

**Outcome of Training Parents of Children with Autism Spectrum Disorder to Use
Antecedent-Behavior-Consequence Charts**

by
Sherrilyn Denise Smith

A dissertation submitted to the Department of Educational Leadership and Policy Studies
College of Education
in partial fulfillment of the requirements for the degree of

Doctorate of Education

in Special Populations

Chair of Committee: Dr. Kristi L. Santi

Committee Member: Dr. Jennifer Cobb

Committee Member: Dr. Shawn Kent

Committee Member: Dr. Sarah Mire

University of Houston
December 2020

Copyright 2020, Sherrilyn Denise Smith

Dedication

To my parents Melvin and Mildred Harris, they would have been proud of this accomplishment. I know they are smiling down on me with pride and love. I miss you dearly and wish you were here to share this moment with me.

Acknowledgments

The long and winding road famously sung by the rock and roll band the Beatles best describes my quest for this accomplishment. The person who always leads me to his door and is always waiting for me is my husband, Quentin. He above all others, no how long and hard this road has been and without his support and encouragement, the open door to this moment would have forever remained closed and not possible. “Have faith” is what he always tells me, and on days when I felt like giving up, I found the strength to carry on. I believe God has placed Quentin in my life for moments just like this, and for that, I am forever grateful.

To my son, Quentin, my daughter-in-law Mirna, and my granddaughter Mia your love and support mean everything to me. I truly appreciate it.

To my niece, Shari, who inspired me to pursue my research topic.

To my committee members, thank you for your leadership, support, and advice. I could not have done it without you. A special thank you to Dr. Santi, whose calmness and encouragement helped me see that indeed there is a light at the end of the tunnel!

Abstract

Background: Individuals diagnosed with ASD often engage in restricted, repetitive patterns of behavior (e.g., stereotyped or repetitive motor movements or use of objects), insist on sameness, exhibit inflexibility, and have highly restricted and fixated interests. According to Jang, Dixon, Tarbox, and Granpeeshe (2012), 94% of children diagnosed with ASD exhibit some form of challenging behavior (e.g., aggression, stereotypy, tantrums, and self-injury). A key factor during an intervention is the consistent involvement of the child's parents (Hastings & Brown, 2002). The problem of practice addressed by the proposed study was parents' training on using ABC strategies to reduce the frequency of challenging behaviors in their children and reduce parental stress levels.

Purpose: The purpose of the study was to investigate whether training parents to use ABC narrative recording charts improves their understanding of the behavioral principles and increase the parents' confidence in discussing their child's challenging behaviors with others. The following research question was posed, to what extent, if any, does parent training on the use of ABC narrative recording charts improve parents' understanding of basic behavioral principles, as well as the parents' confidence in discussing their child's challenging behaviors with others?

Methods: Sixteen parents from a parent support group in a large urban area in the South were recruited to participate in this study. The parent training was provided via an online group platform. The training was designed to provide parents with information about the theoretical and practical rationale for using this approach to better understand and intervene with their children's challenging behavior. The parent training was also constructed to provide participants with a framework for developing knowledge and improving their use of ABC

narrative recording charts when discussing their children's challenging behaviors with others. The framework included three modules (a) defining characteristics of Applied Behavior Analysis, (b) levels of competence in identifying and describing direct observation methods, and (c) parent outcome survey. Descriptive from the survey were analyzed to determine how representative the sample was of the national sample of parents with children with ASD. A Spearman rho was utilized to determine a statistically significant relationship between training and the parents' understanding and the self-reported response to the challenging behaviors and basic behavior principles. **Results:** The results of the Spearman correlation analysis reveal there is a statistically significant relationship between response to child's challenging behavior and the following basic behavior principals: applied ($\rho = .749, p = .002$), behavioral ($\rho = .774, p = .001$), analytic ($\rho = .697, p = .006$), conceptually systematic ($\rho = .590, p = .026$), generality ($\rho = .697, p = .006$), accountable ($\rho = .558, p = .038$), public ($\rho = .749, p = .002$), doable ($\rho = .702, p = .005$), empowering ($\rho = .884, p < .001$), and optimistic ($\rho = .755, p = .002$). **Conclusion:** The study results showed that parents who participate in parent training opportunities report good competency levels in identifying direct observation methods, discussing challenging behaviors with others, and less competency in describing the direct observation methods.

Keywords: autism spectrum disorder, training parents, narrative recording charts

Table of Contents

Chapter	Page
I. Introduction	1
Theoretical Framework	2
Antecedent-Behavior-Consequence Model	3
Problem of Practice	4
Impact of the Work	4
National Context	5
State Context	8
Study Variables	11
Research Question	11
II. Review of Literature.....	12
Parental Impact of ASD	12
Challenging Behaviors.....	13
Parent Training.....	16
Parent Education Training Approaches	16
Theory of Behaviorism	20
Applied Behavior Analysis	23
Parent Knowledge.....	27
Principles of Interventions for Parents of Children with ASD	28
Summary	30
III. Method	31
Sample Demographics	31
Design	32
Research Question	33
Procedures	33
Measure	36
Analysis.....	36
IV. Results.....	38
Module 1 Results	40
Module 2 Results	44
V. Discussion	48
Participants Demographics	48
Module 1	49
Module 2	52
Limitations	53
Implications and Recommendations for Practice	54
Recommendations for Future Research	56
VI. Action Plan	58

Parental Involvement	59
Participants.....	60
Timeline	60
References	63
Appendix A IRB Approval Letter.....	81
Appendix B Survey.....	85
Appendix C ABC Log	94

List of Tables

Table	Page
1. Participant Demographics	32
2. Type of Past Behavioral Intervention Trainings	38
3. Participants Statement About Their Ability to Discuss Child's Behavior.....	39
4. Parents' Self-Reported Response to Challenging Behaviors.....	39
5. Descriptive Statistics for the ABA Model Questions	40
6. Correlations between Parent Response to Challenging Behaviors and the ABA Model (N=14)	41
7. Correlation between Parents Response to Challenging Behaviors and the ABA Model: Composite Score.....	42
8. Correlations: Parents Understanding of Basic Behavioral Principles to the ABA Model (n=14)	43
9. Correlations: Parents Understanding of Basic Behavioral Principles to the ABA Model: Composite Score.....	44
10. Parent Self-Report on Their Level of Confidence of Direct Methods	45
11. Correlations: Parents Self-Report on Level of Confidence to the ABA Model (n=13).....	45
12. Correlations: Parents Self-Report on Level of Confidence to the ABA Model: Composite Score (n=14)	46

List of Figures

Figure	Page
1. Steps of the Antecedent Behavior Consequence Model	3
2. Historical Autism Spectrum Disorder Prevalence and Estimated Prevalence in 2020..	5
3. Evidence-Based Practices	7
4. Autism Spectrum Disorder (ASD) Fact Sheet	9

Chapter I

Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by deficits in social communication and social interaction across multiple contexts. Deficits in both verbal and nonverbal communicative behaviors and the development, maintenance, and understanding of relationships also characterize ASD (APA, 2013). Individuals diagnosed with ASD often engage in restricted, repetitive patterns of behavior (e.g., stereotyped or repetitive motor movements or use of objects), insist on sameness, exhibit inflexibility, and have highly restricted and fixated interests. Though ASD symptoms do change over the lifespan, the diagnosis has lifelong implications, affecting the diagnosed individual and their families. In addition, according to Jang et al. (2012), 94% of children diagnosed with ASD exhibit some form of challenging behavior (e.g., aggression, stereotypy, tantrums, and self-injury). At the time of writing, about 1 in 54 children has been identified with ASD, according to estimates from the Centers for Disease Control (CDC) Autism and Developmental Disabilities Monitoring (ADDM) Network (Maenner et al., 2020).

ASD can create impairment in multiple areas for diagnosed individuals and place strains on the families of those individuals. Gray (2006) conducted a longitudinal study and found that ASD ranked among the most stressful child developmental disabilities. For example, socially inappropriate and aggressive behaviors typically associated with ASD are associated with increased parental stress (Ruiz & Kubina, 2017). Gray found that parents of children diagnosed with ASD experienced considerable stigmatization due to their children's socially inappropriate behavior. Regular breaches of social norms in

social situations can lead to feelings of shame and humiliation and exclusion from normal social activities.

Interventions based on applied behavior analysis (ABA) are research-based approaches to changing behavior, including for those with ASD. Researchers have shown that ABA significantly reduces the debilitating effects of ASD (Ben-Itzhak & Zachor, 2011; Eldevick et al., 2009; Howlin et al., 2009; Reichow & Wolery, 2009). Other researchers have reported that adding a parental component to the overall intervention contributes significantly to the outcome and treatment's effects (Anderson & Romanczyk, 1999; Dawson & Osterling, 1997). However, the parents of many children being treated do not participate in treatment at the recommended levels or drop out of treatment before their behavior problems are resolved (Matson et al., 2009; Miller & Prinz, 2003). Though parents can benefit from using ABA strategies with their children, most do not have access to a behaviorist to teach them these strategies.

Theoretical Framework

Behaviorism is the theoretical framework underpinning ABA. Behaviorism is a learning theory rooted in psychology and emphasizes scientific and objective explanations of behaviors. The framework is centered around observable stimulus-response behaviors and an assumption that individuals learn all behaviors through environmental interaction (Cooper et al., 2007). Behaviorists tailor the goals of intervention and types of reinforcers used to each child's needs based on their performance, as measured by direct observation and data tracking (Heflin & Simpson, 1987). Training parents of children diagnosed with ASD in behaviorism may improve

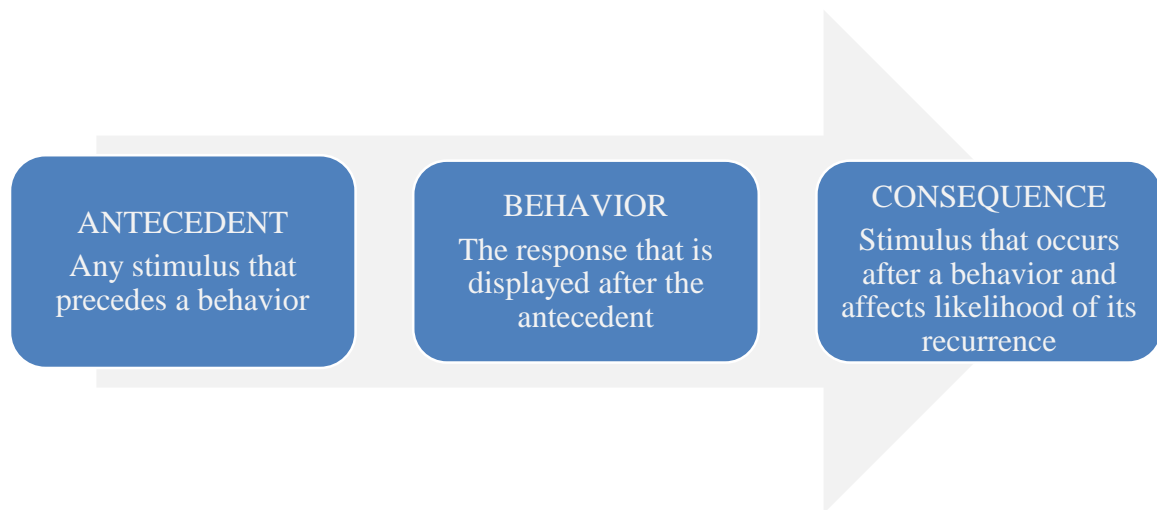
their knowledge of the causes of challenging behaviors and how data and observation can help them decrease those behaviors.

Antecedent-Behavior-Consequence Model

Behavior can be understood through an assessment based on the antecedent-behavior-consequence (ABC) model (Figure 1), which involves direct observation of behavior with no manipulation of the environment (Pence & St. Peter, 2018). One type of descriptive assessment is ABC recording, which involves repeated observations to identify a pattern of antecedents and consequences contributing to a problem behavior (Lerman & Iwata, 1993).

Figure 1

Steps of the Antecedent Behavior Consequence Model



Note: Adapted from Cooper et al. (2007).

An antecedent is an environmental condition that occurs before a behavior of interest (Cooper et al., 2007). The preferred method for determining which behaviors to target for change is to make direct and repeated observations of an individual's behavior in his or her natural environment (Cooper et al., 2007). ABC recording (also called *anecdotal observation*) is a basic form of direct continuous observation described by

Bijou et al. (1968). With this technique, an observer records a descriptive, temporally sequenced account of all of an individual's behaviors of interest along with the behaviors' antecedent conditions and consequences in the individual's natural environment (Cooper, 1982). The technique produces behavioral assessment data that support the identification of potential target behaviors.

Problem of Practice

Early intervention is crucial for children with ASD (Matson et al., 2008). Children with ASD often require academic-related interventions and benefit from behavioral interventions (Matson et al., 2008). For example, Hastings and Brown (2002) found that aggression toward others occurred in up to 68% of studied 6–14-year-old individuals diagnosed with ASD. They also found a high probability that the problem behaviors of a child diagnosed with ASD, such as aggression, resulted in increased stress levels for the child's parents (Hastings & Brown, 2002). Behavioral parent training needs to be accessible (i.e., activities need to fit within their busy schedules), flexible, and affordable to be successful (Hastings & Brown, 2002). The problem of practice addressed by the study was to provide parents with a tool, the ABC model, that is intended to reduce challenging behaviors in their children and assist in the reduction of the parental stress levels.

Impact of the Work

Direct assessment utilizing the ABC model is a useful way for parents to make convenient, free, systematic, and efficient observations of their children's challenging behaviors in a way that permits them to identify situations that may set up (i.e., antecedents) and maintain (i.e., consequences) these behaviors. The present study

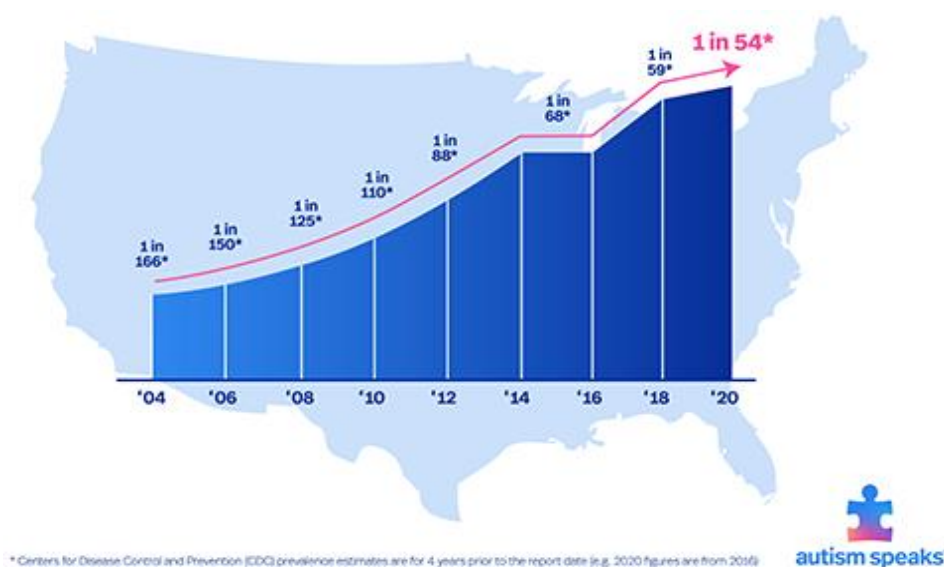
contributes to the existing literature by investigating whether training parents to use ABC narrative recording charts improves their understanding of behavioral principles, as well as in parents' confidence in discussing their child's challenging behaviors with others.

