A List of Core Skills and Knowledge Necessary for Parents of Children Birth to Five Years Old with Autism, as Prioritized by Practitioners with a Behavioral Perspective

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Biographical Sketch

Rachel Albone-Bushnell is currently the Chief Executive Officer at Children's Academy CT. Mrs. Bushnell attended Fordham University from 2001 to 2003 and graduated with a Bachelor of Arts in 2003. She attended the College of New Rochelle from 2003 to 2008 and graduated with three Master of Sciences degrees in 2008. She came to St. John Fisher College in the summer of 2011 and began doctoral studies in the Ed.D. Program in Executive Leadership. Mrs. Bushnell pursued her research in autism under the direction of Dr. Steven Block and Dr. Ellen Gambino and received the Ed.D. degree in 2014.

Abstract

Verified improvement in the treatment of children with autism spectrum disorders (ASD) in the past decade has involved both early interventionists and parents. It is widely acknowledged that the parent-child relationship is fundamental to the development of communication and social skills, especially for children with ASD, and accordingly that parent education is critical. However, lists of required skills and knowledge in professionally developed curricula designed for parents of children with ASD have not been prioritized by the consensus of large numbers of variously affiliated practitioners. The present research yielded wide professional agreement on the prioritization of such skills and knowledge. The instrument used was a self-evaluating, closed-ended survey administered to 483 behaviorists who treat autism. In particular, the survey identified whether a participant had a child with autism or not. The information gathered will assist in the development of a curriculum intended to guide parents in optimizing the help they can give their children with autism.

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Chapter 1: Introduction

Introduction

Autism Spectrum Disorder (ASD), otherwise known as autism, is a "complex developmental brain disorder that affects social interaction and communication skills" (American Psychiatric Association [APA], 2013, p. 20). The Centers for Disease Control and Prevention (CDC, 2013) reported that since 2008, autism, a diagnosed disability, has increased 78%. Furthermore, the CDC (2013) specified that the rate of autism in American children has more than doubled over the prior decade, jumping from 1 in 150 children in 2000, to 1 in 68 children in 2013. In an updated study, moreover, the CDC (2014) found that "an estimated 1 in 50 school-age children (ages 5–18) are diagnosed with the autism spectrum disorder" (p. 6). The differential between the 1-in-68 figure for all children and the higher rate for school-age children is presumably the result of a lag in diagnosis. However, the CDC (2014) also stated that autism among all children is now diagnosed at earlier ages, and a growing number of children are diagnosed by age three. According to the CDC (2014), this increase in ASD diagnoses has created monumental challenges for stakeholders, including schools, parents, social agencies, and practitioners.

Working as a team, parents and practitioners can improve outcomes for children with autism (Crockett and Fleming, 2007). Practitioners provide critical teaching techniques that are more effective with home carry-over; hence, parents' role in advancing their child's success in achieving social and academic goals is critical,

especially because they have more teachable moments available than do therapists (Solomon, Ono, Timmer, & Goodlin-Jones, 2008).

Despite evidence of the importance of the parental role (National Autism Center, 2011), there are very few curricula developed by autism practitioners to assist parents of children with autism from birth to 5 years old (as discussed in the Literature Review in Chapter 2). As an applied behavior analyst (ABA) for children with autism, this researcher observed early that parents and practitioners often have different perspectives about the appropriate treatment approaches, such as how to handle behaviors in children with ASD. Perhaps more significant, this researcher has found that parents and therapists are both important contributors in helping a child with autism attain academic and social goals. Specifically, the consistent engagement of a child with autism is an effective treatment strategy by both parents and behaviorists that will move the child toward fulfilling her or his greatest potential of academic and social success. Thus, the skills and knowledge the parents gain from a parent-training curriculum will assist their child with autism to succeed socially and academically (Wang, 2008). The purpose of this research was to establish priorities in needed knowledge and skills based on the opinions of a large sample of ABA professional respondents.

Problem Statement

According to Crockett and Fleming (2007), parent involvement is an important factor that positively influences children with autism and their education.

The results of the studies by Crockett and Fleming (2007) and Bennett (2012) indicate that parents need to be closely involved in their child's treatment. Yet, according to the studies, although the parent-child relationship is fundamental to the education of

children with ASD, not enough attention has been paid either to giving parents a guide for optimizing this involvement, nor to effectively harnessing the experiential knowledge they have about their own ASD children. Bennett (2012) observed that almost half of all parental education programs studied failed to include a formal curriculum or manual, stating:

> A total of 43% of parent education programs used manuals to train the parents, meaning they taught out of a manual or provided them a manual to follow along. The remaining 57% did not use a curriculum or manual in their parent training. In regards to frequency and duration of parent training, 40% of the research articles contained no information and 23% contained information on either one or the other, but not both. (p.19)

Over a decade earlier, Gresham, Beebe-Grankenberger, and MacMillan (1999) had recognized a "discrepancy between what is known and what is implemented in practice" (p. 571) for a child with autism. They stated that in their review of comprehensive treatment programs for children with autism, they found that treatment programs emphasize some skills more than others and that not all programs integrated parents into the treatment plan. Gresham et al. (1999) further noted that those programs that did include parent training had showed an increase in developmental functioning in the child with autism.

More recent studies by Dunst, Trivette and Hamby (2012) recognized that parents need both formal and informal ways to embed a child's interests into learning within the ASD treatment program. The authors found that promoting the training of parents in

interest-based activities for their child would facilitate the use of best practices in instruction and thus improve their child's performance.

The insufficiency of such materials may partly be a result of the differing perspectives of parents and professionals For example; Murray, Ackerman-Spain, Williams, and Ryley (2011) indicated that parents and professionals view problem-solving processes from different perspectives when working with a child with autism. They noted that when parents and professionals are not adequately trained, they engage in the traditional hierarchical relationship—expert instructs layperson—rather than working as collaborators. In fact, Murray et al. (2011) argued that the primary lesson parents and professionals must learn from each other, is not to be intimidated by one another when problem solving, but to act more collaboratively. Murray, Curran, and Zellers (2008) claimed that parents' existing knowledge of their child, together with skills gained from training experiences, helps empower them and develops self-assurance and proficiency that improve outcomes for their child with ASD (Murray, Ackerman-Spain, Williams, & Ryley, 2011; Murray, Curran, & Zellers, 2008).

In addition to parental involvement, researchers have also highlighted the importance of behavioral early intervention, typically defined as time-intensive, highly structured repetitive sequences that reward correct responses. A study by Coolican, Smith, and Bryson (2010) demonstrated that early intensive behavioral intervention improves communication and the acquisition of knowledge and social skills in young children with autism. Similarly, Zingale, Belfiore, Trubia, and Buono (2008) showed that most children benefit from intensive early intervention. Rogers and Vismara (2010) reported that some early intervention programs share common features, including

(a) trained home therapists and schoolteachers delivering the intervention; (b) a focus on the social areas affected, such as social skills and communication; and (c) active parental participation in both the decision-making and therapeutic delivery of their child's treatment.

Bennett (2012); Solomon, Ono, Timmer, and Goodlin-Jones (2008); and Crockett and Fleming (2007) all argued that "parental involvement is a factor in the success of a child with autism in an early intervention program" (Crockett and Fleming, p. 77). Bennett (2012) conducted a qualitative study that explored the perceptions of behaviorists in the field of autism concerning parental involvement in early intervention programs for children with autism. She concurred with Solomon et al. (2008) that further research is necessary to understand the relationship between parent involvement in the child's treatment and the effectiveness of that treatment (Bennett, 2012; Solomon et al., 2008).

Diagnosis of autism. Clearly, the first step in treating any pathology is accurate diagnosis. Diagnosis of autism disorders is complicated by the fact that, as the American Academy of Pediatrics (AAP) (2013) reported, there are still "no known causes of autism" (p. 407). The history of the diagnosis, addressed in detail in Chapter 2, can be summarized as follows:

In 1943, Kanner reported in a now-famous study on a group of children with what he called "infantile autism." However, most doctors and psychologists continued to label the cluster of symptoms identified by Kanner (1943) as "infantile schizophrenia," "emotional disturbance," or a form of retardation (Thompson, 2013).

