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An Investigation Into the Use of Evidence-Based Interventions in Classrooms for Children with Autism Spectrum Disorder

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AN INVESTIGATION INTO THE USE OF EVIDENCE-BASED
INTERVENTIONS IN CLASSROOMS FOR CHILDREN WITH AUTISM
SPECTRUM DISORDER

by

ALLISON TWYMAN

A thesis submitted in partial fulfillment of the requirements
for the Honors in the Major Program in Communication Sciences and Disorders
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ABSTRACT

A survey was sent to classroom teachers in Central Florida educating students with autism spectrum disorder (ASD) to investigate: 1) intervention practices currently used in the classroom for students with ASD; 2) if the interventions being used are evidence-based, and; 3) if there a difference in use of evidence-based interventions between teachers with the Florida Autism Endorsement and teachers without the Endorsement. A nonprobability purposive study was conducted via an email-based survey. The survey was designed using the tailored design method and was created in Qualtrics.com, an online survey software program. The survey was divided into three major sections: an intervention section which included a variety of evidence and non-evidenced-based practices drawn from the current research literature; a section focused on how teachers select the interventions they use in their classrooms; and, a demographic section. The survey was sent via email to classroom teachers registered with University of Central Florida Center for Autism and Related Disabilities. Participant inclusion criteria included: 1) currently a classroom teacher in a Central Florida, and 2) at least one student with ASD in the classroom. Forty surveys were completed for a ten percent response rate. Results indicated that a variety of evidence- based and non-evidence-based interventions were being used in classrooms. The top three reported interventions were Visual Supports (95 %), Computer Program Applications (93%), and Social Stories (73 %). Based on current empirical evidence, these top three interventions have insufficient evidence regarding their efficacy for use with students with ASD. In addition, two of the interventions reported to be used have a negative evidence base suggesting they may be harmful for some students with ASD. There were no significant differences between teachers with the Florida ASD Endorsement and teachers without

the Endorsement with regard to the interventions used. Overall, the results of the study indicated a need for further research to determine which intervention practices may be the most effective for the specific needs of children with ASD.

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LITERATURE REVIEW

In 1943, Kanner defined autism as being characterized by a failure to develop social relationships and a need for sameness. While the definition of autism has been revised over the years it is still identified by two primary diagnostic markers: persistent difficulties in social communication (both verbal and nonverbal) and social interaction and restricted or repetitive behaviors and interests. These symptoms start early in childhood and inhibit everyday life. According to the latest Diagnostic and Statistical Manual of Mental Disorders, autism is considered a spectrum disorder. Autism Spectrum Disorder (ASD) has a wide range of possible manifestations depending on the severity, developmental level, and age of individual. The spectrum includes disorders which previously were considered separate disorders including early infantile autism, childhood autism, Kanner's autism, high-functioning autism, atypical autism, pervasive developmental disorder not otherwise specified, childhood disintegrative disorder, and Asperger's disorder (American Psychiatric Association, 2013).

Despite differences and discrepancies in the definition, incidences of this disorder have grown exponentially over time. In 2014, the Centers for Disease Control and Prevention estimated that 1 in 68 children will be identified with autism spectrum disorder. This prediction is roughly 30% higher than the estimate of 1 in 88 children being identified in 2012 (Centers for Disease Control, 2014). With incidences climbing, the need to provide appropriate and effective intervention is critical for the well-being of these individuals. Establishing evidence-based interventions for children with autism will help set the precedence for best practice for these individuals.

There are a plethora of different intervention practices used in today's society to treat autism spectrum disorders (ASD) including, but not limited to, relationship based interventions, behavioral interventions, interventions that utilize technology, augmentative and alternative communication, social interventions, motor and sensory interventions, and different educational models. Some interventions being used do not have empirical evidence to substantiate their effectiveness (Hess, Heflin, Ivey, & Morrier, 2008). To most effectively and efficiently help individuals with ASD evidence-based practices should be used. While, there is no universally accepted definition of evidence-based practice, usually evidence from two independent randomized clinical trials conducted by separate research teams will suffice (Reichow, Volkmar, & Cicchetti, 2008). Since numerous interventions for individuals with ASD have been developed from distinctly different fields of study, psychology and education for example, a need for a universal definition becomes evident (Reichow et al., 2008).

In the field of psychology, the evidence-based practice movement started as a defense for adult psychotherapy and to validate these psychological treatments to insurance companies (Mesibov & Shea, 2010). The American Psychological Association Division 12 established criteria in the 1990s, which allowed interventions to be classified as "efficacious" or "probably efficacious" (Wong et al., 2014). This provided a starting ground for identifying the amount and quality of scientific evidence supporting an intervention approach (Wong et al., 2014). In 1998, a special issue of the *Journal of Clinical Child Psychology* included analyses of slightly modified Division 12 criteria of interventions used to treat a variety of child and adolescent disorders, including autism (Mesibov & Shea, 2010). Also in 1998, Rogers (1998) published a review of ASD interventions and found there were no interventions at the time that met this modified

Division 12 criteria. Some further research came about when the US Surgeon General's report on mental health in 1999, included three paragraphs of treatments for ASD. The report supported applied behavioral methods for intervention such as the Lovaas model, the TEACCH model for short term gains, as well as some limited support for antipsychotic drugs.

In the education field, the push for evidence-based practices came directly from the US Government through the No Child Left Behind Act (NCLB) in 2001 and the Individuals with Disabilities Education Improvement Act (IDEA) in 2004 (Hess, et al., 2008). These federal programs mandated use of evidence based practices, in public school settings, for funding purposes (Mesibov & Shea, 2010). Evidence-based practices were defined as

- A) "...research that involves the application of rigorous, systematic, and objective procedures to obtain reliable and valid knowledge relevant to education activities and programs
- B) Includes research that
 - a. Employs systematic, empirical methods that draw on observation or experiment
 - b. Involves rigorous data analyses that are adequate to test the stated hypothesis and justify the general conclusions drawn
 - c. Relies on measurements or observational methods that provide reliable and valid data across evaluators and observers, across multiple measurements and observations, across studies by the same or different investigators

- d. Is evaluated using experimental or quasi-experimental designs in which individuals, entities, programs, or activities are assigned to different conditions and with appropriate controls to evaluate the effects of the condition of interest, with a preference for random-assignment experiments, or other designs to the extent that those designs contain within condition or across condition controls
- e. Ensures that experimental studies are presented in sufficient detail and clarity to allow for replication or at a minimum, offer the opportunity to build systematically on their findings
- f. And has been accepted by a peer reviewed journal or approved by a panel of independent experts through a comparably rigorous, objective, and scientific review ” (Mesibov & Shea, 2010, p. 117).

Though it is federally mandated to include evidence-based practices when working with children with ASD, there are currently no evidence-based practice guidelines specifically for this population. However some research does exist to help educators make evidence-based intervention decisions. In the research literature there are two broad classes of interventions: comprehensive treatment models and focused intervention practices. Comprehensive treatment models focus on the core deficits of ASD. The National Academy of Science Committee on Educational Interventions for Children with Autism (2001) reviewed education programs and identified ten comprehensive treatment models. These included The TEACCH program (Marcus, Schopler, & Lord, 2000), UCLA Young Autism Program (Smith, Groen, & Winn, 2000), the LEAP model (Strain & Hoyson, 2000), and the Denver model (Rogers, Hall, Osaki, Reaven, &

Herbison, 2000). In 2010, Odom, Boyd, Hall, and Hume followed up the National Academy review and identified 30 comprehensive treatment models. The programs were characterized by “organization, operationalization, intensity, longevity, and breadth of outcome focus”.