National Context

As shown in Figure 2, the CDC estimates that 1 in 54 children in the United States is diagnosed with ASD in 2020 (Maenner et al., 2020).

Figure 2

Historical Autism Spectrum Disorder Prevalence and Estimated Prevalence in 2020



Note: From Autism Speaks, n.d.

Laws

At the time of writing, several federal laws apply to students with ASD. In kindergarten through 12th grade, public school students whose ASD symptoms interfere with their educational progress are eligible for services under the Individuals with Disabilities Education Improvement Act (IDEIA) of 2004. The Presumption of Lawful Admission 34 CFR § 300.8 “defined *autism* as a developmental disability significantly affecting verbal communication, nonverbal communication, and social interaction and

associated with engagement in repetitive activities, stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences.” The IDEIA requires every student identified for special education services to have an individualized education program (IEP). A student’s IEP is a legal document developed in collaboration with parents, educational professionals, and students that details their academic and behavioral plans. Federal and state regulations are associated with the IDEIA. They include procedural safeguards designed to protect the rights of children with disabilities and their parents and, at the same time, give families and school systems several mechanisms by which to resolve disputes (U.S. DOE, 2018).

Students not requiring an IEP are entitled to protections under the Americans with Disabilities Act (ADA) of 1990. Legislators designed this section of the act to protect the rights of individuals with disabilities in programs and activities that receive financial assistance from the U.S. Department of Education. Section 504 of the Rehabilitation Act of 1973 (34 CFR part 104) prohibits discrimination based on disability in programs conducted by federal agencies, in programs receiving federal financial assistance, in federal employment, and in the employment practices of federal contractors. A student with a 504 plan would be entitled to assistance in the specific areas affected by his or her disability but would not receive an IEP. Both the ADA and Section 504 of the Rehabilitation Act center around the flexibility of procedures and regulations. Both require school districts to provide a free appropriate public education to every qualified student with a disability within the school district’s jurisdiction, regardless of the nature or severity of the disability (U.S. DOE, 2020).

Best-Practice Guides

Several authors of rigorous evidence-based guidelines (see Figure 3) have addressed ASD-related services and practices. For example, the Missouri Autism Guidelines Initiative (2012) highlighted two national standards that described several evidence-based interventions for individuals with ASD:

- Antecedent interventions involve modifying situational events that precede a target behavior to decrease the behavior's likelihood.
- In behavioral intervention, basic behavior change principles are used to reduce problem behaviors and teach alternative behaviors or skills; treatments in this category often involve a complex combination of behavioral procedures used to treat severe behavioral problems.

Assessment for intervention planning requires collaboration with family members to prioritize the domains of functioning to be addressed. These should be based on family concerns, a child's level of functioning, and access to resources, along with clinical indicators, intervention history, and prior assessment results (MAGI, 2012).

Figure 3

Evidence-Based Practices



Note: Adapted from MAGI (2012)

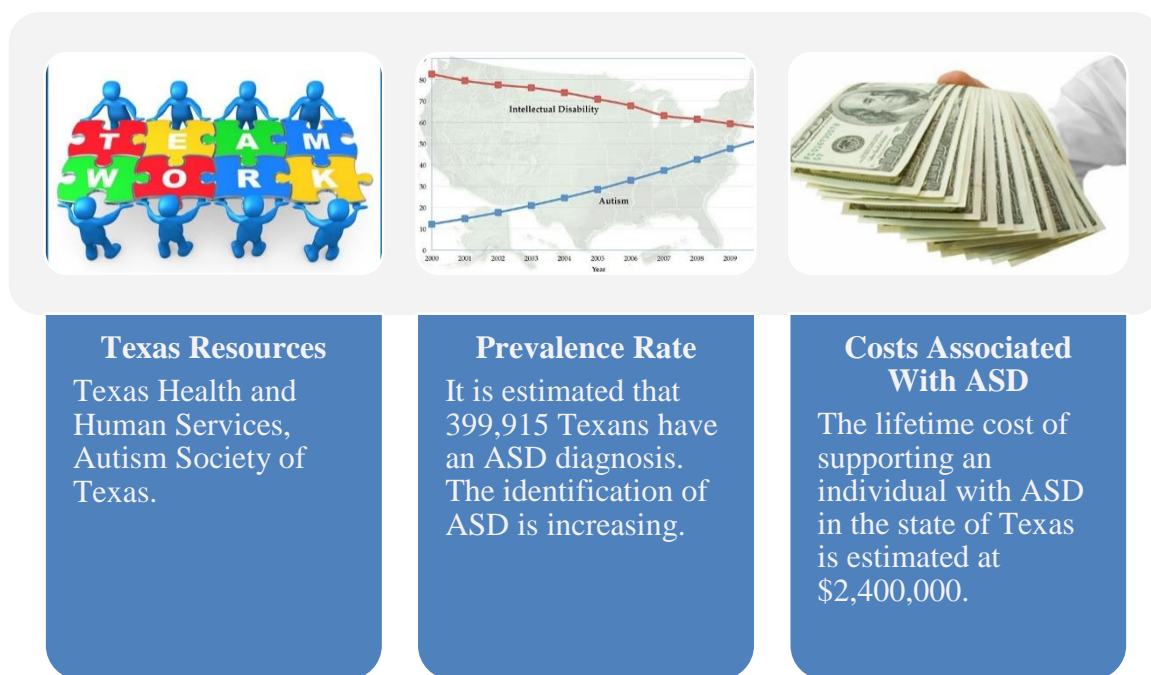
The National Institutes of Health (2019) encourages cutting-edge research to address the need for high-quality services and support for individuals and families affected by ASD, such as research into ways to make interventions more accessible across settings.

The Combating Autism Act of 2006 requires the U.S. Department of Health and Human Services to invest in strategies to help infants, children, and adolescents who have ASD or are at risk of developing ASD by

- developing a system of services that includes screening children early for possible ASD and other developmental disabilities;
- awarding 13 state grants to improve access to comprehensive, coordinated health care and related services;
- addressing the shortage of health-care professionals qualified to provide screening and diagnostic evaluation for ASD and other developmental disabilities; and
- partnering with the Arc of the United States to establish the National Resource and Information Center on Autism Spectrum Disorder and Other Developmental Disabilities.

State Context

Figure 4 summarizes some aspects of ASD in Texas at the time of writing. In the 2018–2019 school year, 71,951 (13.5%) Texas students were classified as meeting the educational classification for ASD and received special education services.

Figure 4*Autism Spectrum Disorder (ASD) Fact Sheet*

Note: Adapted from “Texas Autism Facts” (2019).

At the time of writing, Texas has multiple sources of support, training, and general resources available for individuals with ASD and their parents and teachers. The sections that follow discuss. The resources highlighted were chosen because of their easy accessibility for parents and teachers.

Texas Statewide Leadership for Autism Training

The Texas Statewide Leadership for Autism Training website provides professional development, technical assistance, and resources for educators serving students with ASD. The website includes complete online courses, webinars, information on opportunities for a more in-depth understanding of ASD, a video library, and a blog.

Texas Autism Circuit

The Texas Autism Circuit provides access to specific, user-friendly tools and techniques for students with ASD. The circuit has recorded webinars on evidence-based practices identified by the National Professional Development Center on Autism Spectrum Disorder. The training is free for educators working for local education agencies anywhere in Texas.

Texas Autism Resource Guide for Effective Teaching

The Texas Autism Resource Guide for Effective Teaching website is divided into two sections: evaluations and interventions. Its creators designed it to help schools develop practices from initial referral through program development to implementation, emphasizing research-based and peer-reviewed strategies.

Texas Health and Human Services

Texas Health and Human Services, a state government agency, provided services through grant contracts with local community agencies and organizations that provide ABA and other positive behavior support strategies. These programs help improve the quality of life for children with ASD and their families. Practitioners within these programs use focused ABA treatment to target specific behaviors that minimize a challenging behavior or maximize a social or adaptive skill within a particular area. The agency limits physically/in-person treatment to 180 hours within 12 months and 720 hours during a child's lifetime. The agency also requires parental participation in online parent training as part of the treatment.

Texas Project First

Texas Project First is created by parents, for parents. This network site provides accurate and consistent information for parents and families of students with disabilities ranging from ages 0 to 21 years old.

Study Variables

Hayes and Watson (2013) and May et al. (2015) have demonstrated the importance of training parents in behavioral strategies in order to positively affect their children's behaviors. These researchers have also shown the effectiveness of parents identifying the functions of their children's behaviors and becoming better advocates on behalf of their children's behavioral needs as they communicate those needs to professionals. Given these factors, variables pertinent to the present study were parent training on the theory underlying and using ABC narrative recording charts (independent variables); and parents' understanding of basic behavioral principles and parents' confidence in discussing their child's challenging behaviors with others (dependent variables).

Research Question

A single question guided the study: To what extent, if any, does parent training on the use of ABC narrative recording charts improve parents' understanding of basic behavioral principles, as well as the parents' confidence in discussing their child's challenging behaviors with others?

Chapter II

Review of Literature

The literature review aimed to explore the existing body of work related to the science of behavior analysis. In particular, the application of behaviorally-based parent training on the use and understanding of the ABC model, and how knowledge of this strategy may ultimately increase parents' knowledge of their children's challenging behaviors.

Parental Impact of ASD

ASD is a neurodevelopmental diagnosis characterized by rigid and repetitive behaviors and difficulties with social communication and interactions (APA, 2013). Although not one of the diagnostic criteria, problem behavior is almost ubiquitous among those with ASD and may be more severe in ASD than those with typical development or with intellectual disability (Blacher et al., 2006). Problem behaviors exhibited by those with ASD include self-injury, running away, aggression, property damage, and inappropriate behavior in public. Extreme irritability (e.g., anger, frustration, distress, and meltdowns) and persistent noncompliance with everyday demands also present considerable challenges. McGuire et al. (2016) identified these behaviors as important treatment targets for children with ASD. Parents have reported as particularly problematic those behaviors in their children that require constant supervision, make the children stand out from others, or provoke others' embarrassment or annoyance (Ruef & Turnbull, 2002). Scholars writing about interventions for children with ASD have consistently stated that parents should play a collaborative and active role in designing and implementing their children's intervention services (Brookman-Frazee et al., 2009;

Marcus et al., 2005; Rogers & Vismara, 2008). Studies of those with diagnoses other than ASD are instructive. When parents of those with diagnoses other than ASD are trained to become actively involved as change agents in their children's treatment, improvements extend beyond their observed symptoms. Researchers enlisting parents as intervention providers have documented increased self-efficacy and competence, generalization to other family members, and longer maintenance of treatment gains (Eyberg et al., 1998; Schopler & Mesiboy, 1994; Schuhmann et al., 1998).

Challenging Behaviors

Challenging behaviors include maladaptive or problem behaviors, which are abnormal behaviors of an individual that deviate from the individual's culture in frequency, intensity, or duration and have the potential to cause harm or significant hardship to the individual, those around him or her, and the environment (Emerson et al., 2001). Researchers investigating ASD have described the adverse effects of behavior problems on family functioning, such as increased parental stress, depression, anxiety, marital discord, decreased family adjustment, cohesion, emotional expression, attachment, and well-being (Lesack et al., 2014).

Challenging behaviors, particularly self-injurious behaviors, may threaten the physical safety of the person engaging in them (Schroeder et al., 1980). Other challenging behaviors, such as physical aggression, may cause physical harm to individuals near the person engaging in them (Mukaddes & Topcu, 2006). Challenging behaviors may also significantly limit an individual's access to community facilities or activities (Emerson et al., 2001) and increase the stress of parents or caregivers (Mandell & Salzer, 2007). Challenging behavior also increases the probability of the use of psychotropic medication

or restraints (Antonacci et al., 2008) and disrupts skill acquisition (Carr et al., 1991). Examples of problem behaviors include hand flapping, noncompliance, inappropriate vocalizations, out-of-seat behavior, and aggressive and self-injurious actions (Matson et al., 2013).

Children with ASD engage in more severe and frequent challenging behaviors than children following typical development (Matson & Wilkins, 2009). Without appropriate intervention, these behaviors tend to persist across an individual's lifespan (Murphy et al., 2009). Dominick et al. (2007) found that 98% of children with ASD studied exhibited at least one associated behavior problem. The most common abnormal behaviors associated with ASD were unusual eating habits, irregular sleep patterns, temper tantrums, aggression, and self-injurious actions (Dominick et al., 2007). Unusual eating habits include excessive food selectivity by type and texture, food refusal, and eating rituals. Irregular sleep patterns in children with ASD include the overall amount of sleep, sleep quality, difficulty falling asleep, frequent waking during the night, and waking very early in the morning. Sleep difficulties are more common in younger children and are related to aggression, impulsivity, self-injurious behavior, and tantrums (Dominick et al., 2007).

Temper tantrums and noncompliance are common in young children with ASD and tend to decrease with age. Researchers have not found a universal primary cause for temper tantrums in children with ASD. However, changes in routine and denial of a preferred activity or object were the most common causes cited (Hastings & Brown, 2002). Dominick et al. (2007) reported that 70% of those with ASD studied experienced temper tantrums, and 60% of those had tantrums daily.

Researchers have cited aggression toward self and others as the most recurrent and disruptive behavior problem associated with ASD. In addition to the apparent danger to the aggressive child and others, aggression can also interfere with the child's learning environment, academic progress, and daily living skills (Dawson et al., 1998). Koegel et al. (1994) concluded that 33%–38% of children with ASD engage in self-injurious behavior and aggression toward others. The most common types of self-injurious behavior, as documented by Dominick et al. (2007), included headbanging (65%), hitting oneself (50%), and biting oneself (30%). For 92% of the children sampled by Dominick et al., the child-directed aggression at more than one person. The most common targets of aggression were parents (88%), siblings (75%), and teachers (70%).

The frequent co-occurrence of associated behavior problems—along with their severity, early age of onset, and persistence throughout adolescence—highlight how stressful family members may find adjusting to a child with ASD. This problematic period has significant implications for family functioning. For example, Hastings, Kovshoff, & Brown et al. (2005) and Hastings, Kovshoff, & Ward et al. (2005) linked maternal stress directly to child behavior problems, and behavior problems predict parental stress more significantly than does intellectual disability (Baker, Blacher, Crnic, & Edelbrock, 2002).

With the high prevalence of challenging behaviors exhibited by individuals with ASD (Baghdadli et al., 2003), parents must learn strategies that decrease a wide range of problems, including aggression, noncompliance, and self-injurious behaviors. Parents should learn strategies that replace these undesirable behaviors with a wide range of desirable behaviors, including self-help, adaptive skills, communication, and compliance.