Published in 1961, what became known as the Creak Scale, a 9-point diagnostic criterion list, was adopted for assistance in diagnosing "infantile schizophrenia" through

observation of symptoms. In 1968, "infantile schizophrenia" was further relabeled in the American Psychological Association (APA)'s *Diagnostic and Statistical Manual–Second Edition* (DSM-II) as "schizophrenia, childhood type."

"Infantile autism" was identified for the first time as a distinct diagnosis in the DSM-III (1980). This shift was accompanied by the development of other methods of clinical observation, parent interviews, and newer rating scales such as the Childhood Autism Rating Scales (CARS) and the Autism Behavior Checklist (ABC). These newer scales incorporate and elaborate on the points on the Creak Scale (Thompson, 2013).

The American Academy of Pediatrics (AAP, 2013) recommended that "all children receive routine developmental screenings, as well as specific observational screenings for autism at 9, 18, and 30 months of age" (p. 406). Such developmental screening can detect early signs of autism as soon as between ages 9 and 18 months (AAP, 2013). In fact, the average child diagnosed with autism is "between the age of 12 and 18 months" (p. 406). However, the AAP indicated that there is no definitive medical test to diagnose autism; instead, as part of developmental and observational screenings, "specially trained physicians and psychologists administer autism-specific behavioral evaluations to diagnose the disorder" (AAP, 2013, p. 406). Additionally, the AAP (2013) reported that early signs of autism are typically observed by parents, although many of these parents are unaware that these signs are characteristics of an ASD diagnosis. These signs are usually caught by a pediatrician performing a regular checkup on the child (see Appendix A).

In a fact sheet on autism, Amaze (2014) reported that many child psychiatrists and other trained professionals use for autism diagnosis a uniform set of criteria presented in

the *Diagnostic and Statistical Manual of Mental Disorders–Fifth Edition* (DSM-5) (see Appendix A). These criteria involve assessments of parent surveys, observations, and play.

The CDC (2013) states that this diagnostic procedure for autism assessment requires a 2-step process. The first step is examination by a pediatrician using a screening assessment. Parents and pre-school teachers who observe unusual behaviors in a child, such as repeated failure to make eye contact and playing with toys in unusual ways, may initiate the first step, which is to pursue screening by a pediatrician. The pediatrician does a physical exam to rule out other medical causes for the child's difficulties. If the pediatrician identifies characteristics of autism, then the second step is initiated. This step is for a psychologist or other trained professional to conduct a behavioral assessment in order to determine whether autism is present. Such professionals have extensive training in behavioral disorders and can help differentiate ASD from other conditions (CDC, 2013).

Treatment of autism. Once a diagnosis is made, doctors and autism professionals provide the family with information on various treatment plans, (CDC, 2013) and the parents decide which treatment they would like to pursue for their child. According to Autism Speaks (2014), parents receive pamphlets with information regarding ASD treatment from their pediatrician. They also have the option of obtaining a specially designed 100-day kit from Autismspeaks.org for newly diagnosed families informing them of what treatment therapies are available for their child. Autism Speaks (2014) noted that there are 11 established treatments available for autism. Among the more popular treatment options are the behavioral approaches of Lovaas and the Early

Start Denver Model (ESDM). Also widely used are Relationship Development Intervention (RDI) and the Developmental, Individual-differences, Relationship-based (DIR/Floortime) model (Dozier, Iwata, Thomason-Sassi, Wordsell, & Wilson, 2012). The most common autism intervention approaches are briefly summarized below. These intervention methods will be more fully discussed in Chapter 2.

Behavioral approaches. Vismara, Young, and Rogers (2011) noted that there are several versions of behaviorally based treatment for children with autism. All of these fall under the heading of Applied Behavior Analysis (ABA). The authors cited two successful models in particular: the Lovaas Model (Lovaas, 1987) and the Early Start Denver Model or EDSM (Rogers & Dawson, 2010). Heron, Cooper, and Heward (2007) stated that Lovaas paved the way for behaviorist methods for children with autism. According to Heron et al. (2007), Lovaas (1987) identified discrete skills to be taught by behaviorists and (crucially) reinforced by parents. "The parents worked as part of the treatment team throughout the intervention; they were extensively trained in the treatment procedures so that treatment could take place for almost all of the subjects' waking hours, 365 days a year" (Lovaas et al., 1987, p. 5). Heron et al. (2007) explain that Lovaas' behaviorally based methods involve time-intensive, highly structured, repetitive sequences in which the child receives a reward for correctly responding to a command. Generally, Lovaas' methods have been applied to children aged 5 and older.

Using a similarly behavioral approach but oriented to earlier stages of development, the Early Start Denver Model (ESDM) was specifically tailored to children with autism aged 12 to 48 months (Rogers & Dawson, 2010). Rogers and Dawson (2010) wrote that the model incorporates parental involvement at home during routine and daily

activities, and reported parent involvement as important to a child's successful progress (Rogers & Dawson, 2010).

Relationship-based approaches. RDI (*Relationship Development Intervention*) is a theoretical model and therapeutic approach designed to focus on one core symptom area of autism, social interaction. RDI's goal is to help ASD children improve key skills like recognizing and learning from other people's subjective responses, adapting mentally to new circumstances, solving new kinds of problems, and anticipating future events based on past experience (Gutstein, 2009). Pioneered by psychologist Steven Gutstein, RDI builds on the theory that what Gutstein labeled *dynamic intelligence* is critical to enhancing the quality of life for those with autism (Gutstein, 2009). He defined dynamic intelligence as the ability to think flexibly in social situations. According to Gutstein, the lack of dynamic intelligence, manifested as a rigid, non-adaptive worldview and way of thinking, is a defining characteristic of autism. Gutstein and his colleagues designed an instrument, the Relationship Development Assessment (RDA), to diagnose a child's individual pattern and levels of development. Unlike ABA, RDI does not identify or teach specific behaviors, instead identifying levels of capacity in each area and allowing a variety of markers to manifest achievement of that level, depending on the individual child.

RDI recommends that the majority of early structured therapist and parent interactions encourage *declarative language* from the child by modeling it in interactions (Gutstein, 2009). Declarative language is defined in RDI as the sharing of ideas and feelings by whatever form of communication, including nonverbal expression. For example, in the early stages of treatment for children with ASD, the RDI therapist may

restrict spoken language in favor of nonverbal communication and eye contact if this allows more interaction (Gutstein, 2009). This approach, like ABA, follows a sequence of developmental milestones; but unlike ABA, RDI does not define these milestones by the achievement of specific behaviors. For instance, when an ABA therapist is working to help the child achieve the behavior of answering correctly aloud when asked "What is your name?" the child is not credited with achievement until she actually says her name. In RDI, any response to this question, such as a gesture or a mumble—even, in severe cases, mere toleration of the therapist's presence and speech—is considered an achievement because it is an *interaction*.

The *Developmental Individual-difference Relationship-based model* (DIR) was created by child psychiatrists Stanley Greenspan, and Serena Wieder (Autism Speaks, 2014). As a theoretical framework, DIR studies the development of the functional capacities of children in the dual context of a) "their unique biologically based processing profile" and b) their relationships and patterns of interaction with family members. "It uses the complex interactions between biology and experience to understand behavior and articulates the developmental capacities that provide the foundation for higher order symbolic thinking and relating" (Wieder and Greenspan, 2003, p. 425).

"Floortime" is the name given by Greenspan and Wieder to the practical application of DIR. Whereas RDI follows a structured individual treatment plan prepared by a therapist, Floortime consists of a set of techniques applied in an open-ended way in spontaneous "floor time" play with the child and centers on emotional development achieved through solely child-parent interaction. Adults follow the child's lead, "establishing a foundation of shared attention, engagement, simple and complex gestures,

and problem solving to usher the child into the world of ideas and abstract thinking" (Wieder and Greenspan, 2013).