The other broad class of interventions, Focused Intervention Practices, is designed to address a single skill or goal of a child with ASD. They are defined operationally, address specific learner outcomes, and tend to occur over a shorter time period (e.g., until the specific goal is met) and are often used as building blocks for a Comprehensive Treatment Model. Examples of Focused Intervention Practices include discrete trial training, pivotal response training, prompting, and video modeling (Wong et al., 2014).

In 2002, the US Department of Education took a major step forward and established the What Works Clearinghouse. This website provides evaluations of educational practices and curriculums as a resource for evidence-based decision making for educators (What Works Clearinghouse). As of 2009, the website did not include evaluations of interventions for children with ASD, but since then they have added many evaluations of different types of intervention practices for these children (Mesibov & Shea, 2010).

In 2005, Simpson, de Boer-Ott, Grinswold, Myles, Byrd, and Gantz conducted a narrative review of the interventions being used with children with ASD. They evaluated the scientific evidence for 37 interventions and treatments for children with ASD. Based upon the main feature of treatment, the interventions were divided up into five broad categories: interpersonal relationships, skill-based, cognitive, physiological/biological/neurological, and other. After conducting a thorough review of the treatments which were frequently chosen by families,

Simpson and colleagues rated them as scientifically based, promising practice (i.e. those with which have been used for a time with no or limited adverse results and/or have research suggestive of beneficial outcomes, but warrant further investigation) limited support, and not recommended (Simpson et al., 2005). Of the 37 treatments, 10.81% were considered to be scientifically based, 35.14% were rated as promising practice, 48.65% had limited support, and 5.4% were not recommended for practice with children with ASD (Simpson et al., 2005).

Many of the reviews conducted up until the mid-2000s investigated the effectiveness of interventions for use with children with ASD were narrative reviews conducted by academic researchers or organizations. However, these reviews did not have a stringent review process with clear criteria and many excluded single case study designs which are now recognized as a valid scientific approach and are frequently used to investigate interventions for individuals with ASD (Wong et al., 2014).

The National Standards Project at the National Autism Center and the National Professional Development Center on ASD conducted reviews (National Autism Center, 2009; Odom, Collet-Klingenberg, Rogers, & Hatton, 2010). The reviews have included both group and single case design studies, followed a systematic process for evaluating evidence before including or excluding it, and identified a specific set of interventions that have evidence of efficacy (Wong et al., 2014). A review conducted by the National Professional Development Center (NPDC) on ASD (2010) expanded the research timeframe back to 1997. This review conducted a literature search, using quality-indicator criteria to determine what to include and what to exclude. For the 175 articles they found, they content analyzed intervention

methodologies and created categories for the interventions. Overall they found only 24 focused intervention practices. The NPDC conducted a more recent review in 2013 which expanded the time frame to 1990 and executed a more rigorous review process. They accomplished a more rigorous process by training a separate review panel instead of using their own staff and determined a specific article evaluation process to use. This review defined practices as being evidence-based, idiosyncratic behavioral intervention packages, and other practices with empirical support.

While narrative and systematic reviews have been used to drive evidence-based practice, additional evidence has been compiled through surveys to determine parental preferences (Hess, et al., 2008). Green, Pittuch, Itchon, Choi, O'Reilly, and Sigafos (2006) surveyed 552 families. They concluded that, on average, families were currently using 7 different interventions and had tried an average of 8 interventions in the past (Green, Pituch, Itchon, Choi, O'Reilly, & Sigafos, 2006). The top five therapies reported were speech therapy (70%), visual schedules (43%), sensory integration (38%), applied behavior analysis (36%), and social stories (36%) (Green et al., 2006). The researchers found both the severity of symptoms and age of the child were related to the total number of interventions used showing that individual child characteristics may be a factor in determining the interventions chosen (Green et al., 2006). Another web based survey of parent preferences was conducted by Meyers, Goin-Kochel, and Mackintosh (2005). They found parents used on average 4.3 different interventions and had tried 6.5 interventions. They reported the most common therapies as being social skills training (42%), positive behavior support and drug treatment (41%), sensory integration therapy (37%), and the picture exchange

communication therapy and applied behavior analysis (32%) (Goin-Kochel, & Mackintosh, 2005).

In addition to parent preference studies, a study by Hess et al. (2008) was conducted to identify strategies and interventions used by teachers in the education of children with ASD (Hess, et al., 2008). The Autism Treatment Survey was administered to teachers in Georgia via the World Wide Web to investigate teachers' use of evidence-based treatments in their classrooms (Hess, et al., 2008). One hundred eighty-five teachers were surveyed reporting on 226 children (Hess, et al., 2008). The top five interventions being used in Georgia were Gentle Teaching, sensory integration, cognitive behavioral modification, assistive technology, and social stories (Hess, et al., 2008). Four of the five were categorized as promising practices while gentle teaching was categorized as having limited support based on standards reported in a paper by Simpson and colleagues (2005) (Hess, et al., 2008). Overall the researchers found that 1/3 of the treatments reported to be in use by the respondents have limited support, showing some teachers were using interventions that were not evidence based (Hess, et al., 2008).

The incidence of ASD has dramatically increased in recent years and with this trend there has been a growing need to provide specialized services to for children with ASD. Federal mandates have been put in place to require services being provided to children with ASD be based upon solid research evidence. While professional organizations have not yet implemented evidence-based practice guidelines for children with ASD, a wide array of narrative and systematic reviews have been conducted to investigate the effectiveness of intervention practices.

These studies provide a base of information for determining which intervention practices should be used to address the specialized needs of children with ASD.

Research Objectives

The purpose of this study is to investigate the use of evidence-based practices in classrooms serving children with ASD. It has been seven years since the Autism Treatment Survey (Hess et al., 2008) was conducted and in years since there has been a major push, in the schools, for the use of evidence-based practices. The current study will use survey methodology to identify interventions used in the classrooms for students with ASD. The results will be compared with current research evidence to evaluate whether the intervention practices reportedly used by teachers are evidenced-based as well as compare the results to the Hess et al. (2008), study to identify any changes over time for the use of evidence-based practices. This information will assist both researchers and educators in improving the education of students with ASD as well as teachers working with children with ASD. The following research questions will be addressed:

Research Question 1: What are the specific intervention practices being used by classroom teachers in Central Florida for students with ASD?

Research question 2: Are the intervention practices being used by classroom teachers in Central Florida for with students ASD supported as evidence-based?

Research Question 3: Is there a difference in evidence-based practice use between classroom teachers with the Florida ASD Endorsement and classroom teachers without the endorsement?

Hypothesis

The following hypotheses were made:

1. Teachers in Central Florida will use a variety of intervention practice types for students with ASD in their classrooms.
2. Teachers in Central Florida will be using both evidence-based and non-evidence-based intervention practices for students with ASD in their classrooms.
3. Teachers in Central Florida with the Florida ASD Endorsement will use more evidence-based practices than teachers without the endorsement.

METHODS

Study Design

This was a descriptive study using an online survey administered via email. An email-based survey was chosen due to cost-benefits and timeliness of response (Dillman, Smyth, & Christian, 2009.) A non-probability purposive sample was used to target a specific group. All members in the group were included on an email list.