The proposed study focuses on parent training that improves parental knowledge of the function of behavior across all settings (home, school, and community) before, during, and after the behavior.

Parent Training

Many researchers have reported parental involvement as a part of their treatment designs (Lovaas, 1987; MacDonald et al., 2014; Smith et al., 2010). Parents can provide learning opportunities outside of treatment sessions that assist with skill-building, generalization, and coordination of care (Drew et al., 2002; Kasari et al., 2015; Laski et al., 1988; Smith et al., 2010). Parent training programs can provide interventions in the home that help improve the way children with ASD interact with their families and the community. Parents' use of these skills in the home with their children may decrease their children's behavior problems while increasing functional communication (Koegel et al., 1998), flexibility and adaptability, and parent-child relationships (Solomon et al., 2008). Researchers investigating specific interventions have shown that parental involvement in implementing interventions reduces children's problem behaviors and improves their language and communication skills (Fava et al., 2011). Strauss et al. (2012) confirmed that parental involvement in training and continuous treatment at home increases treatment success for children with ASD. Strauss et al. found that parental stress often decreases with low-intensity interventions and increases with the application of high-intensity interventions.

Parent Education Training Approaches

Parent training is a treatment designed to reduce child behavior problems by teaching parents to interact more effectively with their children. Parent training is a

component of many behaviorally-based approaches to treating children with ASD (Silverman & Hinshaw, 2008). Silverman and Hinshaw (2008) recommended parent training as a best practice for parents of young children with disruptive behavior problems. Researchers have shown it to be effective with children who have developmental disabilities.

The prevalence of ASD has increased, leading to a strong need for efficient, cost-effective, and empirically supported treatments (Wing & Potter, 2002). The average age of diagnosis is four years, so many children with ASD undergo treatment at a young age. The National Research Council (2011) suggested that parental involvement in treatment is essential for rapid gains and consistency. For school-aged children and adolescents, parental involvement in treatment programming is also highly desirable (Brookman-Frazee et al., 2009). Although the nature of parental involvement varies widely between different programs, families, and children, the most common form of parental participation has relied on parent education, in which parents learn techniques for working with their children so that intervention can continue in the absence of a professional (Steiner et al., 2012).

Because parents spend more time with their children throughout the day and week than any service provider can, they can provide “around-the-clock intervention” (Koegel & Koegel, 1995, p. 25) for their children. Parent education can address the issue of generalization faced by service providers, who often see children in restricted settings, such as a room in a clinic. In contrast, parents can provide learning opportunities for their children in many natural environments, such as at home and in the community. Including parents in their children’s habilitation is cost-effective and can increase children’s

progress by increasing their support throughout the day (Cordisco et al., 1988).

Researchers have documented that parents who learn a variety of effective strategies for teaching their children with ASD experience reduction of problem behaviors (Koegel et al., 1992), improved communication (Anderson & Romanczyk, 1999), sleep habits (Reed et al., 2009), joint attention (Kasari et al., 2010), social skills (Sofronoff et al., 2004), and self-help skills (Kroeger & Sorensen-Burnworth, 2009).

By learning strategies that they can use to help their children improve their behaviors, many parents experience reduced parental stress. This is particularly true when parents develop increased self-efficacy and when parent education programs fit naturally into everyday routines (Hastings & Symes, 2002).

The many teaching formats devised differ in the degree of intervention, mode of treatment delivery, therapeutic components provided, and targeted recipients (Marcus et al., 2005). The techniques taught are often similar regardless of the type of behavioral education program parents attend and the behaviors they wish to target (Steiner et al., 2012).

Because of the significant needs of children with ASD and the growth in this population, new service delivery models have emerged that aim to reach a large number of families. Such models include group parent education programs (Openden, 2005) and combined group and individual programs (Ingersoll & Dvotsak, 2009).

Advances in technology have also played a role in the development of parent education. Improvements have included the increasing availability of video equipment and DVDs and the use of self-directed technological training programs (Nefdt et al., 2010). Web-based applications have also become a promising approach to parent

education (Vismara et al., 2009). Distance education methods have helped decrease the number of families unable to receive training because they live remotely or have other transportation obstacles.

Skills parents learn in parent education programs may help them manage their own emotions, cognition, and behavior. Some have proposed parent education programs for parents of children with ASD that include counseling components or focus exclusively on counseling. Parent participants reported a significant improvement in their ability to cope with parenting stress and reduce guilt, negative thoughts, and attributions and symptoms of depression (Blackledge & Hayes, 2006).

Reducing the frequency and intensity of challenging behaviors is typically a top priority for family members of children with ASD. Helping family members intervene in these children's behavior problems is a theme with its roots in the earliest efforts of pioneering behavioral scientists (Hawkins et al., 1966). Positive behavior support applied in a family-centered context helps parents develop the skills they need to support and manage their children's behavior (Carr et al., 1991).

Researchers have suggested that early and sustained behavioral intervention is critical for successful adaptation in most children with ASD (AAP, 2011). Reichow (2012) conducted a meta-analysis and found support for the claim that early intensive intervention is an effective strategy. Singer et al. (2007) conducted a review and concluded that among parents of children with developmental disabilities, programs targeting parental well-being and cognitive-behavioral parent training were more beneficial than programs using just one of these methods.

Researchers have also found that training programs are beneficial for both children and their parents (Kaminiski et al., 2008). Kaminiski et al. reviewed different training programs for parents with young children with behavioral problems. Many factors promote positive results for children, including focusing on communication, emotions, proper use of time-outs, and the usefulness of parenting consistency. Researchers have also focused directly on the training of parents of preschool children with ASD. Drew et al. (2002) found that children with trained parents made more progress with language than those using local services alone. McConachie et al. (2005) studied children aged 24–48 months suspected of having ASD and found similar effects. After parents received training, both the parents and their children improved their communication skills significantly, and the children developed greater vocabularies.

Theory of Behaviorism

Behaviorism is worth examining because it has been one of the most widely used theoretical orientations underlying effective treatment strategies for children with ASD. Cooper et al. (2007) defined behaviorism as “the philosophy of the science of behavior, basic research the province of the experimental study of behavior, and developing a technique for improving behavior is the concern of ABA” (p. 7).

In the early 1900s, psychology was considered the study of states of consciousness, images, and mental process. John B. Watson is well thought about as the leading pioneer psychologist in the development of behaviorism. In his significant article, “Psychology as the Behaviorist Views It,” Watson (1913) wrote:

Psychology as the behaviorist views it is a purely objective experimental branch of natural science. Its theoretical goal is the prediction and control of behavior.

Introspection forms no essential part of its methods, nor in the scientific value of its data dependent upon the readiness with which they lend themselves to interpretation in terms of consciousness (p. 158).

Skinner (1938) inaugurated the experimental branch of behavior analysis by summarizing the laboratory research he had conducted between 1930 and 1937 and bringing into perspective two kinds of behavior: respondent and operant (Cooper et al., 2007). Skinner's colleagues Ferster and DeMyer (1961a, 1962) made the first experimental analysis of children's behavior with ASD. Ferster and DeMyer (1961a) provided an initial conceptual analysis of those with ASD's behavior by explaining it in operant terms. They noted that ASD in children could be defined in part as a lack of responsiveness to delayed conditioned reinforcers, behavioral deficits (such as inadequate language repertoires), absence of certain forms of stimulus control, and aversive social behaviors.

Ferster and DeMyer (1961b) provided what may be the first and only report of basic behavioral pharmacology research using both an operant apparatus and operant measures and a within-individual replication design to analyze the behavior of a child with ASD (Morris & Fouquette, 2009). Although Ferster (1966) did not report any additional pharmacology research, Ferster and DeMyer published further work on ASD analysis and treatment.

Respondent Behavior

Respondent behaviors are triggered by stimuli that immediately precede them. Such antecedent stimuli form a functional component called a reflex. Respondent

behaviors are involuntary and occur whenever the triggering stimuli are present (Cooper et al., 2007).

Operant Behavior

Fuller (1949) made the first report of operant conditioning concerning a human. An 18-year-old man with a severe intellectual disability could not roll over and would only lie on his back. Fuller filled a syringe with a warm solution of sugar in milk and injected it into the man's mouth every time he moved his right arm, which he could move but moved only infrequently. Within four sessions, the man moved his arm to a vertical position at a rate of 3 times per minute. Operant behavior is any behavior whose future frequency is determined primarily by its history of consequences. It is selected, shaped, and maintained by the consequences that have followed it in the past (Cooper et al., 2007).

Skinner's most powerful and fundamental contribution to understanding behavior was his discovery and experimental analyses of the effects of consequences on behavior. Skinner (1938) argued that the analysis of operant behavior "with its unique relation to the environment presents a separate important field of investigation" (p. 438). He named this new science the experimental analysis of behavior and outlined the methodology for its practice.

Skinner's investigative procedures evolved into an experimental approach that enabled clear and powerful demonstrations of orderly and reliable functional relations between behavior and various types of environmental events (Cooper et al., 2007).

Skinner has had a more significant influence than anyone else on guiding the science of behavior and proposing behavior principles (Cooper et al., 2007).

Applied Behavior Analysis

During the 1950s and into the early 1960s, researchers used experimental analysis of behavior to determine whether the principles of behavior demonstrated in the laboratory with nonhuman subjects could be replicated with human learning of behavior (Cooper et al., 2007). Bijou (1955) researched several behavior principles among people developing typically and people with intellectual disabilities. Baer (1960) examined the effects of punishment, escape, and avoidance contingencies on preschool children. Ferster and DeMyer (1961a) conducted a systematic study of behavior principles in children with ASD. Finally, Lindsley (1956) assessed the effects of operant conditioning on the behavior of adults with schizophrenia. These early researchers established that the principles of behavior apply to human behavior, and they set the stage for the later development of ABA (Cooper et al., 2007).

Ayllon and Michael (1959) established ABA as a type of behavior analysis. The authors described how direct care personnel in a state hospital used various techniques based on behavior principles to improve residents' functioning with psychotic disorders or intellectual disabilities.

Baer et al. (1968) recommended that ABA should be (a) applied, (b) behavioral, (c) analytic, (d) technological, (e) conceptually systematic, (f) effective, and (g) capable of appropriately generalized outcomes. Baer et al. (1987) reported that 'these seven self-conscious guides to behavior analysis "remain[ed] functional" 20 years later' (p. 319). The sections that follow discuss each characteristics recommended by Baer and colleagues, in turn. This research provides basic behavior characteristics that may be helpful in the training of parents in the ABC model.

Applied. Researchers and practitioners must commit to effecting improvements in behaviors that enhance and improve people's lives. A researcher or practitioner changes behaviors that are significant for participants' social, linguistic, academic, daily living, self-care, vocational, or recreation and leisure activities and improves participants' day-to-day life experiences.

Behavioral. A behavior chosen for study must require improvement and not be a similar behavior that serves as a replacement for the behavior of interest or the participant's verbal description of the behavior. The behavior must be measurable. When observing changes in behavior during an investigation, it is necessary to ask whose behavior has changed: "Explicit measurement of the reliability of human observers becomes not merely good technique, but a prime criterion of whether the study was appropriately behavioral" (Baer et al., 1968, p. 93).

Analytic. Once an experimenter has demonstrated a functional relationship between manipulated events and a reliable change in some measurable dimension of the targeted behavior, the experimenter must be able to control the occurrence and nonoccurrence of the behavior. This control provides functional and replicable relationships between the interventions it recommends and socially significant outcomes (Baer, 1982).

Technological. An author must identify and describe all operative procedures with sufficient detail and clarity "such that a reader has a fair chance of replicating the application with the same results (Baer et al., 1987, p. 320). The development of a replicable technology of behavior change has been a defining characteristic and

continuing goal of ABA. Behavioral tactics must be replicable and teachable to others (Cooper et al., 2007).

Conceptually Systematic. Researchers and practitioners must account for procedures for changing behavior and any interpretations of how or why those procedures were effective. Baer et al. (1968) provided a strong rationale for using conceptual systems in ABA. Relating specific procedures to basic principles enables readers to understand other similar procedures from the same principles.

Effective. An effective application of behavioral techniques improves the behavior under investigation to a practical degree. An application's power to alter behavior enough to be socially important is the essential criterion of effectiveness (Baer et al., 1968, p. 96). Baer et al. (1987) recommended judging ABA's efficacy by the extent to which changes in target behaviors result in noticeable changes in the reasons those behaviors were initially targeted for change.

General. Generality manifests when changes in targeted behavior occur in nontreatment settings or situations as a function of treatment procedures. Generality also exists when behaviors change that were not foci of an intervention. Desirable generalized behavior changes are important outcomes of an ABA program because they represent additional behavioral improvement (Cooper et al., 2007).

Additional Characteristics of Applied Behavior Analysis

ABA offers society an approach toward solving problems that is:

- accountable, because practitioners use direct and frequent measurement to detect successes and failures so that they can change failures into success (Greenwood & Maheady, 1997);

- visible, public, explicit, and straightforward (Heward, 2005, p. 322);
- practical, in that classroom teachers, parents, coaches, workplace supervisors, and sometimes the participants themselves often implement effective interventions, and although ABA requires more than learning how to administer a few simple procedures, it is not prohibitively complicated or arduous (Heward, 2005, p. 322);
- empowering, because ABA gives practitioners real tools that work, and knowing how to do something and having the tools to accomplish it instills practitioners with confidence (Cooper et al., 2007); and
- optimistic because direct and continuous measurement allows practitioners to detect small improvements in performance that might otherwise be overlooked (Cooper et al., 2007).

The more often a practitioner uses behavioral tactics with positive outcomes, the more optimistic they become about future success (Cooper et al., 2007). Although not among ABA's defining dimensions, the characteristics listed above help increase the extent to which decision-makers and consumers look to behavior analysis as a valuable and important source of knowledge about achieving improvements (Cooper et al., 2007).

ABA's framework is rooted in the dimensions outlined by Baer, Wolf, and Risley (1968). Using the dimensions of ABA ensures that the interventions are data-driven and supported by research, that the interventions are effective and socially significant to the individuals, and that interventions are closely monitored to ensure consistent progress or to make modifications to interventions and when necessary.

In summary, since the early 1960s, numerous researchers have investigated ABA's use as a behavior intervention with children of all ages with ASD. ABA has

remained one of the most popular and widely used treatment strategies for children with ASD. The National Research Council (2011) described a wide variety of ABA-based interventions developed for use in both structured situations and natural everyday situations and both one-on-one and group settings. According to Kazdin (2008) and Morris et al. (2008), the research and behavioral interpretation of Ferster and DeMyer (1961b) provided a fresh basis for studying the behavior of those with ASD. Years later, their research influenced Bijou's decision to assign a clinical case to Risley and Wolf.