Despite these differences in approach, practitioners concur that parents need to acquire professionally developed knowledge and skills to help modify behaviors to improve a child's capabilities (Heron et al., 2007). In a wide-ranging review of parent-oriented materials about these various approaches, however, this researcher has found that the knowledge and skills specifically required of parents in each one are inadequately prioritized if at all. This study focuses on knowledge/skill prioritization in one therapeutic approach, ABA. This circumscription is both to establish a manageable field of research and to build on the researcher's own professional experience with the approach. ABA is also the longest-practiced and to date best validated of the approaches summarized above (Dozier et al., 1999)

Theoretical Rationale

Heron et al. (2007) wrote that a scientifically proven treatment for autism is a system of behavior modifications geared to improve specific behaviors. Behaviorism is the theory that underlies ABA, and as such was used as the theoretical framework for this study.

Behaviorism was founded on the early research of John B. Watson and Ivan Pavlov and further developed by later psychologists, above all B.F. Skinner (Heron et al., 2007). Psychologist John B. Watson, recognized as the lead advocate of behaviorism, coined the term *conditioned emotional reaction* in his 1920s study *The Little Albert Experiment*. In this experiment, "Little Albert," a toddler-aged child, was shown a live rat and a rabbit, demonstrating no fear of either: Using a term he had coined in 1920, Watson

termed “Albert’s” lack of fear an *unconditioned response*. Watson and Rayner (1920) then began showing “Albert” both animals accompanied with a loud, unpleasant noise: the *conditioned stimulus*. After multiple repetitions of this combination of stimuli, Albert showed an aversive reaction to both animals. Watson and Rayner went one-step further and probed Albert’s reaction to all furry things, including blankets and beards. Albert had developed a phobia (i.e., irrational fear) of all furry things: the *conditioned response*. Watson and Rayner (1920) claimed that the experiment was a success, showing that “behaviors were learned and not inherited” (Watson & Rayner, 1920, p. 13). In a later paper, Watson (1924) crisply summarized classical “radical” behaviorism, so called because it ignores the internal workings of the mind as unobservable, focusing instead on external stimulus and behavioral response: “Behaviorism...holds that the subject matter of human psychology is the behavior of the human being” (p. 11).

Following on Watson’s work, Pavlov's famous research on the canine digestive system proved that classical conditioning of behaviors is teachable through conditioned associations in animals. Pavlov conducted his experiment by feeding dogs and ringing a bell when presenting food. The dogs then salivated. Later, after many repetitions, merely ringing the bell caused the dogs to salivate, even without the food present. This is now termed *classical conditioning* (Pavlov & Anrep, 1927). Before conditioning, the taste of food is the *natural stimulus* and salivation is the *unconditioned response*. The sound of the bell is the *neutral stimulus*—since by itself the sound of the bell is neutral in relation to salivation. Once the association between the bell and the taste of food is established, salivation to the sound of the bell (now the *conditioned* stimulus) is the *conditioned response* (Pavlov & Anrep, 1927). Pavlov argued that the experiment was a success,

stating that behaviors were teachable through conditioned association (Pavlov & Anrep, 1927).

Skinner (1957), summarizing earlier research, expanded on Watson's (1920) and Pavlov's (1927) work with his own concept of *operant conditioning*. In operant conditioning, the performance of a desired behavior is rewarded, while the performance of an undesired one (or the nonperformance of the desired one) is punished. For example, when a puppy is being house-trained, it is rewarded with petting or a treat when it scratches at the door to go outside and punished with a light smack on the hindquarters with a rolled-up newspaper when it urinates or defecates on the floor. In this way, a behavior is either *positively* or *negatively reinforced* (Boulding, 1984). The primary difference between classical and operant conditioning is that the former is involuntary—a conditioned reflex—while the latter is voluntary (the subject chooses to perform the desired behavior because of the conditioning).

Using this model, Skinner (1953) developed programmed instruction using a sequence of steps with a "teaching machine" (a mechanical device that administered a curriculum of programmed instruction). The machine required students to perform tasks broken into small steps, which is comparable to working with a tutor one to one (Skinner, 1960). The early machines were simple programmable analog devices: one version would require students to tap out a rhythm in unison with the machine; another used a list of questions. Each correct response was rewarded with an affirmative statement or some other positive stimulus. In a later commentary on his own work, Skinner (1991) wrote that "the first responses of each sequence given in the teaching machines were prompted, but as the performance improved, less and less help was given" (p. 44). In other words,

the students not only learned from the program, but learned better as a result. This has obvious implications for the treatment of autism via ABA.

Conditional learning occurs when a person or animal is conditioned to behave in a particular way by rewards and punishments. As a behaviorist, Skinner believed it was more productive to study observable behaviors rather than internal mental events (Boulding, 1984). Skinner (1957) described the chain of causes, actions, and consequences of behavior as *operant conditioning*. He coined the term to explain antecedents (i.e., stimulus), behavior (i.e., action from stimulus) and consequences (i.e., positive or negative reinforcement of behavior)—the A-B-C sequence (Boulding, 1984). Boulding (1984) stated, "Skinner's work has led to teaching children, especially those with autism, to communicate effectively" (p. 485).

Skinner's work has been enormously influential. The National Standards Report (2009) concluded that two-thirds of established treatments for autism are exclusively developed from the behavioral literature of applied behavioral analysis. The authors state that fewer than 10% of all ASD interventions lack components that include behavioral approaches even if the overall approach is non-behavioral. The National Standards Report's review of literature on autism treatments suggests a pattern of behavioral approaches having the strongest research support. Additionally, Granpeeshe, Tarbox, and Dixon (2009) conducted a literature review of treatment programs, reviewing research on the effectiveness of applied behavior analysis for individuals with autism. They concluded that ABA treatment was consistently reliable and proven scientifically valid through a number of research studies (Granpeesheh, Tarbox, & Dixon, 2009).

Heron et al (2007) wrote that B.F. Skinner was the father of behaviorism as we know it today. They pointed out that Skinner developed many of the principles used in the application of ABA: "Without question, Skinner's writings have been the most influential both in guiding the practice of the science of behavior and in proposing the application of principles of behavior to new areas" (p. 11). They describe behavior analysis as comprised of three major branches: behaviorism, experimental analysis of behavior (EAB), and ABA. Behaviorism is a theory of learning based on behaviors that are acquired through conditioning; EAB consists of controlled laboratory experiments to analyze and identify the principles of behavior; ABA is behavior analysis applied to treat people in need, including individuals with ASD and other developmental disabilities.

Baer, Montrose, and Risley (1968) conducted an early and definitive study on ABA, which described it as applied research using a "close relationship between the behavior and stimuli [i.e., things or events that evokes a reaction]" (p. 3). Baer et al. were the first group of behavioral scientists to apply ABA-like methods, which had previously only been used as EAB in animal studies, to human children. In ABA, a specific behavior immediately and repeatedly follows a given stimulus, which strongly implies a causal relationship between them. The authors went on to define seven key characteristics of ABA from the research (see Appendix B).

Baer et al. (1968) tested and retested inter-rater reliability (agreement) in ABA research, as well as examining the analytics of behavior, which required the demonstration that certain events were responsible for the incorporation or lack of incorporation of any particular behavior. Baer et al. exercised control over the behavior when the experimenter applied a particular variable. When they removed the variable, the

behavior was lost. Baer et al. assessed reliability by replicating and simplifying the components of the process through attention, approval, or candy reinforcement.

Lastly, Baer et al. (1968) examined the *generality* of all seven characteristics. The researchers defined the generality of a behavior as the extent to which it is manifest in a variety of settings and in the company of a variety of people (e.g., parents, teachers, other individuals). Baer et al. found that the more general the application of the behavior, the easier it was for the child with developmental challenges (such as mild retardation or dyslexia) to gain more knowledge. They discovered that a procedure that is effective in changing behavior in one setting could be replicated in another. This was the start of generalization within early intervention for children with autism (Baer et al., 1968).

Willis (2000) reviewed the theories of ABA. He stated that the work of Baer, Wolf, and Risley (1968) set the tone of ABA by addressing three important dimensions of applied behavior analysis in their work: "underlying *theories* of learning that should guide research and practice, the types of *data* that should be gathered in applied research, and the research *designs* to analyze behavior." Willis noted that they were firm in their definitions of all three dimensions of appropriate theories, appropriate data, and appropriate designs. He found that over the years since the 1968 article came out, "thousands of articles, books, and monographs" (p. 209) have been published in the ABA tradition, which continues to be guided by much of Baer, Wolf, and Risley's work (Willis, 2000). The single most important and influential development of ABA with respect to the treatment of ASD has been the work of Ole Lovaas and associates, beginning with his groundbreaking 1987 study and continuing with his development of early intensive behavioral intervention or simply intensive behavioral intervention

(EIBI/IBI). Lovaas' work has in turn been adapted by other ABA practitioners. Among the most significant of these adaptations has been the Early Start Denver Model, which is a combination of two other ABA approaches, the Denver Model and Pivotal Response Technique (PRT).