Data Source

Criteria for participant selection included (1) current employment as a classroom teacher in a Central Florida school and (2) inclusion of at least one student with ASD in the teacher's classroom. Participants were recruited through the University of Central Florida Center for Autism and Related Disabilities (UCF CARD's) database. The database included teachers from the seven surrounding counties (i.e., Orange, Lake, Osceola, Sumter, Brevard, Volusia, and Seminole) who previously attended a workshop or presentation by CARD and volunteered to be included in their database. Participant emails were obtained with permission from UCF CARD.

Protection of Human Subjects

The survey was approved by the University of Central Florida Institutional Review Board (IRB) (Appendix A). The participants read a consent form before completing the survey. Upon clicking the survey link or copying and pasting the survey link into a web browser, participants were directed to a page asking for consent. The page informed participants of the purpose of the study, the contacts for the study, IRB approval, estimated duration of the study, and directions.

Participants were asked if they agreed to take the survey, by clicking an “Agree” button and by doing so, this constituted the participant’s informed consent. If a participant agreed, they were then able to access the survey link. If the participant clicked “Do not agree,” they were directed to the final thank you page of the survey. No identifiable data was collected from the participants.

Survey Development

The survey was developed based on the Autism Treatment Survey (ATS) (Hess et al. 2008). The ATS was obtained with permission from the fourth author of the original study (Hess et al., 2008). For this study, the ATS was modified to a more user-friendly form including shortening the survey from 43 to 16 interventions and reorganizing and formatting the survey to be more easily completed. This included only showing one question per page, and including a progress bar at the bottom of the page. The modified survey also inquired what other services the students were receiving, and how interventions were selected for use in the classroom. The interventions included in the original ATS (Hess et al., 2008) that were excluded from the current study were excluded based on current literature on what interventions are being utilized and their effectiveness in educating children with ASD. The resultant modified survey included a variety of evidence-based and non evidence-based practices. The survey was created in Qualtrics.com and completed online. This provided ease of access and completion of the survey.

The survey was created using the tailored design method. The tailored design method of creating surveys focuses on reducing survey error, developing survey procedures (such as contact letters), and increasing the social exchange value of the survey thus encouraging

response rates (Dillman et al., 2009). In addition, the survey was created using a multiple stage procedure as suggested by Dillman et al. (2009). The stages utilized included: a) drafting the survey, b) obtaining feedback for survey questions and format through cognitive interviewing, and c) developing a final draft (Dillman et al., 2009). The ATS (Hess et al. 2008) served as a framework in the survey development. The survey administered in this study included multiple choice, forced choice questions using drop down answer choices, and write in answer questions (Appendix B).

The survey included questions within four major sections: the first section screened participants to determine if they met study inclusion criteria by asking if they are a current teacher, and if they currently have a student with ASD in their classroom. The next section regarded the specific types of interventions, followed by a section asking how interventions were chosen, followed by a final demographic section.

The intervention section was a forced choice section using drop down answer choices. Each question asked whether the participant used the specific named intervention practice. If the participant selected that they used the intervention, they then were asked how they were trained in the specific intervention. If a participant selected that they did not currently use a specific intervention, the survey proceeded to the next intervention type. The following section of the survey asked the participants how they decided to use the interventions they had selected. The final section included demographic questions related to the participant's age, years of experience, number of children in the classroom with ASD, etc.

Pilot Survey and Revisions

The survey was piloted using cognitive interviewing procedures, a process whereby the researcher observes while a volunteer, familiar with the survey content area, takes the survey and provides feedback specific to the content, structure and format of the survey. The volunteer would take the survey while thinking out loud, informing the researcher of a potential participant's perspective. Upon completion of the survey, the researcher asked the volunteer specific questions to obtain further feedback. The volunteer who participated in the cognitive interview process was not included in the final survey sample. A Communication Sciences and Disorders doctoral candidate who had a background in special education, was working in a school for children with complex communication needs and ASD, and was familiar with survey development volunteered to take the survey and provide feedback. Based upon information obtained during the cognitive interviewing process, the survey was modified in the following ways: 1) definitions were added to intervention questions, 2) survey format was altered so only one intervention type appeared per page, 3) participant inclusion questions were moved to the beginning of the survey, and 4) a final thank you page was added to the survey.

Materials

Materials included an online survey (Appendix B), a prenotice alerting potential participants of the survey (see Appendix C), a reminder email sent six days after the initial survey (Appendix D), and a thank you email sent 13 days after the first survey email (see Appendix E).

A prenotice email explained the purpose of the survey and informed potential participants how the results may be of benefit to them and others working with individuals with ASD (Groves et al., 1992). A reminder email will thank participants who had taken the survey thus far, and urge other potential participants to complete the survey if they had not already done so. Dillman, Christenson, Carpenter, & Brooks (1974) found that a thank you letter can actually increase survey participation as much as the initial mailing in some cases. The wording in the thank you email, replacement survey email (if needed), and final contact email all differed from the original prenotice email as recommended by Dillman et al. (2009). Changing the wording on the emails was also a way to reduce the potential of the email being regarded as spam.

Survey Distribution

The survey was sent to potential participants via email through Qualtrics.com. The survey data was not linked to the participant's information so the researcher did not know who answered what question. However, the researcher was able to determine which survey had or had not been completed which allowed the researcher to be able to send a reminder email to those participants who had not yet completed the survey. The survey was estimated to take eight to ten minutes to complete depending on the participant's familiarity with online surveys and intervention practices in question. All potential participants had access to computers at their work site, making the survey potentially accessible to participants. An advance notice email explaining the survey was sent out to potential participants from UCF CARD three days prior to the survey being administered as recommended by Dillman et al. (2009). Three days later an email containing directions and the survey link was sent to all potential participants. The

participants had two weeks to complete the survey at their leisure. There was no direct interaction between researchers and participants.

Data Analysis

Data will be analyzed to address the following research questions:

Research Question 1: What are the specific intervention practices being used by classroom teachers in Central Florida for students with ASD? Frequencies and percentages were used to answer this question.

Research question 2: Are the intervention practices being used by classroom teachers in Central Florida for with students ASD supported as evidence-based? A rating scale based on current literature reviews was used to determine if interventions were or were not evidence-based. Frequencies and percentages were used to answer this question.

Research Question 3: Is there a difference in evidence-based practice use between classroom teachers with the Florida ASD Endorsement and classroom teachers without the endorsement? As indicated for research question two, a rating scale based on current literature reviews was used to determine if interventions were or were not evidence-based. Frequencies of use by endorsement were used to answer this question.

RESULTS

This survey aimed to discover what practices were being used in Central Florida by classroom teachers working with individuals with ASD, if the practices were evidence-based, and if there was a difference between the teachers with the Florida Autism Endorsement and teachers without the endorsement. The results will be presented first for the demographic information, followed by the results for each research questions.

Response Rate

The survey was distributed to 396 email addresses. One survey failed to be delivered and fifteen emails were bounced. Eighty-six emails were opened, seventy surveys were started, and fifty-nine surveys were completed. One participant did not agree to take the survey. Forty participants met the inclusion criteria. That is, the participant currently was a classroom teacher in Central Florida and currently had at least one student in their classroom with ASD. Therefore forty participants completed the entire survey. The other participants did not meet both inclusion criteria and therefore were directed to the end of the survey. It should be noted that for some questions participants were able to select more than one box for their response, so for some outcomes percents may exceed 100%. In addition, participants were able to skip questions if they chose not to answer a particular question.