Parent Knowledge

Researchers have shown interventions based on ABA (i.e., behaviorally-based interventions) to be effective for children with a wide range of cognitive, adaptive, and functional abilities (Helton & Alber-Morgan, 2018). The principles of ABA are complex, which can limit parents' knowledge of behaviorally-based interventions. However, providing parents with clear and concise information in the form of brief training on the ABC approach to charting their children's behaviors can significantly facilitate and extend parents' knowledge about their children's behavioral challenges and how to successfully address these.

Several researchers have shown that parents can successfully learn interventions and then use them with their children, leading to benefits for the children as individuals and their whole families (Brookman-Frazee et al., 2006). Some investigators have described the perceived unmet needs of families of children with ASD. Dillenburger et al. (2004) explored ways to close the ever-widening gap between need and service and reported that various researchers and interventionists have looked to parents as a possible means for providing some of the critical evidence-based treatment their children require.

Parents reported that they needed information regarding teaching strategies, behavior management, and availability of services.

Principles of Interventions for Parents of Children with ASD

Although the core features of ASD and the behavioral problems associated with the disorder can significantly impact family functioning, family problems can also negatively impact children's behavioral adjustment. The reciprocal relationship between a child's behavior problems and family dysfunction means that early intervention must focus not only on reducing the child's behavior problems but also on improving family functioning so that family members can help maintain improvements in the child's behavior (Harris, 1994; Pakenham et al., 2005; Rogers & Vismara, 2008). Positive outcomes for other members of the child's family, such as reduced stress and increased competence, must therefore be a focus of treatment (Brookman-Frazee et al., 2006; Kasari, 2002; Marcus et al., 2005; Rogers & Vismara, 2008; Schopler & Mesibov, 1994; Schuhmann et al., 1998).

Parent training and family-based programs commonly aim to increase appropriate child behavior, decreasing inappropriate child behavior, decrease inappropriate child behavior, enhance family functioning, and improve family relationship quality. Marcus et al. (2005) argued that although these goals are appropriate for families of children with ASD, each family's needs require individualized assessment. It is important to identify goals that address stressors specific to individual family members and stressors common to families of children with ASD. The three general principles of family-based intervention most applicable to families of children with ASD are (a) emphasis on collaborative parent-professional relationships that respect family views, (b)

conceptualization of parent-child relationships through a transactional model established and maintained over time, and (c) individualization to both the family's and child's specific needs (Marcus et al., 2005).

Marcus et al. (2005) identified the eight general approaches to family-based interventions that are most important when treating families of children with ASD: (a) education, (b) enlisting parents as therapists, (c) a behavioral approach, (d) targeting relationship enhancement, (e) a cognitive approach, (f) providing emotional support, (g) providing instrumental support, and (h) advocacy training.

The education approach of the Treatment and Education of Autistic and Related Communication-Handicapped Children (TEACCH) involves principles that change the person's behavior and skill level and expand an environment that matches their needs. Enlisting parents as co-therapists is a strategy that includes training parents in behavior management techniques or how to implement instructional techniques. Family members apply these learning principles to the child's education and management intervention using the behavioral approach. For example, family members learn to use shaping, extinction, positive reinforcement, and relaxation techniques. Family members learning the cognitive approach discover how to modify behavioral and emotional responses with cognitive techniques such as problem-solving and self-monitoring. Relationship enhancement focuses on helping families increase the parent-child relationship's positive aspects while decreasing the negative aspects. Family members learn about attending skills, child-directed playtime, and how to deliver effective commands. The emotional and instrumental support approaches help family members by providing empathy and problem-solving support or assistance obtaining access to services and resources.

Advocacy training helps family members develop the skills needed to advocate for the child's needs across his or her lifetime (Marcus et al., 2005).

Summary

This chapter reviewed the literature regarding the application of behaviorally-based parent training on the use and understanding of the ABC model, and how knowledge of this strategy may ultimately increase parents' knowledge of their children's challenging behaviors. When parents can identify the ABC components of their children's behavior, their knowledge of the children's challenging behaviors improves. Using a behaviorally-based approach using ABC recording techniques, a parent can learn how best to identify the stimuli that occur just before their child exhibits challenging behavior, what behavior follows, and the consequences subsequent to the behavior's occurrence. Once taught to use ABC recording, parents can quickly identify their children's challenging behaviors, which leads to positive outcomes for both children and parents. The present study contributes to the literature on this subject by empowering parents to understand that they can diminish challenging behavior when they know the root causes of those behaviors.

Chapter III

Method

Reducing the frequency and intensity of challenging behaviors is typically a top priority for parents of children with ASD. Helping parents intervene in their children's behavior problems is a theme with roots in pioneering behavioral scientists (Hawkins et al., 1996). Over the years, critics have raised concerns that approaches to parent training for the parents of children with severe disabilities have often downplayed barriers to treatment, such as stress and pessimism, that occur because of parents' attitudinal and motivational needs (Brookman-Frazee et al., 2006). The purpose of the study was to analyze whether training parents to use ABC model helped them to understand behavioral principles and feel confident about communicating with others regarding their child's needs. This is grounded in behavioral principles and theory for improving parents' understanding of basic behavioral principles and the parents' confidence in discussing their child's challenging behaviors with others.

Sample Demographics

Participants demographic characteristics such as race, marital status, and education level are shown in Table 1.

Table 1*Participant Demographics*

Variable	N (16)	Percent
Ethnicity		
Caucasian/White	11	68.8
Hispanic/Latino	1	06.3
African American/Black	4	25.0
Marital Status		
Married	10	62.5
Divorced/Separated	3	18.8
Single	3	18.8
Education level		
High school	1	06.3
Associate Degree	4	25.0
Some college	6	37.5
College	2	12.5
Graduate Degree	3	18.8

Of the 16 participants in the study, all but one reported their relationship as the child's mother. One participant reported 'other' as the relationship.

Child Characteristics. The participants' reported that 11 children were male, and five were female. The age ranged from 2 years of age to 24 years of age. The average age was 9.56, with a median of 8. All but three students were identified as having ASD and were receiving special education services at school, the other three were not completed so the information is not known. Three participants listed *None of the Above* as the option for whether or not the child qualified for special education services. The home language was reported as English by all participants.

Design

Demographic data were collected to help understand the background of participants. Analysis of participants' change in understanding basic behavioral principles and their confidence in discussing their child's challenging behavior with others relied on

descriptive and inferential statistics. The participants were trained in theories underlying and the use of the ABC model and in behavioral principles.

Study data were collected throughout the parent training. The data from the survey were analyzed using the Statistical Package for the Social Sciences (SPSS). The analysis occurred after the parent training took place. Answering the single research question required that descriptive statistics were computed, including the mean and standard deviation for each parent survey's primary items.

Research Question

A single question guided the proposed study: To what extent, if any, does parent training on the use of ABC narrative recording charts improve parents' understanding of basic behavioral principles, as well as the parents' confidence in discussing their child's challenging behaviors with others?

Procedures

Before participation, parents were provided a consent form to allow data from the surveys to be utilized for this study.

Recruitment. Parents were recruited from a parental support group in a large urban area in the South. The recruitment took place by word of mouth from friends and colleagues who had children classified as having ASD. The parents were told that the training was constructed to provide them with a framework for developing knowledge and improving their use of ABC narrative recording charts when discussing their children's challenging behaviors with others. Once parents agreed to participate, an email was sent out to indicate this was going to be a one-hour online training, and they were

asked to complete the pre-survey prior to the start of this training. They were then asked to download an ABC recording log.

Pre-Survey. Participants were asked to answer demographic data questions such as ethnicity, educational level, marital status, and child demographic data (see Appendix B). As part of this pre-survey, the participants also indicated their past training related to behavioral interventions, including ABC recordings. They were asked not to consider an ARD meeting or a doctor's visit as a training as those settings are typically information regarding education or health-related issues. Finally, the participants were asked to indicate which one of the following five choices best reflected his/her understanding of basic behavioral principles and confidence in discussing the child's behavior with others. The choices included:

1. I do not have confidence in my understanding of the basic behavioral principles, and therefore, I do not feel that I clearly articulate my child's behaviors with others.
2. I have minimal confidence in my understanding of the basic behavioral principles, and therefore I do not feel that I clearly articulate my child's behaviors with others.
3. I am mostly confident in my understanding of the basic behavioral principles, and therefore I feel that I can be semi-articulate about my child's behaviors with others.
4. I am confident in my understanding of the basic behavioral principles, and therefore I feel that I can mostly articulate my child's behaviors with others.

5. I am very confident in my understanding of the basic behavioral principles, and therefore I feel that I can clearly articulate my child's behaviors with others.

Module 1. Module 1 was one component of the parent training. Before this module started, the participants were asked to rate their response to their child's challenging behaviors. They had four options from which to pick, (a) excellent, (b) good, (c) average, or (d) poor. Module 1 was designed to provide parents with information about the theoretical and practical rationale for using a behaviorally-based approach to better understand and intervene with their children's challenging behavior. The content of Module 1 and the survey following Module 1 was based on Cooper et al. (2007). The twelve characteristics of Cooper et al. served as the basis for the content presented in Module 1 (a) applied, (b) behavioral, (c) analytic, (d) technology, (e) conceptually systematic, (f) effective, (g) generality, (h) accountable, (i) public, (j) doable, (k) empowering, and (l) optimistic. After completing Module 1, the participants were asked to complete a survey rating their understanding of twelve ABA characteristics.

Module 2. During this module, the participants learned how to use the ABC recording log (see Appendix C). An example was provided using a pre-determined targeted behavior to show how the participants can identify the antecedent, behavior, and consequence of the target behavior. After completing this module, the participants were asked to rate their competence level in identifying and describing examples of direct observation methods of a child's behavior. The three items were (a) I can identify examples of direct observation methods, (b) I can describe the direct observation methods, and (c) I can discuss my child's challenging behaviors with others.

Measure

The survey (see Appendix B) was a researcher-developed survey based on research in this area and the research focus. There were three sections to the survey. First, parents were asked to provide information before the online training about the demographics and past training. After the online presentation of Module 1, the survey continued with questions regarding their learning from Module 1. Finally, after Module 2, the parents finished the survey by responding to questions pertaining to confidence levels after this training.

The survey was reviewed by parents of children with ASD (they did not participate in this study) and colleagues. They indicated that the survey was easy to understand.

Cronbach Alpha. As this was a survey that did not have reliability data, a Cronbach Alpha was computed to determine the internal consistency of the items presented in the survey. Cronbach Alpha is reported at .974 on the 15 items (the non-demographic questions) and represents excellent reliability.

Analysis

Spearman Rank Correlation Coefficient was computed to test the strength of the association between parents' self-report of past training and their reported understanding of basic behavior principles during the pre-survey. Next, correlations between parents' reported response to their child's challenging behavior and their understanding of the characteristics of ABA as presented in Module 1 (described in Procedures) were computed. Finally, correlations between parents' composite scores and ratings of competency during Module 2 (described in Procedures) were computed. A composite

variable of the parents' responses to the understanding of the twelve ABA characteristics (12 single answers) was produced. This helped control for Type I error rate given the low sample size (Levy, 1972).

Chapter IV

Results

The purpose of this study was to determine whether training parents to use ABC narrative recording charts would help them understand behavioral principles and feel confident in discussing their child's challenging behaviors with others. This chapter describes the survey results collected after the parent training. The chapter starts with the descriptive statistics for the first survey and concludes with the correlational data based on the responses from the remainder of the survey questions.

Regarding their overall training related to ASD, behavioral interventions, including anecdotal observations (e.g., ABC recording). As shown in Table 2, most participants had read about ASD ($N=8$) but had not attended a training in person ($N=1$).

Table 2

Type of Past Behavioral Intervention Trainings

Type of Training	Frequency	Percent
None	5	31.3
Readings	8	50.0
Attended Online	1	6.3
Attended in person	1	6.3
Both in-person and online	1	6.3
Total	16	100.0

Parents' confidence in discussing their child's behavior with others is shown in Table 3.

Table 3*Participants Statement About Their Ability to Discuss Child's Behavior*

Belief Statement	Frequency	Percent
I do not have confidence in my understanding of basic behavioral principles	4	25.0
I have minimal confidence in my understanding of basic behavioral principles	7	43.8
I am mostly confident in my understanding of basic behavioral principles	4	25.0
I am confident in my understanding of basic behavioral principles	1	6.3
Total	16	100.0

Note. $M=2.13$, $SD = .885$

As shown in Table 3, the majority of participants had little to no confidence ($N=11$) in their understanding of basic behavioral principles prior to the delivery of Module 1.

Before presenting Module 1, participants were asked to rate their responses to the child's challenging behavior (see Table 4).

Table 4*Parents' Self-Reported Response to Challenging Behaviors*

Response	Frequency	Percent
Poor	5	31.3
Average	4	25.0
Good	3	18.8
Excellent	2	12.5
Total	14	87.5
Missing	2	12.5
Total	16	100.0

Note. $M=2.14$, $SD = 1.099$

Two participants did not respond to this question, while five responded *Poor* compared to two who responded *Excellent*.

Module 1 Results

After the presentation of Module 1, participants were asked to rate their understanding of the 12 characteristics of the ABA model. The analyses of the data are presented with the descriptive statistics (Table 5) followed by the correlations (Table 6).

Table 5

Descriptive Statistics for the ABA Model Questions

Components of ABA Model	N	Min	Max	Sum	Mean	SD
Applied	14	2	5	52	3.71	.914
Behavioral	14	2	5	53	3.79	.893
Analytic	14	2	5	53	3.79	.893
Technology	14	2	5	49	3.50	.760
Conceptual	14	2	5	50	3.57	.938
Effective	14	2	5	51	3.64	.929
Generality	14	2	5	53	3.79	.893
Accountability	14	2	5	52	3.71	.994
Public	14	2	5	52	3.71	.914
Doable	14	2	5	53	3.79	.975
Empowering	14	2	5	55	3.93	.997
Optimistic	14	2	5	55	3.93	.997
Valid N (listwise)	14					

For the correlation data, two views are presented below. First, the data are presented according to the individual components of Module 1 training (Table 6). As

described in Chapter 3, given the low n , a composite score of the components to the self-reported response to the child's challenging behavior (Table 7).

Table 6

Correlations between Parent Response to Challenging Behaviors and the ABA Model

($N=14$)

		Response to child's challenging behavior
Applied	Spearman Correlation	.749**
	Sig. (2-tailed)	.002
Behavioral	Spearman Correlation	.774**
	Sig. (2-tailed)	.001
Analytic	Spearman Correlation	.697**
	Sig. (2-tailed)	.006
Technology	Spearman Correlation	.436
	Sig. (2-tailed)	.119
Conceptually systematic	Spearman Correlation	.590*
	Sig. (2-tailed)	.026
Effective	Spearman Correlation	.504
	Sig. (2-tailed)	.066
Generality	Spearman Correlation	.697**
	Sig. (2-tailed)	.006
Accountable	Spearman Correlation	.558*
	Sig. (2-tailed)	.038
Public	Spearman Correlation	.749**
	Sig. (2-tailed)	.002
Doable	Spearman Correlation	.702**
	Sig. (2-tailed)	.005
Empowering	Spearman Correlation	.884**
	Sig. (2-tailed)	<.001
Optimistic	Spearman Correlation	.755**
	Sig. (2-tailed)	.002

Note. **Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed).

