al. (2010) discussed how there continues to be a research-to-practice gap in implementation of evidence-based practices within classrooms. The National Professional Development Center (NPDC) identified twenty-four evidence-based practices. One of the benefits of delivering professional development in applied behavior analysis and DTT skills is that training can be provided to educators with little to no experience in background knowledge of these skills. Delivery methods of professional development vary, but studies on web-based training platforms that incorporate video modeling are promising with advantages such that these tend to be self-paced, easily accessible, and cost-effective (Cardinal 2014; Catania et al., 2009). Online training modules show promising results as not the sole delivery of training, but part of a package that is ongoing and supplemented with additional coaching components. Moreover, technological advances in online learning will continue to improve and meet high quality professional development standards (Stone-MacDonald & Douglass, 2015).

Findings from this study indicated that maintenance of knowledge was observed one year after participating in web-based modules. Paraprofessionals also improved their module quiz score after watching the web-based modules. Although not all of the findings from this present study were significant, results from at least two out of the three

selected modules showed promising results in the utility of using training to increase knowledge among paraprofessionals. There continues to be a need for future research in training, knowledge, perceptions of confidence and training needs, and implementation of skills among staff who work with students with autism.

APPENDIX A

SAMPLE RETHINK AUTISM MODULES 1-11 TEST QUESTIONS

1. True or False: All toddlers with autism do not have language skills
   - ☐ True
   - ☐ False

2. An appropriate instruction should (Check all that apply)
   - ☐ Be brief and clear
   - ☐ Always include the student's name
   - ☐ Be stated only once
   - ☐ Target known responses

3. What is a prompt?
   - ☐ Any assistance you give the student to help him respond correctly
   - ☐ Any instruction you give the student
   - ☐ Any reward you give the student after he responds correctly
   - ☐ Any question the student can answer correctly

4. When should you introduce distractor trials?
   - ☐ When the target response can be completed without any assistance
   - ☐ When the student reaches 80% accuracy
   - ☐ When the student is only making one or two errors each time
   - ☐ Following three prompted responses

5. What is the first step of Discrete Trial Teaching?
   - ☐ Establish the student's attention
   - ☐ Present an instruction
   - ☐ Say, "It's time to do some work."
   - ☐ Tell the student what you expect him to do

6. True or False: Running follow up testing sessions after a student has mastered a skill will let the teacher know if he has maintained the skill
   - ☐ True
   - ☐ False

7. True or False: You can identify potential reinforcers by observing what your student likes to play with during his free time.
   - ☐ True
   - ☐ False

APPENDIX B

OVERVIEW OF RETHINK AUTISM MODULES 2, 3, AND 4

Module 2-Discrete Trial Training. This module provides a brief overview of discrete trial training and includes video examples of the procedure. It provides a step-by-step breakdown of discrete trial instruction such as the following: Step 1: Get the student's attention, Step 2: Give an instruction or ask the student a question, Step 3: Help the student respond correctly by using prompts, Step 4: Reinforce the student's correct response, Step 5: Fade prompts by providing less assistance, Step 6: Reinforce when student responds with less prompting, and Step 7: Provide distractor trials by asking student to perform a mastered skill

Module 3-Prompting: This module provides an overview of prompting and includes video examples of various types of prompts. Definition of a prompt and various prompts such as positional, verbal, physical, gestural, visual, and modeling are shown. It also briefly describes fading.

Module 4-Reinforcers: This module provides the definition of reinforcers, when to provide a reinforcer, and examples of what it may look like are provided.

APPENDIX C

CONSENT LETTER FOR GROUP 1

Dear Participant,

You are invited to participate in a research study for my doctoral research project at Loyola University Chicago. The purpose is to examine Rethink Autism training modules. There are a total of 3 test modules through the Rethink Autism platform. Each test module consists of 10 questions and can be completed in less than 10 minutes of your time. All of your responses will remain anonymous and confidential. The modules are not an evaluation of staff performance. Your participation of the modules will not affect your employment status. The primary researcher is the only one who has access to your identification number. You will never be identified in reports and publications resulting from this study.

Your participation for this test is entirely voluntary. The decision whether or not to participate is completely up to you. At no time should you feel obligated to participate. Participate only if you want to or choose to. You have the right to decline participation without penalty. If at any time you feel uncomfortable or decide not participate, you may stop at any time without penalty. Just click 'X' to exit the test. The decision to participate, to decline participation, or to withdraw from the research will not affect your employment status in any way. No penalty will be incurred for declining participation or withdrawing from the study. Completion of the test poses no risk.

You will receive a $15 gift card for completing the 3 test modules. If you have any questions or concerns, I can be reached at 312-659-9773 or email mahn1@luc.edu.

Thank you,

May Ahn
mahn1@luc.edu
SASED
312-659-9773
Loyola University
School of Education

APPENDIX D

CONSENT LETTER FOR GROUP 2

Dear Participant,

You are invited to participate in a research study for my doctoral research project at Loyola University Chicago. The purpose is to examine the effectiveness of the Rethink Autism training modules. There are a total of 3 test modules through the Rethink Autism platform. Each test module consists of 10 questions and can be completed in less than 10 minutes of your time. You will be asked to complete the pre-test, view the module, and then take the post-test. Viewing the modules take less than 10 minutes. All of your scores will remain anonymous and confidential. The modules are not an evaluation of staff performance. Your participation of the modules will not affect your employment status. You will never be identified in reports and publications resulting from this study.

Your participation for this test is entirely voluntary. The decision whether or not to participate is completely up to you. At no time should you feel obligated to participate. Participate only if you want to or choose to. You have the right to decline participation without penalty. If at any time you feel uncomfortable or decide not participate, you may stop at any time without penalty. Just click 'X' to exit the test. The decision to participate, to decline participation, or to withdraw from the research will not affect your employment status in any way. No penalty will be incurred for declining participation or withdrawing from the study. Completion of the test poses no risk.

You will receive a $25 gift card for completing the 3 modules. If you have any questions or concerns, I can be reached at 312-659-9773 or email mahn1@luc.edu.

Thank you,

May Ahn
mahn1@luc.edu
SASED
312-659-9773
Loyola University
School of Education

APPENDIX E

CONSENT FOR PARTICIPATION

Consent for Participation

I have read the above information regarding this study and I agree to participate in the research project entitled, Examining the Impact of Web-Based Training Modules Among Special Educators and Paraprofessionals who Work with Students with Autism. I understand that this is strictly voluntary and can withdraw my participation at any time.

Name (Print): _____

Signature: _____

Date: _____

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VITA

May Koseki Ahn is the daughter to parents Senji and Kuniko Koseki. She was born in Chicago, Illinois on September 3, 1973. She currently resides in a suburb of Chicago with her family.

May Koseki Ahn attended Catholic school in Chicago. She graduated from the University of Illinois in 1995 with a Bachelor's degree in Psychology. In 1999, she earned a Master of Marriage, Family, and Child Counseling degree from the University of Southern California in Los Angeles. In 2004, she earned an Education Specialist degree in School Psychology from Loyola University Chicago. In 2017, she received her Doctorate in Education in School Psychology.

May Koseki Ahn has worked in the field of education for the past 18 years. She began her career as a counselor for students with emotional disabilities at a therapeutic day school in La Mirada, California. She also provided home-based applied behavior analysis (ABA) therapy for children with autism.

May Koseki Ahn served as a school psychologist in early childhood for a suburban school district. She is currently in her ninth year as an instructional support coach and school psychologist for a special education cooperative district.

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