Respondants

Of the forty respondents, 58% identified as teaching in a self-contained autism classroom. Sixty-four percent of respondents taught at the elementary level, and 74% of the respondents were from Orange County. The mean number of years of teaching experience was 13.32 years, while the mean number of years of teaching individuals with ASD was 9.15 years. Fifty-five

percent of the respondents, held a Master’s degree and 98% of respondents had a professional teaching certificate. Over half of the respondents (65%) reported having the Florida Autism Endorsement. Eighty-five percent identified their race as White. Specific demographic information is presented in Table 1.

Table 1: Demographic Characteristics

Due to respondents being able to select multiple choices on some questions, percentages might not equal 100.

Classroom Type	
General Education	8%
Full Inclusion	5%
Collaborative	0%
Resource	5%
Self-Contained Autism	58%
Combination	5%
Other	21%
Grade Level	
Preschool	10%
Elementary	64%
Middle	23%
High School	18%
Counties	
Orange	74%
Lake	9%
Osceola	11%
Seminole	6%
Year of Birth	
(Range)	(1950-1988)
Overall Years Teaching Experience	
Mean	13.32
(Range)	(4-50)
<i>SD</i>	10.80
Years Teaching ASD	
Mean	9.15
(Range)	(1-30)
<i>SD</i>	6.89
Highest Degree Earned	
Bachelors	38%
Masters	55%

Ed Specialist	5%
Doctorate	3%
Teaching Certificate	
Professional	98%
Temporary	3%
Autism Endorsement	
Yes	65%
No	35%
Primary Certification	
Early Education	20%
Elementary Education	80%
Middle Grades	28%
6-12	38%
Hispanic or Latino Origin	
Yes	10%
No	90%
Race	
African American, Black, or Negro	5%
White	85%
American Indian or Alaska Native	3%
Asian Indian	3%
Native Hawaiian or Pacific Islander	3%
Jaoanese	3%
Native Hawaiian	3%
Chinese	3%
Korean	3%
Other	5%
Prefer not to answer	5%

The average classroom size reported by respondents was 11.58 students. The mean number of students with ASD in the class was 7.13. The mean number of white or Caucasian students with ASD was 3.74. 43% of respondents indicated 76-100% of their students with ASD receive free or reduced lunch. Table 2 presents the means, standard deviations, and ranges for the classroom data.

Table 2: Classroom Central Tendency Data

Total Classroom Enrollment	
Mean	11.58
Range	(4-30)
SD	6.99
Students With ASD	
Mean	7.13
Range	(1-23)
SD	4.5
Students with ASD who are White/ Caucasian	
Mean	3.74
Range	(1-19)
SD	4.07
Free or Reduced Lunch	
0-25%	22
26-50%	16
51-75%	19
76-100%	43

Research Question 1 Results

Research Question 1: What are the specific intervention practices being used by classroom teachers in Central Florida for students with ASD?

The data indicated there are a variety of intervention practices currently being used by classroom teachers in Central Florida for individuals with ASD. The most frequently used interventions were Visual Supports (95 %), Computer Program Applications (93%), and Social Stories (73 %). The least frequently used interventions were Auditory Integration (5%) and Fast ForWord (5%). Respondents were asked also to indicate interventions they had used in the past but were no longer being used. The most frequent interventions that were no longer being used by respondents were Discrete Trial Training (35%), Sensory Integration (35%), and PECS

(33%), and. The majority of respondents stated that they never had used Fast ForWord (93%), Auditory Integration (88%), or Holding Therapy (78%). Table 3 presents the percentages of current and past use for each intervention.

Table 3: Intervention Frequency of Use and Ratings

Intervention	Rating	Currently Use			In the past, but not now			No, Never		
		With END	Without END	Total	With END	Without END	Total	With END	Without END	Total
Visual Support	☺	96%	93%	95%	0%	7%	2%	4%	0%	2%
Social Stories	☺	77%	71%	73%	23%	21%	24%	0%	7%	2%
Computer Applications	☺	92%	93%	93%	4%	7%	5%	4%	0%	3%
Holding Therapy	☺	12%	21%	15%	12%	0%	8%	77%	79%	78%
AAC	☺	62%	50%	58%	27%	36%	30%	12%	14%	13%
Assistive Technology	☺	73%	57%	68%	19%	21%	20%	8%	21%	13%
PECS	☺☺	54%	43%	50%	38%	21%	33%	8%	36%	18%
Discrete Trial Training	☺	58%	43%	53%	35%	36%	35%	8%	21%	13%
Fast ForWord	☺	4%	7%	5%	4%	0%	3%	92%	93%	93%
Incidental Teaching	☺	68%	50%	62%	4%	0%	3%	28%	50%	36%
PRT	☺	54%	36%	48%	4%	7%	5%	42%	57%	48%
Auditory Integration	☺	8%	0%	5%	4%	14%	8%	88%	86%	88%
Facilitated Communication	☹	12%	8%	11%	16%	15%	16%	72%	77%	74%
Sensory Int.	☺	50%	29%	43%	35%	36%	35%	15%	36%	23%
LEAP	☺	12%	0%	8%	12%	7%	10%	76%	93%	82%
TEACCH	☺☺	50%	50%	50%	23%	14%	20%	27%	36%	30%
Denver	☺	15%	8%	13%	4%	0%	3%	81%	92%	85%

Key: very strong positive evidence (☺☺☺), strong positive evidence (☺☺), limited positive evidence (☺), insufficient/mixed evidence (☹), or negative evidence (☹)

Research Question 2 Results

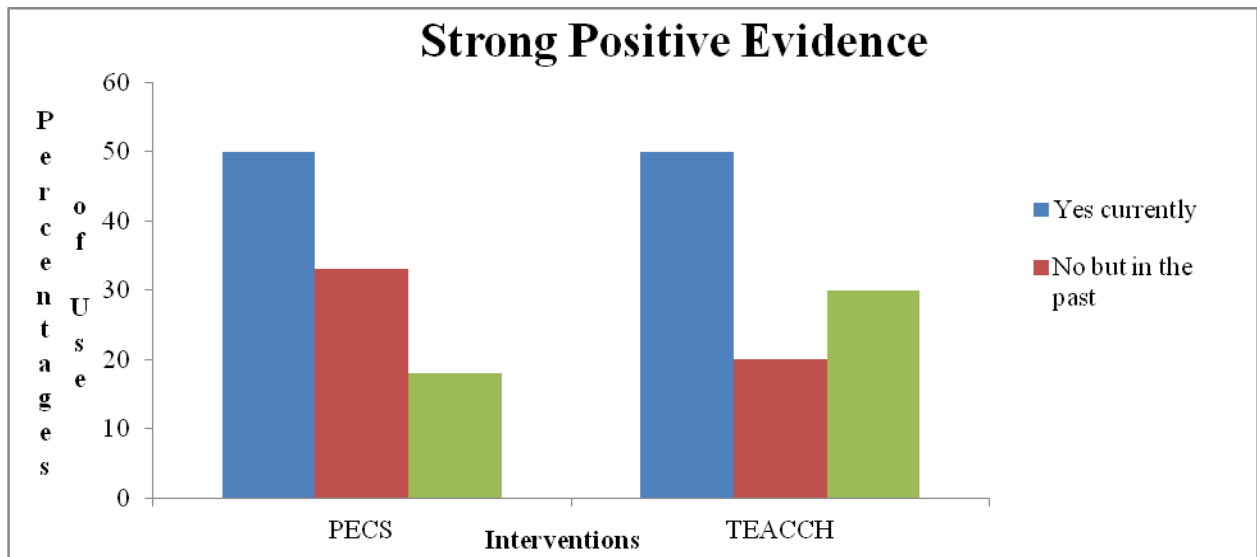
Research Question 2: Are the intervention practices being used by classroom teachers in Central Florida for with students ASD supported as evidence-based?