ABA relies on *imperative language* (Dozier et al., 2012). Dozier et al. (2012) wrote that imperative language (i.e., requiring a verbal response to social interactions) utilizes the "ABC" framework—antecedent, behavior, consequence. They reported that imperative language encourages the child to desire participation in learning by pairing activities (i.e., coupling a preferred activity or item with a non-preferred one). For example, if a child wants to play with the iPad (the preferred activity) she must sit at the table to do so (the non-preferred activity). Over time, the non-preferred activity becomes associated in the child's mind with the preferred one. Component skills for social interaction strengthened by this method include attention and listening. Dozier et al. (2012) recommended the modality as effective because there is abundant scientific data supporting the use of ABA programs for the treatment of autism.

Throughout the development of ABA, criticism of its underlying (behaviorist) assumptions have been raised by supporters of cognitive theory, especially prior to the publication of the Lovaas study in 1987 and its subsequent replication and validation (see below). Studies by Brewer (1974) and Boulding (1984), for example, reviewed both classical and operant conditioning. Brewer and Boulding both noted that many of Skinner's experiments were based on the behavior of animals. Brewer (1974) concluded that "[a]ll the results [reported in] the traditional conditioning literature are due to the operation of higher mental processes, as assumed in cognitive theory, and that there is not

and never has been any convincing evidence for unconscious, automatic mechanisms in the conditioning of adult human beings" (p. 27)

More recent studies, buttressed by cognitive neuroscience, have taken a more nuanced approach. For example, Naik (2001) also expressed concern that Skinner and his theoretical descendants were taking the principles he observed in animals and overgeneralizing them to the more complex nature of human learning. However, Naik also pointed out that it is common practice to use the basic principles of behavioral psychology in the treatment of children with autism, with considerable and well-verified success. Naik's succinct summary of his view of behaviorism is worth quoting in full:

> [T]here are very few scientists who believe that the behaviorist theory is as comprehensive as it was once thought to be. In spite of the holes in the theory, there can be no doubt as to the usefulness of the research done in the field of behaviorism. One cannot totally dismiss the effect the environment has on behavior nor the role it plays in developing personality as shown through this research. Indeed, when the theory of behaviorism is applied to combat certain disorders, the results have shown it to be remarkably effective" (p. 2).

Kirsch, Lynn, Vigorito, and Miller (2004) proposed a tentative reconciliation between "cognitive" and "behavioral" approaches based on their survey of research. Noting that even the most "mechanistic" approaches to learning now acknowledge some role for mental representations in learning, they argued: "[C]ognitive involvement (typically thought of as expectancy) is assumed for most instances of classical and operant conditioning, with current theoretical differences concerning the level of

cognition that is involved (e.g., simple association vs. rule learning), rather than its presence" (p. 1).

Kirsch at al. (2004) go on to review large numbers of studies grouped under two headings: "Data Indicating Higher-Order Cognitive Mediation" and "Data Indicating Automatic Conditioning." The first group supports "cognitive theory, including S–O [stimulus-outcome] associations, according to which expectancy is hypothesized to mediate the effects of conditioning. From this perspective, conditioning trials produce expectancies, and it is the expectancy that produces the response." The second group supports "the hypothesis that conditioning is an S–R [stimulus-response] mechanistic process in which expectancy and other cognitive factors are, at best, epiphenomena. From this perspective, conditioning trials produce conditional responses and perhaps expectancies, but there is no causal relation between expectancy and response" (p. 369)

Kirsch et al. concluded that "the construct of *set* may bridge the apparent divide between automatic conditioning processes and representational cognitive processes" (p. 385) Simple S–R associations of the type described in the behaviorist literature can be viewed as *response sets* that prepare the organism to behave in the conditioned way when the stimulus is encountered. Similarly, S–O and R–O associations (described in both behaviorist and cognitively oriented work) can be described as "*stimulus sets* that prepare the organism to perceive environmental stimuli in particular ways" (p. 387). Besides the potential clinical usefulness of such a conceptual redefinition, it underlines the point that there is now a substantial overlap between behavioral and cognitive-affective approaches to learning.

ABA parent training. Zingale et al. (2008) pointed out that most autism treatment programs mention the importance of parent training. Zingale et al. found that daily efforts by trained parents yielded the largest gain. The authors reported that parent training improved the overall quality of life for the entire family. When parents felt empowered by such training, their confidence grew, as did their understanding of the diagnostic and prognostic aspects of their child's issues. This helped the parents imagine the possibility of *normalizing* the family (Zingale et al., 2008). Additionally, Zingale et al. (2008) reported that the design of many programs focuses on improving interactions between parents and their child.

Though focused on the perceptions of practitioners rather than on the effectiveness of parental participation per se, Bennett's (2012) study gave insight into importance of parental involvement in the child's developmental success. Bennett's findings indicated that "Lack of parental involvement was detrimental to the child's development and progress within an early intervention program" (p. 8). Bennett argued that parent training in early interventions is an important variable that influences the rate of success in a child's program. She wrote that many intervention programs encourage families to become more involved in the teaching process to help increase the developmental rate of social skills. Based on her research, Bennett claimed that training parents as teachers led children to show higher levels of positive effects in early intervention. For example, Bennett quotes one of the participant practitioners:

> A lot of our kids have difficulty generalizing across different environments, so while we may be doing everything we can during the four hours a day they are here, the child is not going to gain as much progress if they *go home or to school*

in a different environment and are not able to continue working on these skills. (p. 45)

Crockett and Fleming (2007) wrote that parents of children with ASD showed more involvement in the ASD treatment after a parent training. They reported that children with ASD demonstrated increased performance in their home and school programs. In contrast, Crockett and Fleming noted that those children whose parents did not have training showed slower growth in social skills: "Both parents improved their teaching across child skills, suggesting that these effects occurred as a function of the parent training intervention" (p. 34). Moreover, "the lack of parental involvement has a significant effect on the child and their success in the program" (p. 45).

Randolph, Stichter, Schmidt, and O'Connor (2012) reported that after parents received training in "reinforcement, providing consequences, using multiple cues, sharing controls, and gaining attention" (p. 234), they showed more involvement in their child's continuing educational development and success in school and community. Randolph et al. indicated that regardless of educational level, the parents were able to successfully utilize the skills they learned when working with their child with ASD. Randolph et al. proposed that there be more support for training parents and further investigation be done on "certain characteristics that make this specific treatment more appropriate for some families and not others" (p. 236). Additionally, Bennett, along with Coolican et al. (2010) and McConachie and Diggle (2005), showed that early-intervention ABA programs that trained and involved parents helped a child progress developmentally.

Rocha and Schreibman (2007) conducted a study on parent training for families who have children with autism. The parent training consisted of ways to gain the

attention of a child before teaching, using an ABA approach: discrete trial training, instruction, understanding the response of the child during therapy, providing feedback to the child during therapy, using motivating toys, and prompting responses. Rocha and Schreibman claimed that parents' skills and knowledge of ASD constitute an important variable that positively influences children with ASD and their education. The authors likewise affirmed that effective intervention programs for children with autism recognize the importance of parent participation and encourage families to become more involved.

Statement of Purpose

The purpose of this quantitative study was to develop from behaviorists in the ASD field a professionally prioritized list of skills and knowledge necessary for parents to guide children with autism from birth to age 5. The study also compared the responses of those who are both professionals and parents of children with autism to those who are professionals only.

Research Questions

The following research questions guided the study:

1. What is the viewpoint of practitioners with a behaviorist perspective regarding the knowledge and skills that are necessary for parents to guide children with autism from birth to age 5 in the categories of behavior modification, parental participation, and ABA skills and knowledge?
2. Do behaviorists who are also parents of children with autism have a different perspective regarding autism than other behaviorists in the field, when prioritizing the knowledge and skills parents need in the categories of behavior modification, parental participation and ABA skills and knowledge?