The results of the Spearman rank correlation analyses reveal there is a statistically significant, positive relationship between how the parent self-reports their responses to the child's challenging behavior and the parent's understanding of the following basic behavior principals after participating in Module 1: applied ($r_s = .749, p < .01$), behavioral ($r_s = .774, p < .01$), analytic ($r_s = .697, p < .01$), conceptually systematic ($r_s = .590, p < .05$), generality ($r_s = .697, p < .01$), accountable ($r_s = .558, p = .038$), public ($r_s = .749, p < .01$), doable ($r_s = .702, p < .05$), empowering ($r_s = .884, p < .01$), and optimistic ($r_s = .755, p < .01$).

Table 7

Correlation between Parents Response to Challenging Behaviors and the ABA Model: Composite Score

		Your Response
ABA Model	Correlation Coefficient	.785**
Composite Score	Sig. (2-tailed)	.001
	N	14

** Correlation is significant at the 0.01 level (2-tailed).

Table 7 shows a positive, statistically significant relationship ($r_s = .785, p < .01$) between the ABA model's composite score and the parent's response to their child's challenging behavior.

The next step was to conduct correlations between parents understanding of the twelve components of Module 1 and the parents' self-reported understanding of the basic behavior principles (Table 8).

Table 8*Correlations: Parents Understanding of Basic Behavioral Principles to the ABA Model**(n=14)*

		Parents stated level of understanding of basic behavioral principles
Applied	Spearman Correlation	.458
	Sig. (2-tailed)	.100
Behavioral	Spearman Correlation	.341
	Sig. (2-tailed)	.233
Analytic	Spearman Correlation	.341
	Sig. (2-tailed)	.233
Technology	Spearman Correlation	.234
	Sig. (2-tailed)	.421
Conceptually systematic	Spearman Correlation	.597*
	Sig. (2-tailed)	.024
Effective	Spearman Correlation	.411
	Sig. (2-tailed)	.144
Generality	Spearman Correlation	.441
	Sig. (2-tailed)	.115
Accountable	Spearman Correlation	.409
	Sig. (2-tailed)	.147
Public	Spearman Correlation	.546*
	Sig. (2-tailed)	.043
Doable	Spearman Correlation	.518
	Sig. (2-tailed)	.058
Empowering	Spearman Correlation	.693**
	Sig. (2-tailed)	.006
Optimistic	Spearman Correlation	.594*
	Sig. (2-tailed)	.025

Note. *Correlation is significant at the .05 level (2-tailed). **Correlation is significant at the .01 level (2-tailed).

The results were not so promising for the relationship between the parents' stated level of understanding of the basic behavioral principles and the twelve characteristics of the ABA model. For this, only three of the twelve showed a positive, statistically

significant relationship between parents' stated level of understanding of basic behavioral principles and the four basic behavior principles: Conceptually Systematic ($r_s = .597$, $p < .05$), Public ($r_s = .546$, $p < .05$), Empowering ($r_s = .693$, $p < .01$), and Optimistic ($r_s = .594$, $p < .05$).

Table 9

Correlations: Parents Understanding of Basic Behavioral Principles to the ABA Model: Composite Score

		Beliefs
Composite	Correlation Coefficient	.318
Score: ABA	Sig. (2-tailed)	.230
Training	N	16

The self-report of the understanding of basic behavioral principles to training did not show a statistically significant relationship ($r_s = .318$, $p < .05$).

Module 2 Results

After the online presentation of the second module, participants were asked to rate their confidence to identify and describe examples of direct observation methods of a child's behavior. The analysis of the data is presented in two formats. First, the data are presented according to the individual components of Module 2 training (Table 9) and then as a composite score of the components to the self-reported response to the self-report of the participants' ability to identify, describe, and discuss examples of direct observation methods (Table 10).

Table 10*Parent Self-Report on Their Level of Confidence of Direct Methods*

Survey Questions	N	Min	Max	Mean	SD
Identify Examples (ID)	14	3	5	4.07	.829
Describe Methods	14	2	5	3.79	.893
Discuss Behaviors	14	3	5	4.29	.726

Table 11*Correlations: Parents Self-Report on Level of Confidence to the ABA Model (n=13)*

Training Components		ID	Methods	Behaviors
Applied	Correlation Coefficient	.771**	.580*	.383
	Sig. (2-tailed)	.002	.038	.197
Behavioral	Correlation Coefficient	.809**	.639*	.340
	Sig. (2-tailed)	.001	.019	.255
Analytic	Correlation Coefficient	.684**	.639*	.498
	Sig. (2-tailed)	.010	.019	.083
Technology	Correlation Coefficient	.498	.711**	.083
	Sig. (2-tailed)	.083	.006	.788
Conceptual	Correlation Coefficient	.391	.469	.431
	Sig. (2-tailed)	.187	.106	.142
Effective	Correlation Coefficient	.399	.617*	.395
	Sig. (2-tailed)	.177	.025	.181
Generality	Correlation Coefficient	.684**	.751**	.498
	Sig. (2-tailed)	.010	.003	.083
Accountability	Correlation Coefficient	.702**	.747**	.458
	Sig. (2-tailed)	.007	.003	.116
Public	Correlation Coefficient	.771**	.679*	.521
	Sig. (2-tailed)	.002	.011	.068
Doable	Correlation Coefficient	.725**	.681*	.580*
	Sig. (2-tailed)	.005	.010	.038
Empowering	Correlation Coefficient	.839**	.506	.616*
	Sig. (2-tailed)	.000	.078	.025
Optimistic	Correlation Coefficient	.839**	.645*	.616*

	Sig. (2-tailed)	.000	.017	.025
--	-----------------	------	------	------

Note. **Correlation is significant at the .05 level (2-tailed). *Correlation is significant at the .01 level (2-tailed).

Spearman rank-order correlations were computed to assess the strength of the relationship between parents' self-report on their level of competence in identifying and describing examples of direct observation methods of a child's behavior and the twelve domains presented in Module 1. There were positive statistically significant relationships found between: applied ($r_s = .771, p < .05$, $.580, p < .05$), behavioral ($r_s = .809, p < .05$, $.639, p < .05$), analytic ($r_s = .684, p < .01$, $.639, p < .01$), technology ($r_s = .711, p < .05$), effective ($r_s = .617, p < .05$), generality ($r_s = .751, p < .05$), accountable ($r_s = .702, p = .05$), public ($r_s = .771, p < .05$), doable ($r_s = .725, p < .05$), empowering ($r_s = .839, p < .01$), and optimistic ($r_s = .839, p < .01$).

Table 12

Correlations: Parents Self-Report on Level of Confidence to the ABA Model: Composite Score (n=14)

		Composite Score
ID	Correlation Coefficient	.543*
	Sig. (2-tailed)	.045
Describe Methods	Correlation Coefficient	.437
	Sig. (2-tailed)	.118
Discuss Behaviors	Correlation Coefficient	.587*
	Sig. (2-tailed)	.027

Note. *Correlation is significant at the .05 level (2-tailed).

Participants' self-reported confidence to identify examples of direct observation methods that were statistically significant included applied, behavioral, analytic,

generality, accountability, public, doable, empowering, and optimistic related to their self-reported confidence level in ABA model. Three areas, technology, conceptual, and effective, related to their self-report confidence level in ABA model were not statistically significant.

Participants' self-reported confidence to describe direct observation methods that were statistically significant included, applied, behavioral, analytic, technology, effective, generality, accountability, public, doable, empowering, and optimistic. One area conceptual related to their self-reported confidence to describe direct observation methods in ABA model was not statistically significant.

Participants' self-reported confidence to discuss challenging behaviors with others that were statistically significant included doable, empowering, and optimistic, with nine areas not statistically significant.

Chapter V

Discussion

The purpose of this study was to examine whether training parents of children with ASD to use ABC recording charts would help them on their understanding/knowledge of basic behavioral principles and their level of confidence in identifying and describing direct observation methods of their child's behavior.

According to the literature, when it comes to training parents of children with ASD on their understanding of basic behavioral principles and confidence in discussing their child's challenging behaviors with others, parents' ability to understand behaviorally-based techniques result in more effective treatment for their children (Matson et al., 2009). The remainder of this chapter outlines the implications of current findings, limitations, and suggestions for future research.

The following research question was central to this study, to what extent, if any, does parent training on the use of ABC narrative recording charts assist in parents' understanding of basic behavioral principles and the parents' confidence in discussing their child's challenging behaviors with others?

Participants Demographics

The majority of participants for this study were Caucasian/White (11/16), were married (10/16), and had an education level of some college (6/16). All but one participant identified as the mother of a child with ASD, consistent with national data. This study had a small sample size and thus is limited to generalizability to larger samples. It is also the case that this study sample were college educated and belonged to a

group that helps parents advocate for their children. Without a support structure parents' may not have the ability to reach out for trainings.

Module 1

Module 1 was analyzed to determine if any relationships existed between the ABA characteristics presented in the training to the self-report of the parents' ability to effectively communicate with others about their child's behaviors and work with their child. Next, the data were analyzed to determine whether the parents' prior training affected their self-report of the ABA model.

Parents Response and Training. The results showed that all but two of the training components had a positive, statistically significant relationship with other components. Thus, the composite score computation a positive correlation coefficient ($r_s=.785$, $p<.01$) indicating a positive relationship between the composite score of the twelve ABA characteristics of Module 1 and participants' self-report of how they respond to their child's challenging behavior.

It is not surprising that Technology was not statistically significant ($r_s=.436$, $p=.119$). Technology was not covered in great detail in this training, given the limited time available. Only one example was provided, and there was a lack of discussion due to this time constraint, on the proper ways to incorporate technology into their toolbox. Given this was limited to one session and parents did not have time to incorporate technology with their child in an actual home setting, this result is expected. If this training were to be conducted in two sessions with a week or two in between sessions, the results may have been positive and statistically significant. Instead, the correlation coefficient ($r_s=.504$, $p=.066$) is strong as it falls within the range of .50 or larger.

The pre-survey results showed parents' self-report of their ability to respond to their child's challenging behavior showed that nine of the 14 parents responses rated their behavior as poor or average. In comparison, only five parents rated themselves as good or excellent, which may indicate that parents did not have the capability to reinforce appropriate behaviors before training. Essentially, the results support that parents who feel like they respond "better" to challenging behavior also have more understanding of behavioral principles.

According to the promise and potential of ABA discussed in the "*The White Book*," there are aspects about which relatively little is known, about the effectiveness of parent training and additional research both basic and applied, is needed to clarify, extend, and fine-tune all existing knowledge (Critchfield & Kollins, 2001; Friman, Hayes, & Wilson, 1998; Murphy, McSweeney, Smith, & McComas, 2003; Stromer, McComas, & Rehfeldt, 2000). While no clear explanation of the parent training and ABA basic behavioral principles relationships can be provided, what we can take away from the findings is that even something as simple as one-hour online trainings can provide parents with an opportunity to gain knowledge and understanding of the behaviors they find challenging and provide a tool (the ABC chart) for helping them address the behaviors in a more structured way.

Parents Stated Level of Understanding and Training. The results were not so promising for the relationship between the parents' stated level of understanding of the basic behavioral principles and the twelve components of training. There were statistically significant three areas that showed a positive, statistically significant relationship between parents' stated level of understanding of basic behavioral principles

and the four basic behavior principles: Conceptually Systematic ($r_s = .597$, $p < .05$), Public ($r_s = .546$, $p < .05$), Empowering ($r_s = .693$, $p < .01$), and Optimistic ($r_s = .594$, $p < .05$) However, no statistically significant relationship was found.

It may be that Conceptually Systematic, Public, Empowering, and Optimistic were statistically significant in that these items relate more to the emotional aspect of the self-report survey. These items are more centered on the advocacy for the children, and as stated, 11 of the 16 parents had taken it upon themselves to read about or take part in trainings regarding being a parent of a child with Autism.

Findings from this study are supported by similar research dedicated to ASD parent training. Intervention literature for children with ASD consistently states that parents should play a collaborative and active role in designing and implementing their child's intervention services (Brookman-Frazee et al., 2009). The literature on parent training with clinical populations other than ASD demonstrates that when parents are actively involved as change agents in their child's treatment, improvement extends beyond their observed symptoms. Research enlisting parents as intervention providers have documented increased self-efficacy and competence, generalization to other family members, and longer maintenance of treatment gains (Eyberg et al., 1998). Parent training and intervention programs often focus on children's outcomes and fail to consider how parents and variables might impact the treatment outcomes. Parent training can lead to improved child communication, increased parental knowledge of ASD, enhanced parental communication style, and improved parent-child interaction (McConachie & Diggle, 2007). Parents can often perform the skills but do not effectively use them after they are learned (Mahoney, & Powell, 1998; Moore & Symons, 2011).

There are also many issues with transferring the skills learned in treatment across settings (Cordisco, Strain, & Depew, 1988). This variability in implementation might be due more to the parents' attitudes and beliefs rather than just their ability to perform the tasks asked (Clancy, 2017).

Module 2

For questionnaire given at the end of Module 2, participants were asked to rate their confidence level to identify and describe examples of direct observation methods of a child's behavior. First, participants reported their level of confidence in the identification, ability to describe the ABA model, and discuss the behaviors of their children as it relates to the ABA model. The highest mean and tightest standard deviation was discussing the behaviors with others ($M=4.29$, $SD = .726$), whereas the ability to identify examples of direct observation methods was the lowest ($m=3.79$, $SD= .893$). Participants after Module 2 training felt confident in discussing challenging behaviors with others and less confident in identifying direct observation methods.

It is again the case that if this training were longer or over multiple sessions, the participants might have learned more about the use of the ABC log in real-time and hence, had more opportunities to discuss the use of and corrections for behaviors encountered in the home setting.

In sum, existing literature showcases the need for effective ASD parent training that addresses behavior. The ABA model is a type of intervention strategy widely used among practitioners. Parents should have an understanding/knowledge of basic behavioral principles in order to better communicate with the children's practitioners. Parent training on the use of ABC narrative recording charts is one way to decrease the

knowledge gap. When parents have an understanding of the ABA model and the strategies such as the ABC chart, they can be better both working with their child at home and in understanding of what the educational professionals are working on with their child at school. ABA principles can be very complicated, but when presented clearly and succinctly, understanding their children's challenging behaviors increase confidence levels when discussing why, when, and where behaviors occur. Successful behavioral intervention for children with ASD have the parents implement therapeutic activities with their children, recognize and define specific behaviors for data collection, establish specific consequences for problem behaviors in the home and community settings, and maintain consistent programming across setting (Matson et al., 2009).

Limitations

This study's findings should be interpreted with caution for multiple reasons, including a small sample size, the one hour window of training, the lack of pre- and post-test to measure growth, the lack of follow up with the parents after the training, and potential flaws of using the internet during COVID-19 such as bandwidth issues.