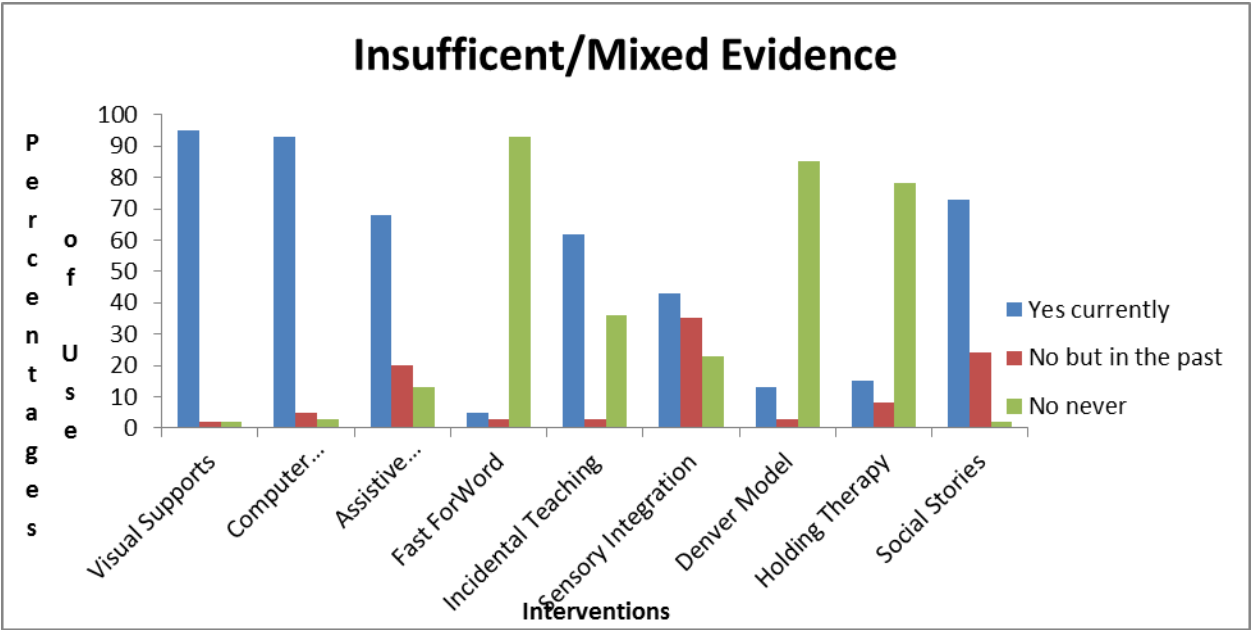
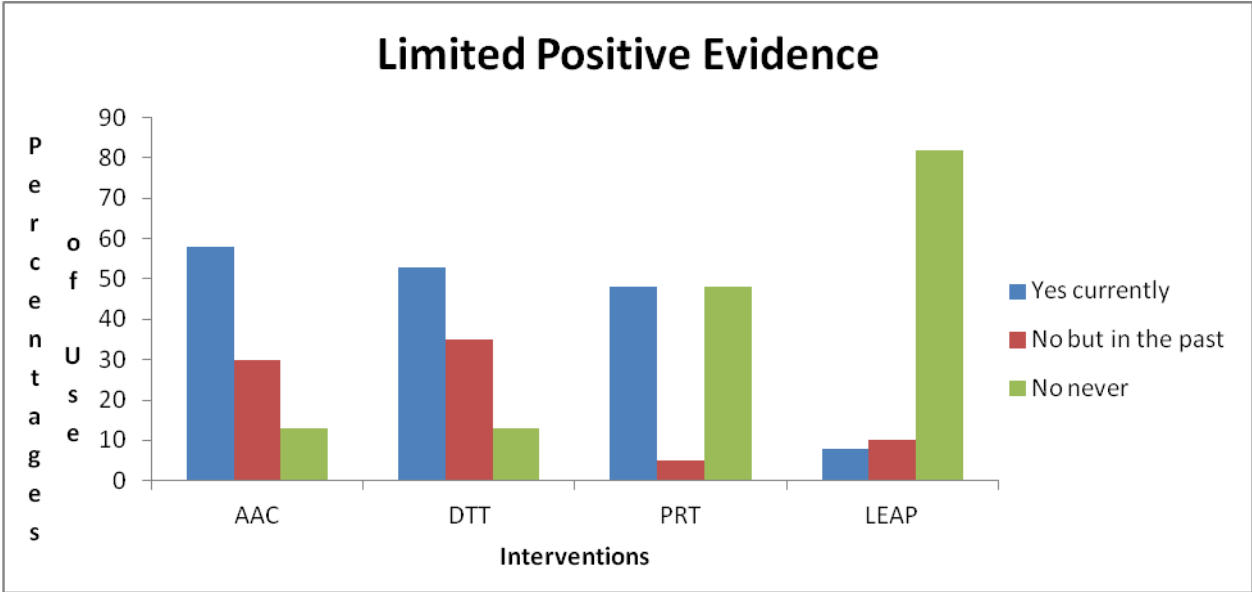
The data showed that the majority of intervention practices that were used by classroom teachers in Central Florida were supported, at least to some extent, as evidence-based. To determine which interventions were supported by the extant literature, a number of sources were consulted (Wong et al., 2014; Simpson et al., 2005; Research Autism, 2015). Each of these sources provided recommendations for intervention use based on the amount and quality of peer-reviewed scientific evidence that has been conducted to support the efficacy of specific intervention practices. In general the various rating sources based their findings on the results of studies with varying design types, including randomized controlled trials, quasi-experimental studies, and single case designs. The interventions, in this study, were categorized as either very strong positive evidence (☺ ☺ ☺), strong positive evidence (☺☺), limited positive evidence (☺), insufficient/mixed evidence (☹), or negative evidence (☹☹) based on a compilation of information presented in Wong et al. (2014), Simpson et al. (2005), and Research Autism (2015). Table 2 presents the percentage of use for the interventions and the strength of the research literature supporting the interventions for use with individuals with ASD.

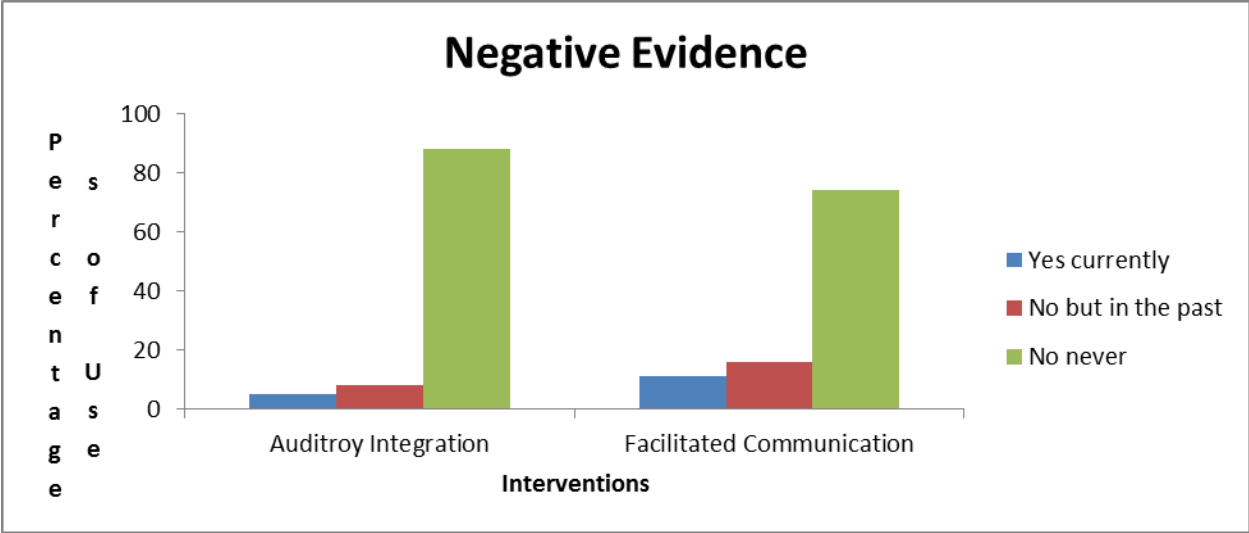
As shown in the Table 3, only PECS and TEACCH have strong positive scientific evidence to support their use, while LEAP and Discrete Trial training have limited positive evidence. Ten of the 17 intervention practices have insufficient or mixed evidence. Of the ten, Holding Therapy has some mixed positive and negative evidence, suggesting it may be harmful