Significance of the Study

The significance of the study is to fill a void identified in the research by creating a prioritized list of professionally developed skills and knowledge parents of children with autism need to optimize their contribution to their child's academic and social growth. Coolican et al. (2010) indicated that children must have a range of learning environments. They stated that such learning environments include family, schools, and out-of-school time programs. Bryson, Koegel, Koegel, Openden, and Nefdt (2007) found that the inclusion of parents in the training of evidence-based intervention techniques is an efficient way to expand the resources and services available to children with autism. Bryson et al. stated that parent training programs "increased child skills and self-efficacy" (p. 150).

Definition of Terms

The following definitions of terms are to add clarity to the issues underlying the study:

Applied Behavior Analysis (ABA). ABA is derived from an earlier practice called behavior modification. ABA is a form of behavior analysis based on the findings from the experimental analysis of behavior pioneered by B.F. Skinner in the 1930s and further developed by Ivan Lovaas and his colleagues into *intensive behavioral intervention*. This technique is typically carried out early in the development of children (from age 3 on) with autism and developmental delays (Autism Speaks, 2014).

Autism spectrum disorder (ASD). For the purpose of this study, ASD refers to classic autism and "pervasive developmental disorder–not otherwise specified" (PDD-NOS; APA, 2013). The term "autism" is used interchangeably with the term "autism

spectrum disorder" and its acronym ASD but no longer includes Asberger's Syndrome (see Appendix A).

Behaviorists. For the purpose of this study, "behaviorists" refers to individuals who have a degree in child psychology, psychology, special education, applied behavior analysis or are certified in behavior analysis and who work with individuals with the developmental diagnosis of ASD *using only behaviorism* as the theoretical foundation of their therapeutic practice

Core skills and knowledge. For the purposes of this study, "core skills and knowledge" refer to a list of skills and knowledge ranked with higher frequency in a Likert scale from 1 to 7. Items that were scored in the 50th percentile or above from surveys administered to behaviorists in the field of autism were presented as core skills and knowledge.

Curriculum. For the purposes of this study, curriculum refers to the list of knowledge and skills prioritized by behaviorists in the field of autism in regards to training parents of children with autism.

Developmental, Individual-differences Relationship-based/Floortime. For the purposes of this study, Developmental, Individual-differences, Relationship-based (DIR)/Floortime refers to an "expansion of communication through circles of communication [i.e., conversation] by meeting the child at their cognitive and social developmental level" (Autism Speaks, 2014 p. 39). It is different from a behavioral approach because it does not separate and focus on speech, motor, or cognitive skills but rather addresses these areas through a synthesized emphasis on emotional development (Autism Speaks, 2014)

Early intensive behavioral intervention (EIBI). For the purpose of this study, *early intensive behavioral intervention* (sometimes simply *intensive behavioral intervention* or IBI*)* refers to the ABA-based method developed by Lovaas et al. and subsequently elaborated by many other ASD-focused behaviorists. EIBI involves10-30 hours a week of behavioral techniques applied to a child aged from birth to 5 years who has a developmental diagnosis of ASD. EIBI consists of time intensive, highly structured, repetitive sequences that reward correct responses by the child.

Early Start Denver Model (ESDM). For the purpose of this study, ESDM refers to an approach that combines two models of intensive behavioral intervention based on the EIBI techniques of Lovaas et al. to children from birth to age three. ESDM's goals are to foster social gains, communicative, cognitive, and language development in very young children with autism (Autism Speaks, 2014).

Non-core skills and knowledge. As noted, for the purposes of this study, *core skills and knowledge* refers to a list of skills and knowledge ranked with lower frequency in a Likert scale from 1 to 7. Skills and knowledge that were scored below the 50th percentile from administered surveys to behaviorists in the field of autism were presented as *non-core skills and knowledge*.

Parent. For the purpose of this study, the term *parent* refers to the primary care giver.

Relationship Development Intervention. For the purpose of this study, Relationship Development Intervention (RDI) refers to teaching children with autism how to engage in social relationships with other people by helping them develop relationships with their parents and other family members. RDI focuses primarily on the

core deficits of social skills and interaction without the teaching procedures and framework required by a behavioral approach (Autism Speaks, 2014).

Training. For the purpose of this study, training refers to the acquisition of knowledge, skills, and competencies that relate to working with individuals diagnosed with autism.

Chapter Summary

While there is no known cure for autism, there are treatments and educational models that produce successful outcomes for behavioral and communication issues associated with the condition. Interventions from both professionals and parents working collaboratively improved skill acquisition by the child with autism to some degree (Crockett & Fleming, 2007). Studies by Crockett and Fleming (2007) and Bennett (2012) indicated a need for additional research to examine parental involvement as well as parent training to guide children with autism.

The study developed a professionally prioritized list of core skills and knowledge necessary for training parents to guide children with autism from a more general list of items already used in ABA training for behaviorists in the field of autism.

Chapter 2 will demonstrate analysis of the research for the study. Chapter 3 will explain in detail the research design and methodologies that were used for the study. Chapter 4 will present the results of the study. Lastly, Chapter 5 will discuss and interpret the results of the study presented in Chapter 4.

Chapter 2: Review of the Literature

Introduction and Purpose

Autism is a "complex developmental brain disorder that inhibits social interaction and communication skills" (American Psychological Association (APA), 2013, p. 20). This condition, now commonly also described as Autism Spectrum Disorder because it includes a range from mild to severe with overlapping sets of symptoms (see below), affects more than two million Americans and tens of millions of people worldwide (Autism Speaks, 2013). A recent survey conducted by the Centers for Disease Control and Prevention (CDC, 2014) revealed that an estimated 1 in 68 children are diagnosed with an autism spectrum disorder (ASD). Autism among children is being diagnosed at earlier ages, and a growing number of children are diagnosed by age three: in 1970, 1 in 10,000 children under three was diagnosed with "infantile autism" per the DSM-III, whereas according to a recent survey conducted by the Centers for Disease Control and Prevention (CDC) in 2013, 1 in 68 children in this age range were diagnosed with ASD (CDC, 2013). This represents an increase of 3 orders of magnitude over 4 decades, a staggering figure. The CDC (2013) stated that this phenomenon of increased diagnosis has created monumental challenges for schools, parents, social agencies, and communities.

Among the challenges faced by practitioners in the field is helping parents learn to collaborate in the agreed upon treatment program. This challenge is exacerbated by the absence of professional agreement on specifically what parents need to learn, particularly in the more popular ABA treatment programs. The present study surveyed more than 450 practitioners in order to establish a prioritized list of specific skills and knowledge parents need in ABA treatment to assist in the growth and development of their children

from birth to age 5 diagnosed with autism. The function of the literature survey that follows, therefore, is not to provide a comprehensive review of all current research on and approaches to autism treatment. Rather, it is intended to set the discussion of ABA-based research and therapy in the two contexts: the historical evolution of autism research and treatment; and the literature on the two other most popular models, RDI and DIR/Floortime, both of which are primarily relational-developmental in orientation.

Review of the Literature

This review of the literature includes the history of autism, approaches to the treatment of autism, and reviews of parent training programs for autism.

Background and definitions of autism. The first recorded reference of autism-like behaviors was by Jean-Marc-Gaspar Itard, a French physician who observed symptoms similar to autism in a young boy named Victor in 1797. The child, also known as the "Wild Boy of Aveyron," was thought to have lived his childhood alone in the woods of France. Itard's treatment for the "wild boy" was a behavioral program designed to help increase speech and form social attachments (Lane & Pillard, 1979).

According to Trevarthen et al. (1998), Bleuler, a Swiss psychiatrist, coined the word autism in 1911. Bleuler developed the term from a compound of two Greek roots: *aut*, meaning self, and *ism*, which implies a state, to describe the condition in which a person is removed from social interaction. Bleuler used the term to describe individuals with schizophrenia who showed signs of withdrawal (Trevarthen et al., 1998).