The study's findings based on this small number of participants and descriptive statistics were influenced by ratings/responses. The sample consisted of 16 women, with one woman reporting the child's relationship as "other" who attend the ASD parent support group. If the parent training could be conducted in-person as initially planned, the representative sample might have been higher and more diverse if more parents knew about the training through advertised outreach efforts to ASD organizations that support diverse populations. Recruiting participants willing to participate by way of an internet-based platform was difficult due to the demands of working from home and children

learning from home, particularly for children with ASD who routinely resist change. Time was a driving factor, parents had limited days and times to participate, and thus the parent training had to be scaled back to accommodate this limitation.

When presenting a training online, bandwidth is important. As parents and students were almost all working from home, internet connectivity was a potential issue. While this study had only two instances of participants not completing a few questions on the survey, there were still those two instances of missing data.

This study is also limited because there was no longitudinal data collected on the use of the ABA model by the parents. Given the limited time, participants were not required to practice using the narrative recording chart. They only rated their competency level to identify and describe direct observation methods of their child's behavior. Thus, we cannot make assumptions regarding the impact of this training on parents' improved understanding/knowledge of ABA model including the use of the ABC narrative recording charts.

Implications and Recommendations for Practice

Recommendations to Increase Parent Participation. Parents who have children diagnosed with ASD want resources and services available that speak to their specific needs. However, reaching out to various parent support groups in the Houston area to gauge their interest in parent training that addresses challenging behaviors, was low. This may have been because parent support groups were experiencing low interest in online support during the height of COVID-19 statewide shutdown that required family members to work and attend school while at home. Establishing an ongoing partnership with various parent support groups in the area will allow for familiarity and

understanding of the group's specific needs. Like individuals with ASD, parent support groups also have unique interests and needs that cannot be addressed with a one-session parent training. The stigma of having a child with a disability, specifically ASD, can be very intimidating to parents who may not feel comfortable sharing for fear others do not understand their circumstances when discussing items like challenging behaviors.

Intimidation may be caused by cultural, educational, or linguistic factors that were not accounted for in this study. In addition, hands-on skill-building activities should be utilized to ease parents' lack of participation due to possible intimidation factors. This training type may increase parents' understanding of their child's specific challenging behaviors, but the activities foster advocacy capabilities where parents become change agents. Trainings should also be customized based on the participants' needs.

Recommendations for Parent Training. The researcher's overall recommendations to continue supporting parents in understanding ABA model include three key strategies. First, given that the prevalence rate increase across the national, state, and local levels indicates that autism awareness is necessary to bridge the gap between families, educators, and community leaders, increasing parents' knowledge about autism includes family outreach meetings across schools and community settings that support autism-related topics of interest, like training parents on narrative recording charts. Second, parents, educators, and community leaders must form a strong working partnership that incorporates a team approach that transcends all settings. Third, parent training on ASD related topics like on the use of narrative recording charts utilizing behaviorally-based principles should be offered within school districts at a reduced or no-cost series of workshops designated for this population. Children spend the majority of

their days at school where challenging behaviors occur, so given parents the opportunity to be trained on sites where the behaviors occur outside the home is bringing the training to the place where parents and teachers can come together to develop a sound behavior plan that is interchangeable across settings.

Recommendations for Future Research

The study aimed to determine if training for parents of children with ASD on the use of ABA model would assist in parents' understanding of basic behavioral principles and their confidence in discussing their child's challenging behaviors with others. Based on this study's results and the literature review, the following recommendations are presented to continue supporting parents on their understanding of behavioral principles and their confidence levels with speaking with others about challenging behaviors their children display. First, this study should be replicated with the active recruitment of fathers of children diagnosed with ASD. This can help increase fathers' involvement in the day-to-day interactions with their child from a perspective different from a disciplinary one. Second, it would help conduct a follow-up study with the current study participants to measure whether the training on using narrative recording charts increased their understanding/knowledge of ABA model. This could include direct observations of negative or positive reinforcements and documenting the outcome over time by tracking parents' reactions to the behaviors. A study on the amount of training sessions to help parents fully understand and practice the ABA model would be a worthy endeavor. For example, how many sessions would be needed to fully learn the ABA model along with support structures during time outside of the training? Finally, it would be worth studying

if an in-person training would facilitate higher rates of understanding than an online training.

Chapter VI

Action Plan

The purpose of this action plan is to provide parents of children with ASD with a framework for improving their knowledge of their children's challenging behaviors and how data and observations can help them decrease those behaviors. Researchers and interventionists have looked to families themselves as a possible means for providing the evidenced-based treatment their children often require to close the ever-widening gap between need and service. More specifically, parents are frequently called upon to be implement treatments—especially those based on behavioral theory—in their homes and communities. It has been found that many families can successfully utilize the power of knowledge to cope with the challenges and difficulties often associated with raising a child with ASD (Dillenburger et al., 2004). This type of parent knowledge can take several forms, including knowledge of (a) the specifics of the child's disability, (b) how to interact with the child effectively interact with the child, and (c) how to advocate for the child's needs. Useful knowledge can be increased due to targeted parent training (Anan et al., 2008). This action plan includes a next step online parent training that will consist of three modules that parents can access at their convenience, with two face-to-face follow-up trainings held within 12 months of the initial training. This framework can be presented to parents/guardians or caregivers of children with ASD who display challenging behaviors. Its purpose is to provide parents with new strategies for using narrative recording charts, build on their current knowledge of behavioral principles, and confidence levels in discussing their child's challenging behaviors with others.

The results from this study showed that parent training on the ABA demonstrates that parents reported a better understanding of basic behavioral principles and an increase in their confidence level when discussing their child's challenging behaviors with others. An action plan is essential to continue to support parents/guardians and caregivers in training them on the use of narrative behavioral recording charts based on the outcome from the data.

To improve parents' use of narrative recording charts, parents must get appropriate training by behavior analysts to teach them the basic behavioral principles of ABA that can be easily implemented and understood. To do this, parents must continue with ongoing training that strengthens their knowledge and skillset to become strong advocates for their children. Children with ASD require greater parent involvement and advocacy than their peers without ASD. Parents of children with ASD who demonstrate knowledge and skillset on topics like challenging behaviors can better communicate to educators and other professionals in the community expectations that ensure successful outcomes for their children's needs.

Parental Involvement

There are multiple opportunities for the use of the ABA model. Successful implementation of behaviorally-based treatment requires concerted efforts between professionals and relies heavily on parents throughout the entirety of a child's day. As in the current study, parents participated in online training to improve behavior management interventions at home (Schworer, 2013). Studies on specific interventions have shown that when parents are involved in implementing the intervention, problem behaviors are reduced, and language and communication skills increase (Fava et al., 2011). Another

study confirmed that parent involvement in training and continuous treatment at home increases success for children with ASD (Strauss et al., 2012). Strauss et al. (2012) also found that parental stress decreases with low-intensity interventions and increases with high-intensity interventions. While high-intensity interventions may be more stressful, they are also found to be more effective.

Participants

The intended participants for this action plan are parents/guardians or caregivers of children with ASD.

Timeline

Initial Online Training

The online training will consist of three, approximately 1-hour long modules:

1. Determining the ABC(s) of Behavior by Conducting a Functional Assessment
2. Selecting and Defining Targeted Behaviors
3. Increase Advocacy Skills

Each module in the online training will include access to video vignettes that provide the participants with a visual illustration and administration of the specific strategies provided in the content. Participants will be able to complete the modules on their schedule. That is, all modules do not need to be completed in one session.

Upon completing the three modules in the online training, participants will be asked to complete an exit survey that will be provided online. This survey will assess the training modules' effectiveness in parents' understanding of the use of ABC charts, identification, and purposes of challenging behaviors and promoting building/sustaining strong advocacy skills due to the parent training.

Module 1: Determining the ABC(s) of Behavior by Conducting a Functional Assessment

Time: 60 minutes

Overview: Participants will learn how to collect data and then use it to conduct a Functional Assessment. Participants will watch a vignette video on the following areas:

- Methods in Data Collection
- The Functional Assessment
- The Baseline Phase

Targeted objective: After this module, participants will describe the who, what, when, where, and why of recording and data collection, be able to explain and conduct a functional assessment and articulate the importance of a baseline phase.

Module 2: Selecting and Defining Target Behaviors

Time: 60 minutes

Overview: Participants will learn about the role of assessment in ABA, including pre-assessment considerations, assessment methods used by behavior analysis, issues in determining the social significance of potential targeted behaviors, considerations for prioritizing target behaviors, and the criteria and dimensions of selected behaviors (Cooper & Heron, 1978).

- Role of Assessment in ABA
- Assessment Methods Used by Behavior Analysts
- Assessing the Social Significance of Potential Target Behaviors
- Defining Target Behaviors

Targeted objective: After this module, participants will identify critical therapeutic techniques used in ABA that significantly impact behavior.

Module 3: Increase Advocacy Skills

Time: 60 minutes

Overview: Participants will learn to discuss with professionals' behavioral needs of their children effectively.

Targeted objective: After this module, participants will be able to increase their advocacy skills by creating an individualized seven-step resource guide that helps understand and use interventions based on ABA applications.

- The definition of ABA
- Common ABA terms with clear examples
- Information about a Behavior Intervention Plan
- Addressing individual parents' needs
- List of resources in the community
- Reference page with relevant terms

Table of content with information that can be accessed quickly.

Follow-up Session

In addition to the online training, parents will be asked to participate in one 2-hour face-to-face session following the online training. Before starting the face-to-face session, parents would rate their competency level to practice their advocacy capabilities obtained from creating the individualized resource guide.

References

- American Academy of Pediatrics. (2011). A systematic review of early intensive intervention for autism spectrum disorders. *Pediatrics*, 127(5), 1303-1311.
- American Psychiatric Association. (2013). Proposed changes to the American Psychiatric Association diagnostic criteria for autism spectrum disorder: Implications for young children and their families. *Maternal and Child Health Journal*, 17(4), 586-592.
- Americans With Disabilities Act of 1990, Pub. L. No. 93-112, § 504, Stat. 394 (1973).
- Anderson, S. R., & Romanczyk, R. G. (1999). Early intervention for young children with autism: Continuum-based behavioral models. *Journal of the Association for Persons with Severe Handicaps*, 24(3), 162-173.
<https://doi.org/10.2511/rpsd.24.3.162>
- Antonacci, D. J., Manuel, C., & Davis, E. (2008). Diagnosis and treatment of aggression in individuals with developmental disabilities. *Psychiatric Quarterly*, 79(3), 225-247. <https://doi.org/10.1007/s11126-008-9080-4>
- Autism Speaks. (n.d.). *Estimated Autism Prevalence 2020*.
<https://www.autismspeaks.org/science-news/cdc-increases-estimate-autisms-prevalence-10-percent-1-54-children>
- Ayllon, T., & Michael, J. (1959). The psychiatric nurse as a behavioral engineer. *Journal of the Experimental Analysis of Behavior*, 2(4), 323-334.
<https://doi.org/10.1901/jeab.1959.2-323>

- Baer, D. (1960). Escape and avoidance response of pre-school children to two schedules of reinforcement withdrawal. *Journal of the Experimental Analysis of Behavior*, 3(2), 155-159. <https://doi.org/10.1901/jeab.1960.3-155>
- Baer, D. (1982). *Applied Behavior Analysis*. New York, Guilford, 277-309.
- Baer, D., Wolf, M., & Risley, T. (1968) Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis*, 1, 91-97.
<https://doi.org/10.1901/jaba.1968.1-91>
- Baer, D., Wolf, M., & Risley, T. (1987). Some still-current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis*, 20(4), 313-327.
<https://doi.org/10.1901/jaba.1987.20-313>
- Baghdadli, A., Pascal, C., Grisi, S., & Aussilloux, C. (2003). Risk factors for self-injurious behaviours among 222 young children with autistic disorders. *Journal of Intellectual Disability Research*, 47, 622–627. <https://doi.org/10.1046/j.1365-2788.2003.00507.x>
- Baker, B. L., Blacher, J., Crnic, K. A., & Edelbrock, C. (2002). Behavior problems and parenting stress in families of three-year-old children with and without developmental delays. *American Journal on Mental Retardation*, 107(6), 433-444. [https://doi.org/10.1352/0895-8017\(2002\)107<0433:BPAPSI>2.0.CO;2](https://doi.org/10.1352/0895-8017(2002)107<0433:BPAPSI>2.0.CO;2)
- Ben-Itzhak, E., & Zachor, D. (2011). Who benefits from early intervention in autism spectrum disorders? *Research in Autism Spectrum Disorders*, 5, 345-350.
<https://doi.org/10.1016/j.rasd.2010.04.018>
- Bijou, S. (1955). A systematic approach to an experimental analysis of young children. *Child Development*, 26(2), 161-168. <https://doi.org/10.2307/1126106>

- Bijou, S. (1996). Reflections on some early events related to behavior analysis of child development. *The Behavior Analyst*, 19(1), 49-60.
<https://doi.org/10.1007/BF03392738>
- Bijou, S., Peterson, R., & Ault, M. (1968). A method to integrate descriptive and experimental field studies at the level of data and empirical concepts. *Journal of Applied Behavior Analysis*, 1, 175-191. <https://doi.org/10.1901/jaba.1968.1-175>
- Blacher, J., & McIntyre, L. L. (2006). Syndrome specificity and behavioural disorders in young adults with intellectual disability: Cultural differences in family impact. *Journal of Intellectual Disability Research*, 50(3), 184-198.
<https://doi.org/10.1111/j.1365-2788.2005.00768.x>
- Blackledge, J., & Hayes, S., (2006). Using acceptance and commitment training in the support of parents of children diagnosed with autism. *Child & Family Behavior Therapy*, 28(1), 1-18. https://doi.org/10.1300/j019v28n01_01
- Brookman-Frazee, L., Stahmer, A., Baker-Ericzen, M., & Tsai, K. (2006). Parenting interventions for children with autism spectrum and disruptive behavior disorders: Opportunities for cross-fertilization. *Clinical Child and Family Psychology Review*, 9(3-4), 181-200. <https://doi.org/10.1007/s10567-006-0010-4>
- Brookman-Frazee, L., Vismara, L., Drahota, A., Stahmer, A., & Openden, D. (2009). Parent training interventions for children with autism spectrum disorders. *Applied Behavior Analysis for Children with Autism Spectrum Disorders* (pp. 237–257). Springer. https://doi.org/10.1007/978-1-4419-0088-3_14