for some individuals. Two of the intervention approaches, Facilitated Communication and Auditory Integration Training, have evidence to suggest they may be harmful or they are harmful to individuals, respectively. Interestingly, none of the interventions have very strong positive evidence to support their use. In general, these findings relate to the quality of the research being conducted rather than to the potential benefits of an intervention for a specific individual with ASD. Figure 1 depicts the intervention data for current use, use in the past, and never been used, based on the strength of empirical evidence for each approach.

Figure 1: Frequency by Intervention Rating







Research Question Three Results

Research Question 3: Is there a difference in evidence-based practice use between classroom teachers with the Florida ASD Endorsement and classroom teachers without the endorsement?

The data showed mixed results for teachers with and without the Florida Autism Endorsement. Table 2 shows five percent of respondents with the Florida Autism Endorsement reported using the unsupported intervention, Holding Therapy; whereas, 25% of teachers without the Endorsement reported using it. However, 16 % of respondents with the Florida autism Endorsement reported using the unsupported intervention, Facilitated Communication, while only 9% of teachers without the Endorsement reported using it. For interventions that have positive ratings, teachers with the endorsement had a higher frequency response rate. PECS was reported to be used by 53% of teachers with the endorsement, and 42% of teachers without the

endorsement. 74% of teachers with the endorsement reported using AAC, while 50% of teachers without the endorsement reported using it. 53% of respondents with the endorsement reported using Pivotal Response Training, and 42% of teachers without the endorsement reported using it.

Additional analyses were performed regarding classroom statistics. Many teachers reported to base their classroom structure off of research based classroom models, as shown in Table 2. 50% of respondents reported their classroom is based around the TEACCH model. 82% reported they have never used the LEAP model and 85% reported they have never used the Denver model.

In addition to intervention strategies, respondents also reported other specialty services their students are receiving. Students receiving speech and language therapy had the largest range of (1-31) and also the highest mean of 8.67. The mean number of students receiving Occupational Therapy was 3.49 and the mean number receiving physical therapy was 2.21.

Table 4: Specialty Services Central Tendency

Speech and Language Therapy	
Mean	8.67
Range	(0-30)
<i>SD</i>	5.24
Occupational Therapy	
Mean	3.49
Range	(0-18)
<i>SD</i>	2.97
Physical Therapy	
Mean	2.21
Range	(0-13)
<i>SD</i>	3.31

DISCUSSION

The current study, as well as the previous ATS study (Hess et al., 2008), aimed to investigate which intervention practices were being used by classroom teachers for individuals with ASD. In this chapter similarities and differences between the two studies will be addressed along with limitations of the current study, and suggestions for future research.

The results for the current study were based on the responses of 29 teachers working primarily in self-contained classrooms for individuals with ASD. Although the number of respondents was vastly different from those in the Hess et al. (2008) study (185 respondents primarily working in self-contained classrooms) there were a number of similarities with regard to intervention practices. The top five reported interventions used by classroom teachers in the current study were Computer Program Applications, Visual Supports, Assistive Technology, AAC, and Social Stories. In Hess et al., the top five reported interventions were Gentle Teaching, Sensory Integration, Cognitive Behavioral Modification, Assistive Technology, and Social Stories. This suggests that Social Stories and Assistive Technology continue to be promoted for use with individuals with ASD even though there continues to be limited evidence to support their use. Slightly over half of the intervention practices used by classroom teachers in the current study had insufficient evidence to support their use compared to one third of the interventions included in the Hess et al. study. This study showed the majority of interventions were used across all grade levels. Speech and language therapy were the highest reported specialty service for both surveys. In this study it was reported that an average of 8.39% of students with ASD received speech and language therapy and in the ATS 37% of respondents indicated their students with ASD receive speech and language therapy. Due to the nature of a

survey study, it is unclear how strictly the respondents followed the implementation protocol for a specific intervention practice or classroom model or if they modified the intervention approach.

The demographics of the respondents in this study and for the ATS respondents were somewhat comparable. Overall the respondents in the current study had more advanced academic training. Sixty-one percent of the respondents reported having a Master's degree compared to 28% of the respondents in the Hess et al. study. The results for those who held a Bachelor's degree were twice as many with 29% and 14%, respectively. The classroom type most identified in both studies was self-contained autism (55% and 26%, respectively). The respondents in current survey had been teaching slightly longer with a mean number of years of 13.83 compared to a mean of 12.25 years. The mean number of years teaching students with ASD was greater in the current study, 9.43years, compared to 4.94 years in the previous study.

Unlike the Hess et al. study, the current study investigated how teachers were trained in the various intervention practices. The respondents reported learning how to implement interventions from multiple sources including their teacher training educational program, teacher trainings offered through their school or district, self-taught, or from other professionals. Respondents also reported consulting other sources when deciding what intervention to use. The majority of respondents reported they decide what intervention to implement based on another professional's recommendations such as a speech-language pathologist, physical therapist, or occupational therapist. In addition they responded that their personal preference and district recommendations or philosophy played a role in their decision regarding which interventions to implement in their classroom. A minority of respondents indicated that parent requests help

determine their intervention decision. Given the variety of sources upon which classroom teachers base their decisions for implementing interventions for individuals with ASD, effort needs to be made to keep information consistent across stakeholders with regard to which interventions have the strongest evidence base.

Limitations

A number of limitations of the study were identified. First, the study was limited by the overall number of potential participants as well as the number of participants who actually met the study inclusion criteria. While the UCF CARD database included nearly 400 classroom teachers, some of the teachers were not currently teaching or did not currently have a student with ASD in their classroom. In addition, the survey response rate was low. Of the 396 potential participants only 29 participants met inclusion criteria and completed the survey. This severely limited the data available for analysis. Perhaps the response rate may have been improved if the survey was available for longer than a two week period. The survey also was distributed during a period of mandated student assessments. If the survey had been distributed at another time of the year, when teachers were less preoccupied with student testing, the response rate might have been higher. Further, survey duration was a possible limitation. In an effort to maximize a potential participant's willingness to take and complete the survey, measures were taken to decrease the length of the survey. Only 17 interventions were included in the study based on the most common interventions used for individuals with ASD. If duration wasn't a factor, the survey could have included more specific types of intervention practices to develop a more comprehensive view of the interventions used in the classrooms. Finally, there was no way to

determine why an intervention was being used or why it was no longer being implemented. Potentially the reason for not using a particular intervention may have been valid such as the intervention was no longer appropriate given the age or skill level of the student.