However, Kanner (1943) was the first child psychiatrist in the United States to use the term autism in his introduction of the label of *early infantile autism*. Kanner's now famous 1943 study included 11 children with strikingly similar behaviors. Kanner

used the term *autistic* to identify a set of deficits he observed in this group of children he studied and reported on in detail. Specifically he described these children with "autistic aloneness" as having no desire to interact with others, which is typical of ASD (Kanner & Eisenberg, 1956).

Bleuler's earlier use of the term "autism" to describe a characteristic of individuals diagnosed as schizophrenic led to some confusion among professionals between the definitions of autism and infantile schizophrenia. This difference was not formally clarified until 1980, when "infantile schizophrenia" was reclassified in the DSM-III as "infantile autism."

Kanner's 1943 paper was agnostic as to the causes of the syndrome he observed in his subjects: that is, he did not ascribe the syndrome to schizophrenia. He merely noted that all the children came from highly intelligent parents. By 1956, however, he had concluded that maternal emotional distance was at least partly responsible, though according to Feinstein (2010) he vacillated. In a 1960 interview, Kanner used the term "refrigerator mothers" to describe autism as an infant's response to a sexually and/or emotionally "frigid" mother who had "defrosted" herself enough to produce a child. He speculated that such mothers only met their child's material needs and not emotional needs after the child was born (Kanner & Eisenberg, 1956). In a 1969 presentation to what became the Autism Society of America, however, Kanner definitively renounced this view, saying: "[H]erewith, I especially acquit you people as parents. I have been misquoted many times. From the very first publication until the last, I spoke of this condition in no uncertain terms as 'innate.' But because I described some of the

characteristics of the parents as persons, I was misquoted often as having said that 'it is all the parents' fault'" (Feinstein, 2014).

Coincidental to the work Kanner was doing in the 1940s, Asperger was studying children with interpersonal and communication deficits but higher levels of functioning in other areas, now known as Asperger Syndrome. According to Frith (1991), Kanner and Asperger, by a remarkable coincidence, independently described the same type of disturbed child to whom clinicians and researchers paid little attention before the known diagnosis of autism. Asperger, an Austrian pediatrician, studied four boys who had an identified pattern of behaviors he called *autistic psychopathy*. The pattern included "a lack of empathy, little ability to form friendships, one-sided conversation, intense absorption in a special interest, and clumsy movements" (Asperger, 1979, p. 47). Asperger's Syndrome was first described in a 1944 paper, written in German and later transcribed in English. He gave a positive perspective on autism that was not there before. Asperger noted that these children appeared to have strengths and capacities society did not suspect existed, such as flawless rote learning, specialized talents, and higher IQs (Asperger, 1979).

In the late 1960s, Bruno Bettelheim, a child developmental specialist, championed Kanner and Eisenberg's (1956) analysis of autism, confirming it to be the product of mothers who were cold and distant, thus depriving the child of a chance to properly bond through studying parent/child relationships. Bettelheim (1967) portrayed the child with autism as living in a "glass bubble" and unreachable. He believed that autism was not organic but caused by mothers not emotionally connected enough to their child—who, therefore, received insufficient affection. Bettelheim futher concluded that

the primary cause of autism was from the mother-child relationship. He developed a form of treatment he called "parentectomy": removal of the child from his or her parents, in the hope that the child's social development would recover from the absence of the unaffectionate parent (Bettelheim, 1967).

An alternate perspective was presented by Rutter (1968) who conducted a study on the results of Bettelheim's (1967) approach. Rutter's research suggested that a biological syndrome rather than an emotional response to an unfeeling parent as the cause of autism. Specifically, the study showed that removal of the child from the biological parents (Bettelheim's "parentectomy") did not lead to an obvious improvement in the child's social development. Rutter (1968) concluded that parents were not to blame for their child's unusual behavior, noting that the parents of autistic children did not differ in their emotional characteristics from parents of normal children. Unfortunately, it has taken decades for some parents to feel free of the guilt that Bettelheim's theory implied (Women's Studies Association of New Zealand , 2010).

The shift in perception of autism's causes from familial to biological brought renewed attention to Asperger's work on otherwise high-functioning children with communication and social perception difficulties among other symptoms. This was the next step in the formation of the APA's current diagnostic framework for autism disorders. According to the APA (1981), the term "Asperger Syndrome" was first used in a 1981 paper by Wing, in which she described children much like the boys discussed in Asperger's 1944 paper, "Deficits of Children with Autism**."** Wing's "syndrome" was subsequently incorporated as "high functioning" within the autism spectrum (see below).

The benchmarks for ASD as defined in the DSM-5 include developmental disabilities, social/behavioral problems, and physical challenges. The range of these symptoms is quite wide and any given individual will display an overlapping subset of them. Broadly: children diagnosed with ASD have difficulty both in interpreting the emotional behavior of others and in controlling their own emotions. They are delayed in language and gross motor development and have trouble communicating and conversing, though they may sometimes develop large vocabularies. In addition, they tend to focus on a narrow range of interests and engage obsessively in repetitious and ritualistic behaviors (Autism Speaks, 2014). Physical problems seen in individuals with ASD include asthma, digestive disorders, epilepsy, and frequent and persistent viral infections (AAP, 2013). However, since the biological origin of ASD is unknown, with multiple indicators pointing to a variety of causal agents and genetic markers, no biologically based test is available for diagnosing it (Heron et al., 2007).

Diagnosis of autism. During the decade after World War I, the American Medical Association developed a nationally accepted psychiatric guide called the *American Medical Association's Standard Classified Nomenclature of Disease*, first published in 1928. This work was the standard US guide to the classification and treatment of mental illness until after World War II and did not identify autism as a disorder. In 1952, the American Psychiatric Association (APA) produced the *Diagnostic and Statistical Manual of Mental Disorders-I* (the DSM-I) for continued guidance of medical professionals in treating mental disorders (APA, 1952) Like the AMA's guide, the DSM-I did not include diagnostic criteria for children demonstrating autism characteristics. Instead, children who demonstrated such symptoms were classified as

suffering from *childhood schizophrenia* (APA, 1952) (See Appendix C). The DSM-II (1968) maintained the label of "childhood schizophrenia" for symptoms of "autistic, atypical, and withdrawn behavior" (APA, 1968, p.35). The DSM-III, published in 1980, finally included autism as a distinct diagnostic category. However, *infantile autism* was the only form of autism identified. Criteria for the diagnosis required all six characteristics to be identified for the diagnosis of infantile autism (see Appendix C)

Later in the 1980s, the release of the DSM-III-R (Revised) included general criteria for autism, based on more concrete and observable behaviors (APA, 1987). (See Appendix D.) In 1994, the new DSM-IV added several subtypes of autism, including the newly established category of *pervasive developmental disorder (PDD)*. Additionally, it listed 16 new symptoms, of which only six exhibited were required for the diagnosis of autism. Two of the six items were based on "qualitative impairment in social interactions," (see Appendix E) (APA, 1994).

Amaze (2014) reported that child psychiatrists and other professionals now use a uniform set of criteria published in the DSM-5 (2013, see Appendix A) to detect autism through parent surveys, observations, and play. (The DSM's editors changed the numbering from Roman to Arabic numerals for this edition.) These criteria are widely used in early autism screenings. The characteristics of autism typically first noticed by parents are uncommon behaviors, such as a child not responding to his or her name, playing with toys in abnormal and repetitive ways, or failing to make eye contact (Heron et al., 2007).

At the beginning of 2013, then, the standard definition of autism was a cluster of complex developmental brain disorders defined by various subsets of a long and shifting

list of symptoms (CDC, 2013). The autism disorders were characterized by varying degrees of social, behavioral, and communication difficulties (see Appendix E) (CDC, 2012). In March of 2013, APA released the DSM-5, which made significant changes in the diagnosis of autism. The original one-size-fits-all diagnosis was broken down into a triple "spectrum" of syndromes: the Autism Spectrum Disorders. There were three identified subtypes of ASD, in descending order of severity: Autism Disorder, Asperger Syndrome, and Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS). In order to be diagnosed as having autism, individuals would need to demonstrate two impairments of social interactions and two repetitive stereotype behaviors such as "spinning, jumping, and other rhythmic movements of the body" first identified by Kanner (1943). Under the new guidelines, individuals previously diagnosed with Asperger's or PDD-NOS would be considered as having an ASD. This change now gives the diagnosis of autism instead of subcategorizing it into multiple *distinct* disorders (APA, 2013). Insurance companies (which have only covered ASD since 2010), schools, and service providers use the DSM-5 to determine what disorders and treatments are covered (see Appendix A).