- Carr, E., Taylor, J., & Robinson, S. (1991). The effects of severe behavior problems in children on the teaching behavior of adults. *Journal of Applied Behavior Analysis*, 24(3), 523-535. <https://doi.org/10.1901/jaba.1991.24-523>
- Centers for Disease Control and Prevention. (2020). *Data and statistics on autism spectrum disorder*. <https://www.cdc.gov/ncbddd/autism/data>
- Combating Autism Act of 2006, VV U.S.C § SSSS (2014).
- Cooper, J. O. (1982). Applied behavior analysis in education. *Theory Into Practice*, 21(2), 114-118. <https://doi.org/10.1080/00405848209542992>
- Cooper, J., Heron, T., & Heward, W. (2007). *Applied behavior analysis* (2nd ed.) Merrill Prentice Hall.
- Cordisco, L., Strain, P., & Depew, N. (1988). Assessment for generalization of parenting skills in home settings. *Journal of the Association for Persons with Severe Handicaps*, 13(3), 202-210. <https://doi.org/10.1177/154079698801300311>
- Dawson, J., Matson, J., & Cherry, K. (1998). An analysis of maladaptive behaviors in persons with autism, PDD-NOS, and mental retardation. *Research in Developmental Disabilities*, 19(5), 439-448 [https://doi.org/10.1016/50891-4222\(98\)00016-X](https://doi.org/10.1016/50891-4222(98)00016-X)
- Dillenburger, K., Keenan, M., Gallagher, S., & McElhinney, M. (2004). Parent education and home-based behaviour analytic intervention: An examination of parents' perceptions of outcome. *Journal of Intellectual and Developmental Disability*, 29(2), 119-130. <https://doi.org/10.1080/13668250410001709476>

- Dominick, K., Davis, N., Lainhart, J., Tager-Flusberg, H., & Folstein, S. (2007). Atypical behaviors in children with autism and children with a history of language impairment. *Research in Developmental Disabilities*, 28(2), 145-162.
<https://doi.org/10.1016/j.ridd.2006.02.003>
- Drew, A., Baird, Gillian, Baron-Cohen, S., Cox, A., Slonims, V., Wheelwright, Swettenham, J., Bryony, Berry, & Charman, T. (2002). A pilot randomised control trial of a parent training intervention for pre-school children with autism. *European Child & Adolescent Psychiatry*, 11(6), 266-272.
<https://doi.org/10.1007/s00787-002-0299-6>
- Eldevick, S, Hastings, R. P., Hughes, J. C., Jahr, E., Eikeseth, S., & Cross, S. (2009). Meta-analysis of early intensive behavioral intervention for children with autism. *Journal of Clinical & Adolescent Psychology*, 38(3), 439-450.
<https://doi.org/10.1080/15374410902851739>
- Emerson, E., Kiernan, C., Alborz, A., Reeves, D., Mason, H., Swarbrick, R., & Mason, L., & Hatton, C. (2001). The prevalence of challenging behaviors: A total population study. *Research in Developmental Disabilities*, 22(1), 77-93.
[https://doi.org/10.1016/50891-4222\(00\)00061-5](https://doi.org/10.1016/50891-4222(00)00061-5)
- Eyberg, S., Edwards, D., Boggs, S., & Foote, R. (1998). Maintaining the treatment effects of parent training: The role of booster sessions and other maintenance strategies. *Clinical Psychology: Science and Practice*, 5(4), 544-554.
<https://doi.org/10.1111/j.1468-2850.1998.tb00173.x>

- Fava, L., Strauss, K., Valeri, G., D'Elia, L., Arima, S., & Vicari, S. (2011). The effectiveness of a cross-setting complementary staff-and parent-mediated early intensive behavioral intervention for young children with ASD. *Research in Autism Spectrum Disorders*, 5, 1479-1492.
<https://doi.org/10.1016/j.rasd.2011.02.009>
- Ferster, C. B. (1966). Animal behavior and mental illness. *Psychological Records*, 16, 345-356. <https://doi.org/10.1007/BF03393678>
- Ferster, C. B., & DeMyer, M. K. (1961a). The development of performances in autistic children in an automatically controlled environment. *Journal of Chronic Diseases*, 13(4), 312-345 [https://doi.org/10.1016/0021-9681\(61\)90059-5](https://doi.org/10.1016/0021-9681(61)90059-5)
- Ferster, C. B., & DeMyer, M. K. (1961b). Increased performances of an autistic child with prochlorperazine administration. *Journal of the Experimental Analysis of Behavior*, 4, 81-84. <https://doi.org/10.1901/jeab.1961.4-84>
- Ferster, C. B., & DeMyer, M. K. (1962). A method for the experimental analysis of the behavior of autistic children. *American Journal of Orthopsychiatry*, 32(1), 89. <https://doi.org/10.1111/j.1939-0025.1962.tb00267x>
- Fuller, P. R. (1949). Operant conditioning of a vegetative human organism. *The American Journal of Psychology*, 62(4), 587-590.
<https://doi.org/10.2307/1418565>
- Gray, D. E. (2006). Coping over time: The parents of children with autism. *Journal of Intellectual Disability Research*, 50, 970-976. <https://doi.org/10.1111/j.1365-2788.2006.00933.x>

- Green, K., Mays, N., & Jolivet, K. (2011). Making choices: A proactive way to improve behaviors for young children with challenging behaviors. *Beyond Behavior*, 20(1), 25-32.
- Greenwood, C., & Maheady, L. (1997). Measurable change in student performance: Forgotten standard in teacher preparation. *Teacher Education and Special Education*, 20(3), 265-275. <https://doi.org/10.1177/088840649702000307>
- Hastings, R., & Brown, T. (2002). Behavior problems of children with autism, parental self-efficacy, and mental health. *American Journal on Mental Retardation*, 107(3), 222-232. [https://doi.org/10.1352/0895-801\(2002\)107](https://doi.org/10.1352/0895-801(2002)107)
- Hastings, R. P, Kovshoff, H., Brown, T., Ward, N. J., Espinosa, F. D., & Remington, B. (2005). Coping strategies in mothers and fathers of preschool and school-age children with autism. *Autism*, 9(4), 377-391. <https://doi.org/10.1177/1362361305056078>
- Hastings, R. P., Kovshoff, H., Ward, N. J., Degli Espinosa, F., Brown, T., & Remington, B. (2005). Systems analysis of stress and positive perceptions in mothers and fathers of pre-school children with autism. *Journal of Autism and Developmental Disorders*, 35, 635. <https://doi.org/10.1007/s10803-005-0007-8>
- Hastings, R. P., & Symes, M. D. (2002). Early intensive behavioral intervention for children with autism: Parental therapeutic self-efficacy. *Research in Developmental Disabilities*, 23(5), 332-341. [https://doi.org/10.1016/50891-4222\(02\)00137-3](https://doi.org/10.1016/50891-4222(02)00137-3)
- Hawkins, R. P., Peterson, R. F., Schweid, E., & Bijou, S. W. (1966). Behavior therapy in the home: Amelioration of problem parent-child relations with the parent in a

therapeutic role. *Journal of Experimental Child Psychology*, 4(1), 99-107.

[https://doi.org/10.1016/0022-0965\(66\)90054-3](https://doi.org/10.1016/0022-0965(66)90054-3)

Hayes, S. A., & Watson, S. L. (2013). The impact of parenting stress: A meta-analysis of studies comparing the experience of parenting stress in parents of children with and without autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 43, 629-642. <https://doi.org/10.1007/s10803-012-1604-y>

Helfin, L. J., & Simpson, R. (1998). Interventions for children and youth with autism: Prudent choices in a world of exaggerated claims and empty promises. Part 1: Intervention and treatment option review. *Focus on Autism and Other Developmental Disabilities*, 13(4), 194-211.

<https://doi.org/10.1177/108835769801300401>

Helton, M. R., & Alber-Morgan, S. R. (2018). Helping parents understand applied behavior analysis: Creating a parent guide in 10 steps. *Behavior Analysis in Practice*, 11(4), 496-503. <https://doi.org/10.1007/s40617-018-00284-8>

Heward, W. L. (2005). *Focus on behavior analysis in education: Achievements, challenges, and opportunities*. Pearson/Merrill/Prentice Hall.

Howlin, P., Magiati, I., & Chapman, T. (2009). Systematic review of early intensive behavioral interventions for children with autism. *American Journal on Intellectual and Developmental Disabilities*, 114(1), 23-41.

<https://doi.org/10.1352/2009.114:23-41>

Individuals with Disabilities Education Act, 20 U.S.C § 1400 (2004).

Ingersoll, B., & Dvotcsak, A. (2009). *Teaching social communication to children with autism: A practitioner's guide to parent training and a manual for parents.*

Guilford Press

Jang, J., Dixon, D.R., Tarbox, J., & Granpeesheh, D., Komack, J., & deNocker, Y. X.

(2012). Randomized trial of an eLearning program for training family members of children with autism in the principles and procedures of applied behavior analysis.

Research in Autism Spectrum Disorders, 6(2), 852-856.

<https://doi.org/10.1016/j.rasd.2011.11.004>

Kaminiski, J.W., Valle, L. A., Filene, J. H., & Boyle, C. L. (2008). A meta-analytic review of components associated with parent training program effectiveness.

Journal of Abnormal Child Psychology, 36(4), 567-589.

<https://doi.org/10.1007/s1082-007-9201-9>

Kasari, C. (2002). Assessing change in early intervention programs for children with autism. *Journal of Autism and Developmental Disorders*, 32(5), 447-461.

<https://doi.org/10.1023/A:1020546006971>

Kasari, C., Gulsrud, A., Paparella, T., Hellman, G., & Berry, K. (2015). Randomized comparative efficacy study of parent-mediated interventions for toddlers with autism.

Journal of Consulting and Clinical Psychology, 83(3), 554.

<https://doi.org/10.1037/a0039080>

Kasari, C., Gulsrund, A. C., Wong, C., Kwon, S., & Locke, J. (2010). Randomized controlled caregiver mediated joint engagement intervention for toddlers with autism.

Journal of Autism and Developmental Disorders, 40(9), 1045-1056.

<https://doi.org/10.1007/s10803-010-0955-5>

- Kavanaugh, R., & Harris, P. (1994). Imagining the outcome of pretend transformations: Assessing the competence of normal children and children with autism. *Developmental Psychology*, 30(6), 847-854. <https://doi.org/10.1037/0012-1649.30.6.847>
- Kazdin, A. E. (2008). *Parent management training: Treatment for oppositional, aggressive, and antisocial behavior in children and adolescents*. Oxford University Press.
- Koegel, L. K., Koegel, R. L., Hurley, C., & Frea, W. D. (1992). Improving social skills and disruptive behavior in children with autism through self-management. *Journal of Applied Behavior Analysis*, 25(2), 341-353. <https://doi.org/10.1901/jaba.1992.25-341>
- Koegel, R. L., & Koegel, L. K. E. (1995). *Teaching children with autism: Strategies for initiating positive interactions and improving learning opportunities*. Paul H Brookes.
- Koegel, R. L., Frea, W. D., & Surratt, A. V. (1994). Self-management of problematic social behavior. *Behavioral Issues in Autism*, ?(?), 81-97. https://doi.org/10.1007/978-1-4757-9400-7_5
- Koegel, L. K., Stiebel, D. & Koegel, R. L. (1998). Reducing aggression in children with autism toward infant or toddler siblings. *Journal of the Association for Persons with Severe Handicaps*, 23(2) 111-118. <https://doi.org/10.2511/rpsd.23.2.111>
- Kroeger, K. A., & Sorensen-Burnworth, R. (2009). Toilet training individuals with autism and other developmental disabilities: A critical review. *Research in Autism Spectrum Disorders*, 3, 607-618. <https://doi.org/10.1016/j.rasd.2009.01.005>

- Laski, K. E., Charlop, M. H., & Schriebman, L. (1988). Training parents to use the natural language paradigm to increase their autistic children's speech. *Journal of Applied Behavior Analysis*, 21(4), 391-400. <https://doi.org/10.1901/jaba.1988.21-391>
- Lerman, D. C., & Iwata, B. A. (1993). Descriptive and experimental analyses of variables maintaining self-injurious behavior. *Journal of Applied Behavior Analysis*, 26(3), 293-319. <https://doi.org/10.1901/jaba.1993.26-293>
- Lesack, R., Bearss, K., Celano, M., & Sharp, W. G. (2014). Parent-child interaction therapy and autism spectrum disorder: Adaptations with a child with severe developmental delays. *Clinical Practice in Pediatric Psychology*, 2(1), 68. <https://doi.org/10.1037/cpp0000047>
- Lindsley, O. R. (1956). Operant conditioning methods applied to research in chronic schizophrenia. *Psychiatric Research Reports*, 5, 118-139.
- Lovaas, O. I. (1987). Behavioral treatment and normal educational and intellectual functioning in young autistic children. *Journal of Consulting and Clinical Psychology*, 55(1), 3. <http://dx.doi.org.ezproxy.lib.uh.edu/10.1037/0022-006X.55.1.3>
- MacDonald, R., Parry-Cruwys, D., Dupere, S., & Ahearn, W. (2014). Assessing progress and outcome of early intensive behavioral intervention for toddlers with autism. *Research in Developmental Disabilities*, 35(12), 3632-3644. <https://doi.org/10.1016/j.ridd.2014.08.036>

- Maenner, M. J., Shaw, K. A., & Baio, J. (2020). Prevalence of autism spectrum disorder among children aged 8 years-autism and developmental disabilities monitoring network, 11 sites, United States, 2016. *MMWR Surveillance Summaries* 69(4), 1.
- Mandell, D. S., & Salzer, M. S. (2007). Who joins support groups among parents of children with autism? *Autism*, 11(2), 111-122.
<https://doi.org/10.1177/1362361307077506>
- Marcus, L. M., Kunce, L. J., & Schopler, E. (2005). Working with families. In F.R. Volkmar, R. Paul, A. Klin, & D. Cohen (Eds.). *Handbook of autism and pervasive developmental disorders: Assessment, interventions, and policy* (p. 1055-1086). John Wiley & Sons.
- Matson, J. L., Baglio, C. S., Smioldo, B. B., Hamilton, M., Packlowskyj, T., & Kirkpatrick-Sanchez, S. (1996). Characteristics of autism as assessed by the diagnostic assessment for the severely handicapped-II (DASH-II). *Research in Developmental Disabilities*, 17(2), 135-143. [https://doi.org/10.1016/0891-4222\(95\)00044-5](https://doi.org/10.1016/0891-4222(95)00044-5)
- Matson, J. L., Kozlowski, A. M., Fitzgerald, M. E., & Sipes, M. (2013). True versus false positives and negatives on the modified checklist for autism in toddlers. *Research in Autism Spectrum Disorders*, 7(1), 17-22.
<https://doi.org/10.1016/j.rasd.2012.02.011>
- Matson, J. L., Mahan, S., & Matson, J. L. (2009). Parent training: A review of methods for children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, 3(4) 868-875. <https://doi.org/10.1016/j.rasd.2009.02.003>

Matson, J. L., Wilkins, J., & Gonzalez, M. (2008). Early identification and diagnosis in autism spectrum disorders in young children and infants: How early is too early?

Research in Autism Spectrum Disorders, 2(1), 75-84.

<https://doi.org/10.1016/j.rasd.2007.03.002>

Matson, J. L., & Wilkins, J. (2009). Psychometric testing methods for children's social skills. *Research in Developmental Disabilities*, 30(2), 249-274.

<https://doi.org/10.1016/j.ridd.2008.04.002>

May, C., Fletcher, R., Dempsey, I., & Newman, L. (2015). Modeling relations among coparenting quality, autism-specific parenting self-efficacy, and parenting stress in mothers and fathers of children with ASD. *Parenting*, 15(2) 119-133.