Future Directions

Investigations of the use of evidence-based practices in schools could be furthered by developing a more comprehensive survey and expanding the reach of the survey to include teachers in Florida or even teachers across the nation. Furthermore, it could be distributed to other populations working with individuals with ASD such as speech-language pathologists, and behavior therapists which would allow for cross-discipline comparisons. Descriptions of the interventions could be enhanced with more specific examples included to allow participants to relate the definitions to their own practices. Also, respondents could be asked how they define evidence-based practice and if they feel they engage in an evidence-based decision making process.

In recent years some efforts have been made to define the interventions for students with ASD as evidence-based or non evidence-based such as the reviews by the National Research Council (Wong et al., 2014) and the What Works Clearinghouse (What Works Clearinghouse). Further effort needs to be made to establish practice guidelines for providing intervention to individuals with ASD based on sound research evidence. Teachers then need to be trained to implement interventions in an efficacious manner to best serve their students with ASD. Evidence-based interventions should be used whenever possible to ensure that students with ASD are given the best chance to succeed in the academic setting and beyond.

APPENDIX A: IRB APPROVAL LETTER



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1
FWA00000351, IRB00001138**

To: **Jamie B. Schwartz** and Co-PI: **Allison Lynn Twyman**

Date: **March 20, 2015**

Dear Researcher:

On 03/20/2015, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Project Title:	An Investigation of Evidence-based Practices Used by Teachers in Classrooms Serving Children with Autism Spectrum Disorder
Investigator:	Jamie B Schwartz
IRB Number:	SBE-15-11149
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the [Investigator Manual](#).

On behalf of Sophia Dziegielewska, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 03/20/2015 04:05:50 PM EDT

IRB manager

APPENDIX B: SURVEY

EXPLANATION OF RESEARCH

Principal Investigator: Dr. Jamie B. Schwartz

Other Investigators: Allison Twyman

Faculty Supervisor: Dr. Jamie B. Schwartz

You are being invited to take part in a research study. Whether you take part is up to you.

The purpose of this research is to investigate what interventions are being used to teach students with Autism Spectrum Disorder in Central Florida.

You will be asked to complete a survey online, your answers will be anonymous.

The survey should take 8-10 minutes to complete.

You must be 18 years of age or older to take part in this research study.

Study contact for questions about the study or to report a problem:

If you have questions, concerns, or complaints

Dr. Jamie B Schwartz

Associate Professor

Department of Communication Sciences and Disorders

University of Central Florida

Jamie.Schwartz@ucf.edu

IRB contact about your rights in the study or to report a complaint:

Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB.

For information about the rights of people who take part in research, please contact:

Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

Instructions

This survey should only take 8-10 minutes of your time! As you finish each page and proceed to the next, your data will be submitted for processing. You will not be able to use the back button in your browser.

Please complete the survey regarding the classroom you are currently in. If you teach in more than one class please response based on the class with the greatest number of children with ASD.

By clicking AGREE below, you are providing consent to take the survey. Please print this page for your records.

- I agree to take this survey.
- I do not agree to take this survey.

Are you currently employed as a teacher?

- Yes
- No

Do you currently teach at least one student who has Autism Spectrum Disorder?

- Yes
- No

Visual Supports (visual schedules, visual sequences activity steps, picture directions, etc)

Do you utilize Visual Supports with your current students who have ASD?

- Yes, currently
- In the past, but not now
- No, never

Visual Supports (visual schedules, visual sequences activity steps, picture directions, etc)

Please indicate the method of training you received for Visual Supports (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

Social Stories (visually represented stories that describe social situations or socially appropriate response or behaviors)

Do you utilize Social Stories with your current students who have ASD?

- Yes, currently
- In the past, but not now
- No, never

Social Stories (visually represented stories that describe social situations or socially appropriate response or behaviors)

Please indicate the method of training you received for Social Stories (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

Do you utilize Computer programs or Application (Apps) with your current students who have ASD?

- Yes, currently
- In the past, but not now
- No, never

Please indicate the method of training you received for Computer Programs or Apps (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

Holding Therapy (holding a child tightly and closely while speaking in a comforting manner)

Do you utilize Holding Therapy with your current students who have ASD?

- Yes, currently
- In the past, but not now
- No, never

Holding Therapy (holding a child tightly and closely while speaking in a comforting manner)

Please indicate the method of training you received for Holding Therapy (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

Augmentative Alternative Communication (AAC) (e.g., aided and unaided communication devices and symbol systems, excluding Picture Exchange Communication System-PECS)

Do you utilize Augmentative Alternative Communication with your current students who have ASD?

- Yes, currently
- In the past, but not now
- No, never

Augmentative Alternative Communication (AAC) (e.g., aided and unaided communication devices and symbol systems, excluding Picture Exchange Communication System-PECS)

Please indicate the method of training you received for Augmentative Alternative Communication (AAC) (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

Assistive Technology (AT) (e.g., adapted utensils, talking calculators, pencil grips, audible word scanning devices, talking word processors with text, or van adaptations)

Do you utilize Assistive Technology (AT) with your current students who have ASD?

- Yes, currently
- In the past, but not now
- No, never

Assistive Technology (AT) (e.g., adapted utensils, talking calculators, pencil grips, audible word scanning devices, talking word processors with text, or van adaptations)

Please indicate the method of training you received for Assistive Technology (AT) (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

Picture Exchange Communication System (PECS) (using pictures to request, answer, or form sentences)

Do you utilize Picture Exchange Communication System (PECS) with your current students who have ASD?

- Yes, currently
- In the past, but not now
- No, never

Picture Exchange Communication System (PECS) (using pictures to request, answer, or form sentences)

Please indicate the method of training you received for Picture Exchange Communication System (PECS) (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

Discrete Trial Training (adult directed task instruction incorporating reinforcers, clear contingencies and task repetition and typically focuses on tacting or labeling behaviors)

Do you utilize Discrete Trial Training with your current students who have ASD?

- Yes, currently
- In the past, but not now
- No, never

Discrete Trial Training (adult directed task instruction incorporating reinforcers, clear contingencies and task repetition and typically focuses on tacting or labeling behaviors)

Please indicate the method of training you received for Discrete Trial Training (DTT) (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

Fast ForWord (FFW) (computer training program for auditory processing difficulties)

Do you utilize Fast ForWord with your current students who have ASD?

- Yes, currently
- In the past, but not now
- No, never

Fast ForWord (FFW) (computer training program for auditory processing difficulties)

Please indicate the method of training you received for Fast ForWord (FFW) (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

Incidental Teaching (systematic instruction delivered within child initiated activities typically focusing on mand or requesting behaviors)

Do you utilize Incidental Teaching with your current students who have ASD?

- Yes, currently
- In the past, but not now
- No, never

Incidental Teaching (systematic instruction delivered within child initiated activities typically focusing on mand or requesting behaviors)

Please indicate the method of training you received for Incidental Teaching (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

Pivotal Response Training (PRT) (instruction focus on pivotal areas of development including motivation, social interaction in natural environments)

Do you utilize Pivotal Response Training with your current students who have ASD?

- Yes, currently
- In the past, but not now
- No, never

Pivotal Response Training (PRT) (instruction focus on pivotal areas of development including motivation, social interaction in natural environments)

Please indicate the method of training you received for Pivotal Response Training (PRT) (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

Auditory Integration Training (AIT) (listening to specially filtered and modulated music through headphones)

Do you utilize Auditory Integration Training with your current students who have ASD?