Causes of autism. Since the causes of autism are presently unknown, the American Academy of Pediatrics' (AAP, 2013) research reported, "the rise of autism [that is, of diagnoses of ASD] may be explained through greater awareness and more accurate diagnosis" (p. 407). According to Landrigan (2010), however, there is evidence that environmental and genetic factors cause autism. Moreover, data from Landrigan's study specifically "links autism to the exposures in early pregnancy of thalidomide, valproic acid, and misoprostol; maternal rubella infection; and the organophosphate

insecticide, chlorpyrifos" (p. 221). In other words, this complex spectrum of disorders may have an equally complex etiology, including multiple potential prenatal environmental causes such as synthetic chemicals and viral infection in the mother.

At least one such causal agent has been ruled out, however. In response to widespread concern (see, for example, Gross (2009) stirred by public figures such as talk-show host Jenny McCarthy and environmentalist Robert F. Kennedy Jr. (Kennedy, 2005), the American Academy of Pediatrics (AAP, 2010) conducted a study on the exposure to thimerosal (a mercury-based preservative) used in vaccinations. They examined the relationship between prenatal and infant exposure to vaccinations containing thimerosal and its relation to ASD and regression of skills within ASD. The AAP used three managed care organizations with 256 children with ASD and 752 controls matched by age and gender with an ASD diagnosis. They used medical charts and parental interviews to assess associations between ASD and developmental regression (i.e., return to a former less developed state) from exposure to thimerosal during prenatal care and infancy. Results showed no findings of increased risk of any of the outcomes. The AAP concluded that prenatal and early-life exposures to vaccinations that contain thimerosal are not related to the increase risk of ASD (American Academy of Pediatrics, 2010).

Yochum (2009) noted that although most children with ASD show clear developmental differences from their normal peers, children with what she refers to as "autistic regression" have normal development up to about two and a half, after which they rapidly lose skills they had gained earlier. "Thereafter, these individuals experience a loss of previously acquired skills and this regression is sometimes preceded by illness or medical treatment" (p. 201). Hypothesizing that the regression might be caused by an

unknown toxicant or toxicants, Yochum conducted a study on the effects of toxic exposures on genetically modified mice pups thought to be more sensitive to these types of exposures in early life. These baby mice underwent a developmental regression following exposure. Yochum's study, then, showed a genetic component in the form of autism susceptibility. Her results supported that "autism may be the result of a gene mutation by a toxicant interaction wherein both factors share a common feature of oxidative stress" (p. 203). In other words, autism could be triggered by environmental factors during postnatal care that cause a genetic mutation. She stated that although there has not been a direct cause of autism identified, further research is needed to determine the biological contributors in humans.

Yochum's study is one of a large and growing number that address possible primary and contributory causes of autism, including both genetic and epigenetic factors, toxic exposures to the mother during gestation (thalidomide or valproate), maternal viral infections (rubella or cytomegalovirus), and other causes, including certain specific genes. Autism Speaks (2014) pertinently remarks: "It is important to keep in mind that autism is not one disorder with one cause. Rather, it is a group of related disorders with many different causes. In most instances, autism is likely caused by a combination of genetic risk factors that interact with environmental risk factors."

Treatment of autism: behavioral approaches. Levine and Chedd (2012) found that behavioral training and the use of positive reinforcement, self-help, and social-skills training can help to improve emotional comprehension, self-management, and communication skills. The authors noted that using behavior analysis to gather data showed that an evidence-based learning tool—that is, one in which there is a clear and

close association between a cue or instruction and the performance of a desired behavior—was effective in promoting acquisition and maintenance of new skills in children with autism (Levine and Chedd, 2012).

In early intervention settings, ABA addresses daily living skills (such as brushing teeth) and applies behavioral techniques (such as breaking down these skills into small, discrete, observable steps) (Heron, Cooper, & Heward, 2007) By working patiently to teach and reinforce such observable behaviors, therapists can bring about positive changes (Levine & Chedd, 2012).

In a groundbreaking 1987 study, Ole Lovaas found that behavioral interventions selected and administered by formally trained early interventionists were effective treatment for children with ASD. In so doing, he laid the foundation for his later development of *intensive behavioral intervention* (IBI) using ABA as it is now practiced. Lovaas (1987) drew his conclusions substantially from a study he conducted on the use of intensive behavior modification treatment using two groups of children. Each group met the following criteria:

1. diagnosed with autism;
2. aged less than 40 months if mute and less than 46 months if echolaic (automatically repeats heard vocalization by others); and
3. having the typical IQ of an 11 month-old or more at the chronological age of 30 months.

Lovaas organized these children into two groups, each of whose members received one-to-one behavioral therapy in their home, school, and community. One group of 19 was an intensive treatment group receiving 40 hours of treatment per week; the

other group of 19 was the control group receiving 10 hours or fewer per week. Lovaas also incorporated the parents of the non-control group as part of the treatment team throughout the intervention and provided them with extensive training in operant conditioning so that the "treatment could take place for almost all of the subjects' waking hours" (Lovaas, 1987, p. 5). Treatment for both groups continued over two years. Results showed that 47% of the children in the intensive therapy group achieved an age-normal IQ level based on a pretreatment assessment; in contrast, only 2% the control group achieved this level. Thus, Lovaas' study offered evidence that intensive behavior treatment for children with autism was successful (Lovaas, 1987).

Scholpler, Short, and Mesibov (1989) critically reviewed the Lovaas (1987) study and identified the following problem areas in the study: (a) choice of outcome measures, (b) criteria for selection, and (c) method for assigning control groups. Lovaas, Smith, & McEachin (1989) responded to each of these criticism areas in turn. For clarity and concision, each problem alleged by Scholpler et al. and the counter-arguments by Lovaas et al. are presented in a claim-and-reply format. This level of detail is important because Lovaas' work has been foundational in current ABA-based approaches to autism treatment in children and thus to the basis of the present study.

Scholpler et al. argued that the choice of measure was flawed due to an absence of multiple outcome measures, such as communication, social, and behavioral capacities before and after treatment. Lovaas et al. responded that his 1987 group had conducted 20 specific pretreatment and post-treatment assessments on each child that included variables sensitive to the deficits of children with autism such as language development, behavior problems, and cognitive impairment, but chose to report only IQ as the pre-

and post-intervention measure because IQ was widely recognized as an objective standard.

Scholpler et al. further argued that the Lovaas (1987) study showed selection bias, being skewed toward higher-functioning children with autism. They claimed that for the treatment group Lovaas et al. had picked "the best prognosis regardless of treatment" (p. 162) and that the selection criteria were intended to produce a biased sample. Lovaas et al. responded that their treatment and control groups were identical in all measures and that they had excluded children with low IQs from both groups because it was difficult to differentiate autism and profound retardation in infants.

Finally, Scholpler et al. complained that Lovaas' treatment group was supposedly of children who received behavioral treatment for 40 hours per week from a trained professional, while the control group members received their 16 weekly hours of treatment from a student therapist, thus skewing the results in the treatment group's favor (Scholpler, et al. 1989). Lovaas et al. replied: "Scholpler et al. (1989) think we should have had a control group receiving many hours of attention without treatment to rule out the possibility that attention alone brought about the outcome in the experimental group. We did not use an attention control group because we never supposed that the mere presence of adults who were interested in helping out autistic children would be sufficient to obtain a favorable outcome. If it were, the children's parents, who are as devoted and attentive as parents of 'normal' children, as well as dedicated teachers would have cured the children long ago" (p. 166). They concluded that they stood by their study because they had in fact safeguarded against the flaws asserted by Scholpler et al. They added that their study's results might not apply to children older than their subjects but that it held

out the hope that children with autism have at least the possibility of achieving "recovery" or normal functioning (Lovaas, Smith, & McEachin, 1989).