<https://doi.org/10.1080/15295192.2015.1020145>

McConachie, H., Randle, V., Hammal, D., & Le Couteur, A. (2005). A controlled trial of a training course for parents of children with suspected autism spectrum disorder.

The Journal of Pediatrics, 147(3), 335-340.

<https://doi.org/10.1016/j.peds.2005.03.056>

McGuire, K., Fung, L. K., Hagopian, L., Vasa, R. A., Mahajan, R., Bernal, P., & Veenstra-VanderWeele, J. (2016). Irritability and problem behavior in autism spectrum disorder: A practice pathway for pediatric primary care. *Pediatrics*,

137(Suppl. 2), S136–S148. <https://doi.org/10.1542/peds.2015-2851L>

- Missouri Autism Guidelines Initiative. (2012). Autism spectrum disorders: Guide to evidence-based interventions. *Thompson Foundation for autism, Division of developmental disabilities, Missouri Department of mental health, Office of special education, Missouri department of elementary and secondary education*. <http://www.autismguidelines.dmh.mo.gov>
- Morris, E. K., & Fouquette, C. M. (2009). Rescuing Ferster and DeMyer's behavioral pharmacology research in autism from oblivion. *European Journal of Behavior Analysis*, 10(1), 5-18. <https://doi.org/10.1080/15021149.2009.11434305>
- Mukaddes, N. M., & Topcu, Z. (2006). Case report: Homicide by a 10-year-old girl with autistic disorder. *Journal of Autism and Developmental Disorders*, 36(4), 471-474. <https://doi.org/10.1007/s10803-006-0087-0>
- Murphy, O., Healy, O., & Leader, G. (2009). Risk factors for challenging behaviors among 157 children with autism spectrum disorder in Ireland. *Research in Autism Spectrum Disorders*, 3(2), 474-482. <https://doi.org/10.1016/j.rasd.2008.09.008>
- National Institutes of Mental Health. (2019). *NIH awards funding for early autism screening*. <http://www.nimh.nih.gov/news/science-news/2019>
- Nefdt, N., Koegel, R., Singer, G., & Gerber, M. (2010). The use of a self-directed learning program to provide introductory training in pivotal response treatment to parents of children with autism. *Journal of Positive Behavior Interventions*, 12(1), 23-32. <https://doi.org/10.1177/1098300709334796>
- Openden, D. A. (2005). *Pivotal response treatment for multiple families of children with autism: Probable efficacy and effectiveness of a group parent education workshop*. Santa Barbara: University of California, Santa Barbara.

- Pakenham, K. I., Samios, C., & Sofronoff, K. (2005). Adjustment in mothers of children with Asperger syndrome: An application of the double ABCX model of family adjustment. *Autism*, 9(2), 191-212. <https://doi.org/10.1177/1362361305049033>
- Pence, S. T., & St. Peter, C. C. (2018). Training educators to collect accurate descriptive-assessment data. *Education and Treatment of Children*, 41(2), 197-221. <https://dio.org/10.135/etc.2018.008>
- Reed, H. E., Artibee, K., Surdkya, K., Goldman, S. E., Frank, K., & Marlow, B. A. (2009). Parent-based sleep education workshops in autism. *Journal of Child Neurology*, 24(8), 936-945. <https://doi.org/10.1177/0883073808331346>
- Reichow, B. (2012). Overview of meta-analyses on early intensive behavioral intervention for young children with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 42(4), 512-520. <https://doi.org/10.1007/s10803-011-1218-9>
- Reichow, B., & Wolery, M. (2009). Comprehensive synthesis of early intensive behavioural interventions for young children with autism based on the UCLA Young Autism Project Model. *Journal of Autism and Developmental Disorders*, 39, 23-41. <https://doi.org/10.1007/s10803-008-0596-0>
- Roberts, C., Mazzucchelli, T., Taylor, K., & Reid, R. (2003). Early intervention for behaviour problems in young children with developmental disabilities. *International Journal of Disability, Development and Education*, 50(3), 275-292. <https://doi.org/10.1080/1034912032000120453>

- Rogers, S. J., & Vismara, L. A. (2008). Evidence-based comprehensive treatments for early autism. *Journal of Clinical Child & Adolescent Psychology*, 37(1), 8-38.
<https://doi.org/10.1080/15374410701817808>
- Ruef, M. B., & Turnbull, A. P. (2002). The perspectives of individuals with cognitive disabilities and/or autism on their lives and their problem behavior. *Research and Practice for Persons with Severe Disabilities*, 27(2), 125-140.
<https://doi.org/10.2511/rpsd.27.2.125>
- Ruiz, S., & Kubina, R. M., Jr. (2017). Impact of trial-based functional analysis on challenging behavior and training: A review of the literature. *Behavior Analysis: Research and Practice*, 17(4), 347. <http://dx.doi.org/10.1037/bar00000079>
- Rutter, M. (1978). Diagnosis and definition of childhood autism. *Journal of Autism and Childhood Schizophrenia*, 8(2), 139-161. <https://doi.org/10.1007/BF01537863>
- Schopler, E., & Mesibov, G. B. (Eds.). (2013). *High-functioning individuals with autism*. Springer.
- Schroeder, S. R., Mulick, J. A., & Rojahn, J. (1980). The definition, taxonomy, epidemiology, and ecology of self-injurious behavior. *Journal of Autism and Developmental Disorders*, 10(4), 417-432. <https://doi.org/10.1007/BF02414818>
- Schuhmann, E., Foote, R., Eyberg, S., Boggs, S., & Algina, J. (1998). Efficacy of parent-child interaction therapy: Interim report of a randomized trial with short-term maintenance. *Journal of Clinical Child Psychology*, 27(1), 34-45.
https://doi.org/10.1207/s15374424jccp2701_4

- Silverman, W. K., & Hinshaw, S. P. (2008). The second special issue on evidence-based psychosocial treatments for children and adolescents: A 10-year update. *Journal of Clinical Child & Adolescent Psychology*, 37(1), 1-7.
<https://doi.org/10.1080/15374410701817725>
- Singer, G. H., Ethridge, B. L., & Aldana, S. I. (2007). Primary and secondary effects of parenting and stress management interventions for parents of children with developmental disabilities: A meta-analysis. *Mental Retardation and Developmental Disabilities Research Reviews*, 13(4), 357-369.
<https://doi.org/10.1002/mrdd.20175>
- Skinner, B. F. (1938). *The behavior of organisms: An experimental analysis*. B. F. Skinner Foundation.
- Smith, L. E., Hong, J., Seltzer, M. M., Greenberg, J. S., Almeida, D. M., & Bishop, S. L. (2010). Daily experiences among mothers of adolescents and adults with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 40(2), 167-178. <https://doi.org/10.1007/s10803-009-0844-y>
- Sofronoff, K., Leslie, A., & Brown, W. (2004). Parent management training and Asperger syndrome: A randomized controlled trial to evaluate a parent-based intervention. *Autism*, 8(3), 301-317. <https://doi.org/10.1177/1362361304045215>
- Solomon, M., Ono, M., Timmer, S., & Goodlin-Jones, B. (2008). The effectiveness of parent-child interaction therapy for families of children on the autism spectrum. *Journal of autism and developmental disorders*, 38(9), 1767-1776.
<https://doi.org/10.1007/s10803-008-0567-5>

- Steiner, A. M., Koegel, L. K., Koegel, R. L., & Ence, W. A. (2012). Issues and theoretical constructs regarding parent education for autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 42, 1218-1227.
<https://doi.org/10.1007/s10803-011-1194-0>
- Strauss, K., Vicari, S., Valeri, G., D'Elia, L., Arima, S., & Fava, L. (2012). Parent inclusion in early intensive behavioral intervention: The influence of parental stress, parent treatment fidelity and parent-mediated generalization of behavior targets on child outcomes. *Research in Developmental Disabilities*, 33, 688-703.
<https://doi.org/10.1016/j.ridd.2011.11.008>
- Texas autism facts. (2019). <http://www.sbcglobal.net>
- United States Department of Education. (2018). *Community report on autism 2018*.
<http://https://www.cdc.gov/mmwr>
- United States Department of Education. (2020). *Autism Prevalence rises in communities monitored by CDC*. <http://www.cdc.gov>
- Vismara, L. A., Colombi, C., & Rogers, S. J. (2009). Can one hour per week of therapy lead to lasting changes in young children with autism? *Autism*, 13(1), 93-115.
<https://doi.org/10.1177.136236130798516>
- Wing, L., & Potter, D. (2002). The epidemiology of autistic spectrum disorders: Is the prevalence rising? *Mental Retardation and Developmental Disabilities Research Reviews*, 8(3), 151-161. <https://doi.org/10.1002/mrdd.10029>

Appendix A
IRB Approval Letter

UNIVERSITY of HOUSTON

DIVISION OF RESEARCH
Institutional Review Boards

APPROVAL OF SUBMISSION

June 23, 2020

Sherrilyn
Smith
[ssmith25@u
h.edu](mailto:ssmith25@uh.edu)

Dear Sherrilyn Smith:

On May 29, 2020, the IRB reviewed the following submission:

Type of Review:	Initial Study
Title of Study:	Teaching Parents of Children with Autism Functional Behavioral Assessment and How to Communicate Needs of Their Children and Family
Investigator:	Sherrilyn Smith
IRB ID:	STUDY00002286
Funding/ Proposed Funding:	Name: Unfunded
Award ID:	
Award Title:	
IND, IDE, or HDE:	None

Documents Reviewed:	<ul style="list-style-type: none"> • Participant Flier.pdf, Category: Recruitment Materials; • Smith-Letter of Support.pdf, Category: Letters of Cooperation / Permission; • Research Study Site.pdf, Category: Letters of Cooperation / Permission; • HRP-502a - TEMPLATE CONSENT DOCUMENT- NON-CLINICAL.pdf, Category: Consent Form; • IRB Response Letter.docx, Category: Correspondence (sponsor, IRB, misc.); • Smith_IRB_June 2020.pdf, Category: IRB Protocol; • Survey for Parents042020.pdf, Category: Study tools (ex: surveys, interview/focus group questions, data collection forms, etc.);
Review Category:	Exempt
Committee Name:	Noncommittee review
IRB Coordinator:	<u>Maria Martinez</u>



DIVISION OF RESEARCH
Institutional Review Boards

The IRB approved the study on June 23, 2020; recruitment and procedures detailed within the approved protocol may now be initiated.

As this study was approved under an exempt or expedited process, recently revised regulatory requirements do not require the submission of annual continuing review documentation. However, it is critical that the following submissions are made to the IRB to ensure continued compliance:

- Modifications to the protocol prior to initiating any changes (for example, the addition of study personnel, updated recruitment materials, change in study design, requests for additional subjects)
- Reportable New Information/Unanticipated Problems Involving Risks to Subjects or Others
- Study Closure

Unless a waiver has been granted by the IRB, use the stamped consent form approved by the IRB to document consent. The approved version may be downloaded from the documents tab.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library within the IRB system.

Sincerely,

Research Integrity and Oversight (RIO)
Office University of Houston, Division
of Research 713 743 9204
cphs@central.uh.edu
<http://www.uh.edu/research/compliance/irb-cphs/>

Appendix B

Survey

Pre-Training Questions

What is your relationship to the child?

☐ Father

☐ Mother

☐ Grandmother

☐ Grandfather

☐ Legal Guardian

☐ Foster Parent

☐ Other

Which of the following best represents your race and/or ethnicity? Please check all that are applicable.

☐ Asian

☐ African American/Black

☐ Caucasian/White

☐ Hispanic/Latino

☐ Pacific Islander

☐ Two or more

☐ Other

☐ Do not wish to disclose

Which of the following best describes your current marital status?

- ☐ Married
- ☐ Married to parent other than child's parent
- ☐ Living with child's other parent (but not married)
- ☐ Living with partner (not child's biological parent)
- ☐ Divorced
- ☐ Separated
- ☐ Widowed
- ☐ Single
- ☐ Never married

Please list your current occupation (if applicable). For example, sales associate, teacher, lawyer, N/A, etc.

Please list your partner's (other parent or partner) current occupation (if applicable). For example, sales associate, teacher, lawyer, N/A, etc.

What is the highest degree or level of school that you have completed?

☐ GED

☐ High School Graduate

☐ Associate Degree

☐ Some College

☐ College Degree

☐ Vocational/Technical School

☐ Graduate Degree

☐ I did not complete high school

What is the gender of the child with ASD?

☐ Male

☐ Female

How old is the child with ASD?

If applicable, under which category (or categories) does your child receive special education their school? Please pick all that apply.

☐ Autism

☐ Intellectual Disability

☐ Emotional Disturbance

☐ Specific Learning Disability

☐ Multiple Disabilities

☐ Other

☐ I am not sure which category, but I know my child receives special education services

☐ My child has a 504 Plan and is not in Special Education

☐ None of the above

What is your first language?

What is your partner's first language?

What languages are spoken in the home? Please list all that apply.

Pick the statement that best reflects your overall training related to behavioral interventions including anecdotal observations (ABC recording). This does not include telehealth visits related to the ARD or doctor visits.

- ☐ I have no training (includes online and face to face) in this area.
- ☐ I have read articles online.
- ☐ I have attended 1-3 online trainings.
- ☐ I have attended 1-3 face to face trainings.
- ☐ I have attended both online and face to face trainings (average of 3 total).
- ☐ I attend every online or face to face training available.

Please pick the statement that best reflects your understanding of basic behavioral principles and confidence in discussing your child's behavior with others.

- ☐ I do not have confidence in my understanding of the basic behavioral principles and therefore I do not feel that I clearly articulate my child's behaviors with others.
- ☐ I have minimal confidence in my understanding of the basic behavioral principles and therefore I do not feel that I clearly articulate my child's behaviors with others.
- ☐ I am mostly confident in my understanding of the basic behavioral principles and therefore I feel that I can be semi-articulate about my child's behaviors with others.
- ☐ I am confident in my understanding of the basic behavioral principles and therefore I feel that I can mostly articulate my child's behaviors with others.
- ☐ I am very confident in my understanding of the basic behavioral principles and therefore I can clearly articulate my child's behaviors with others.

Module 1 Questionnaire

How would you rate your response to your child's challenging behavior?

- ☐ Excellent
☐ Good
☐ Average
☐ Poor

As a result of Module 1, rate your understanding of the following characteristics of Applied Behavior Analysis from 1 (no competence) to 5 (high level of competence):

	None	Moderately Low	Average	Moderately High	High
Applied	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Behavioral	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Analytic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conceptually Systematic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effective	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Generality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accountable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Doable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Empowering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Optimistic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Module 2 Questionnaire

As a result of Module 2, please rate **your level of competence** in identifying and describing examples of direct observation methods of a child's behavior.

	None	Low	Average	Moderate	High
I can identify examples of direct observation methods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can describe the direct observation methods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can discuss my child's challenging behaviors with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix C

ABC Log

ABC (Antecedent, Behavior, Consequence) Chart Form

[illegible]