- Yes, currently
- In the past, but not now
- No, never

Auditory Integration Training (AIT) (listening to specially filtered and modulated music through headphones)

Please indicate the method of training you received for Auditory Integration Training (AIT) (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

Facilitated Communication (supported typing that physical assists an individual to communicate)
Do you utilize Facilitated Communication with your current students who have ASD?

- Yes, currently
- In the past, but not now
- No, never

Facilitated Communication (supported typing that physical assists an individual to communicate)

Please indicate the method of training you received for Facilitated Communication (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

Sensory Integration (SI) (e.g., weighted vests, brushing, joint compressions, sensory diet)

Do you utilize Sensory Integration (SI) with your current students who have ASD?

- Yes, currently
- In the past, but not now
- No, never

Sensory Integration (SI) (e.g., weighted vests, brushing, joint compressions, sensory diet) Please indicate the method of training you received for Sensory Integration (SI) (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

LEAP (comprehensive, intensive instruction within an inclusion classroom setting)

Is your current classroom based on the LEAP Model?

- Yes, currently
- In the past, but not now
- No, never

LEAP (comprehensive, intensive instruction within an inclusion classroom setting)

Please indicate the method of training you received for the LEAP Model (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

TEACCH (structured teaching approach that modifies the environment and teaching strategies to accommodate the individual's cognitive and behavioral characteristics)

Is your current classroom based on the TEACCH Model?

- Yes, currently
- In the past, but not now
- No, never

TEACCH (structured teaching approach that modifies the environment and teaching strategies to accommodate the individual's cognitive and behavioral characteristics)

Please indicate the method of training you received for the TEACCH Model (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

Denver Model (integrated approach that combines behavioral and developmental principles)

Is your current classroom based on the Denver Model?

- Yes, currently
- In the past, but not now
- No, never

Denver Model (integrated approach that combines behavioral and developmental principles)

Please indicate the method of training you received for the Denver Model (select all that apply):

- Teacher Preparation Program
- Half-Day workshop
- Full Day Workshop
- Local School Inservice
- County School System Inservice
- Workshop by Program Developer or Representative
- Online Training Module
- Hands-on in the classroom
- Parent
- Peer teacher/therapist
- Self-taught
- No training received

Please list any other classroom models you use.

As a classroom teacher how do you decide which teaching interventions to implement for students who have ASD (select all that apply)?

- Personal Preference
- Parent Request
- Other Professional recommendation (SLP, OT, PT, Psych.)
- District Recommendation or philosophy
- Administration Recommendation or philosophy
- Workshop
- College/university training
- Other _____

Please list other therapies/methods used in your classroom for students with ASD because of parent request or that are IEP driven.

What does your district call your class?

- General Education
- Full Inclusion (more than 3/4 of the day)
- Collaborative
- Resource
- Self-Contained Autism
- Other Self-Contained (please describe below) _____
- Combination (please describe below) _____
- Other (please describe below) _____

My school is a (check all that apply):

- Preschool
- Elementary School
- Middle School
- High School

What is your school type?

- Public
- Private
- Charter

My school or charter school is located in:

- Orange
- Lake
- Osceola
- Sumter
- Brevard
- Volusia
- Seminole
- Other

What county are you located in?

What is the total enrollment of your class?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30+

How many students in your class qualify for free and reduced lunch?

- 0%-25%
- 26%-50%
- 51-75%
- 76%-100%

How many students in your class have Autism spectrum disorder?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30+

Of the students with ASD how many are White/Caucasian?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30+

Are you male or female?

- Male
- Female

What is your year of birth?

Including the current school year, how many years have you been teaching?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28

- 29
- 30
- 31
- 32
- 33
- 34
- 35
- 36
- 37
- 38
- 39
- 40
- 41
- 42
- 43
- 44
- 45
- 46
- 47
- 48
- 49
- 50+

Including the current school year, how many years have you been teaching children with ASD?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30+

Are you of Hispanic or Latino origin?

- Yes
- No

What is your race? Check all that apply.

- African American, Black, or Negro
- White
- American Indian or Alaska Native
- Asian Indian
- Native Hawaiian or Pacific Islander
- Japanese
- Native Hawaiian
- Chinese
- Korean
- Other
- Prefer not to answer

What is your highest degree?

- Bachelor's level
- Master's Level
- Educational Specialist Level
- Doctorate Level

Do you have the state of Florida Autism Endorsement?

- Yes
- No

Have you had preprofessional preparation (classes in college, or teacher preparation trainings) for teaching children with Autism Spectrum Disorder:

- Yes
- No

My teaching certification category is:

- Professional
- Temporary

What is your primary certification area (Select all that apply):

- Early Childhood
- Elementary
- Middle Grades
- 6-12 Certification Subject Area: _____

How many children with ASD in your classroom receive Occupational Therapy?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30+

How many children with ASD in your classroom receive Speech-Language Therapy?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30+

How many children with ASD in your classroom receive Physical Therapy?

- 01
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30+

Please list any other services your students with ASD are receiving at school.

APPENDIX C: PRENOTICE EMAIL

Hello,

In the near future you will receive an important survey, the results of which will be used to better support teachers of student with Autism Spectrum Disorders. The results of the survey are a vital component to a research study being completed by Allison Twyman, an undergraduate student at the University of Central Florida, as part of her Honors in the Major program.

The UCF Center for Autism and Related Disabilities (CARD) would greatly appreciate your assistance in completing the survey. The student has worked closely with CARD to develop this study. Your valued assistance will impact current research, helping to discover how to better support teachers and how to better serve children with Autism Spectrum Disorder.

Please be on alert for this survey coming soon! The email subject will be: Survey Study

Thank you so much for your support and time!

Sincerely,

Terri Daly, Ph.D., BCBA-D

Executive Director

UCF CARD

APPENDIX D: REMINDER EMAIL

Good afternoon,

Recently, you were emailed an invitation to take part in an important research survey related to Autism Spectrum Disorders. I am so thankful to all of those who have taken the time to complete the survey! If you have not yet completed it, please use the link below! We really need your help.

TO PROTECT YOUR PRIVACY DO NOT SHARE THE LINK, IT IS UNIQUELY YOURS!

This survey is vitally important to potentially improve the support of teachers of students with Autism Spectrum Disorders. Your expertise would greatly assist us!

Thank you so much,

Allison Twyman

UCF Undergraduate Research Student

APPENDIX E: THANK YOU EMAIL

Hello,

Thank you to everyone who graciously participated in my research study. Your participation will assist in better supporting teachers of student with Autism Spectrum Disorders.

If you are interested in the results, please contact me at Allison.twyman@ucf.edu.

Thank you again!

Sincerely,

Allison Twyman

APPENDIX F: COMPARISONS BETWEEN STUDIES

Table 5: Comparison of the current study outcomes with those of Hess et al. (2008)

Category Type	Current Study	ATS
Respondents	29	185
Top 5 reported interventions	Computer Applications	Gentle Teaching
	Visual Supports	Sensory Integration
	Assistive Technology	Cognitive Behavioral Modification

	AAC	Assistive Technology
	Social Stories	Social Stories
interventions with insufficient evidence	>50%	33%
Speech-Language Therapy	Mean 8.39 students per class	37% indicated students receive it
Master's degree	61	28
Bachelor's degree	29	14
Self-contained ASD class	55%	26%
Years teaching experience	13.83	12.25
Years teaching ASD	9.43	4.94

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