Broderick (2009) also criticized Lovaas (1987) for introducing the notion of "recovery" to ABA. Broderick suggested that before the concept of recovery can be validly employed, an operational definition is necessary for the word *recovery*. He also argued that Lovaas's use of the term gave families unrealistic hopes for ABA therapy for their child with autism. He noted that Lovaas pointed out that "certain residual deficits may remain in the normal functioning group that cannot be detected by teachers and parents and can only be isolated on closer psychological assessment, particularly as these children grow older" (p. 8). This admission and Broderick's critique of Lovaas' claims of "recovery" dovetail with Scholpler et al.'s criticism of claims of success based on a single measure (IQ) tested at the study's conclusion rather than repeatedly over time.

Despite these criticisms, over the past 40 years Lovaas (1987) has been replicated and validated in numerous studies, including Eikeseth, Smith, Eldevik, & Sigmund (2002); Howard, Sparkman, Green, Cohen, & Stanislaw (2005); Rogers & Vismara (2008); Sallows and Graupner (2005); Cohen, Amerine-Dickens, & Smith (2006); and Eldevik, Hastings, Hughes, & Jahr (2010). The work of Lovaas and his associates in EIBI/IBI has been extensively built on since 1987 in the development of treatment protocols for different age groups and autism disorders (Dozier et al., 2013).

A significant variation on Lovaas' EIBI is the Early Start Denver Model (ESDM), which adapts EIBI to children from newborn to age three. ESDM as developed by Vismara and Rogers (2008) combines two other behaviorally based approaches. One is the *Denver Model*, which is a relational approach focused on achieving a series of

developmental milestones on advancing interaction and communication in a naturalistic, "affectively warm environment" (Vismara and Rogers, 2008). The second is Pivotal Response Training, which according to Autism Speaks (2014) is "play-based and child-initiated." "[T]he PRT therapist targets 'pivotal' areas of a child's development. These include motivation, response to multiple cues, self-management and the initiation of social interactions" (Autism Speaks, 2014). As might be expected given its target age range, ESDM relies more on nonverbal communication to achieve its goals and is more oriented to broader milestones than to specific behaviors—but like IBI for older children, it follows the "ABC" structure of ABA.

A study by Vivanti et al. (2012) on the validity of the outcome predictors for ESDM investigated the development in four key areas a group of children receiving ESDM intervention: Functional Use of Objects, Goal Understanding ("whether participants show anticipatory gaze to the target of observed actions"); Social Attention; and Imitation. The authors concluded: "These preliminary data suggest that the ESDM might be particularly beneficial to children whose cognition is more ''organized'' around goals, as reflected in the use objects in a goal-directed way, the understanding of goals behind others' actions and the imitation of others' goal-directed actions." However, they add the following caution: "In order to provide a rigorous investigation on the predictors of outcomes that are specific to the ESDM versus other models, it would be necessary to conduct a randomized control trial comparing different treatments and testing whether the hypothesised early predictors moderate response to the ESDM only" (Vivanti et al., 2012).

Relational approaches, 1: RDI. Relational Development Intervention RDI (Gutstein, 2000 and 2009; Gutstein & Shelley, 2002) is a program of individualized techniques and strategies based on what Gutstein described as the typical development (i.e., milestones or levels) of social competence. Gutstein wrote that RDI as an intervention for autism is designed to increase motivation and interest in social relationships with others through enjoyable activities and practical coaching. Specifically, RDI's six overall objectives are:

- *Emotional referencing*: The ability to recognize and learn from the emotional and subjective experiences of others;
- *Social coordination*: The ability to observe and control behavior to successfully participate in social relationships;
- *Declarative language*: The ability to use language and non-verbal communication to express curiosity, invite interactions, share perceptions and feelings and coordinate with others;
- *Flexible thinking*: The ability to adapt and alter plans as circumstances change;
- *Relational information processing*: The ability to put things into context and solve problems that lack clear cut solutions; and
- *Foresight and hindsight*: The ability to anticipate future possibilities based on experiences (Autism Speaks, 2014).

In pursuit of these six objectives, Gutstein and Shelley coincidentally defined six levels in RDI: *novice, apprentice, challenger, voyager, explorer,* and *partner*. These

levels were later reduced to five with the elimination of level 6, "partner" (Gutstein and Sheely, 2002a, 2002b). According to Gutstein and Sheely, the five levels are as follows:

1. The novice works to increase interactions. Critical to emotion sharing is seeking information about emotion from another person.
2. The apprentice learns that change occurs, and that in order to adapt to change, the ability to communicate is essential.
3. The challenger learns to collaborate, improvise, and work cooperatively with others.
4. The main goals for the voyager level are learning to improvise in communication and to share points of view and imagination.
5. The explorer level's main goal is learning to share diverse ideas.

Programming is "individualized and based on the Relationship Development Assessment (RDA) designed by Gutstein" (p. 22). The authors noted that a child's relationship level is determined before an individualized program is created and supervised by therapists (using direct observation and video recordings) and implemented by trained parent coaches to support skills acquisition. "The RDA is also used to develop appropriate treatment objectives and to identify potential child-parent obstacles" (Ross, 2012, p.11).

According to Ross in a 2012 review, "RDI is therapy focusing on a child's inability to form true social and emotional relationships, done by exposing them in a gradual, systematic way" (p. 11). Ross stated that RDI's purpose is to teach parents and other adult caregivers how to motivate and enable children with ASD to experience "dynamic social relationships" by sequentially helping the children acquire motivation

and tools for interaction. In this way, RDI is meant to "remediate experience-sharing deficits" (Ross, 2012, p. 11). Ross is very firm on the point that despite being carefully sequenced by its designers and to help children acquire specific abilities, "RDI is not a behavioral approach to treating children with Autism Spectrum Disorder (ASD) and does not view ASD as a behavioral disorder" (p. 11). Rather, it is intended "to teach children to evaluate and adjust their actions to others as they participate in ongoing interactive processes and not simply providing instruction in discrete skills" (p. 12)

Gutstein (2009) acknowledged that up to that time, there had been very little published research regarding the efficacy of this approach. He did, however, suggest~~ed~~ that it could be useful for higher-functioning children with autism or for "lower functioning children after they have learned some basic relating through applied behavior analysis" (p. 22).

Certainly, from Gutstein's own viewpoint, therefore, and despite Ross' claim that RDI is not a "behavioral approach," there is no essential contradiction between RDI and ABA. Gutstein even sees ABA as a useful foundation for his approach in lower-functioning children.

Relational approaches, 2: DIR/Floortime. According to Solomon et al. (2007) Stanley Greenspan, a child psychologist, created the Developmental Individual-difference Relationship-based (DIR) model to help adults expand the child's modes of communication by reaching out at the child's developmental level and building on the child's strengths and pleasures.

The Interdisciplinary Council on Development and Learning (ICDL) is Greenspan's DIR/Floortime organization set up to promote the approach. According to

the IDCL website, the underlying theory of DIR identifies six *Functional Emotional Developmental Levels* (FEDLs). These, the "D" (for Developmental) part of the model, describe the developmental capacities that children acquire as they grow emotionally and intellectually, as follows:

1. Paying attention and remaining calm and regulated;
2. Engaging with and relating to others;
3. Initiating and responding to all types of communication, beginning with emotional and social affect-based gestures;
4. Engaging in purposeful problem-solving and intentional behavior involving a continuous flow of interactions;
5. Using ideas (symbols) to communicate needs and think and play creatively; and
6. Building bridges between ideas (logical thinking) (IDCL, 2014).

The "I" (Individual-differences) part of the model describes "the unique, biologically-based ways each child takes in, regulates, responds to, and comprehends sensations" (IDCL, 2014). Such individual differences are often apparent in the areas of sound, touch, and the planning and sequencing of actions or ideas. For example, some children are hyper-responsive to touch or sound, while others may be under-reactive to the same stimuli and as a result will accordingly either seek or avoid environments rich in these sensations (IDCL, 2014).

The "R" (Relationship) part of the model describes learning relationships with DIR-trained "caregivers, educators, therapists, peers, and others" who, following the FEDLs, attune their interactions to the child's individual differences and developmental

capacities. “These relationships enable progress in the child’s overall functional and emotional development” (IDCL, 2014).

Hence, DIR resembles RDI in being focused on relational interaction between parent/caregiver and child; but unlike RDI, DIR-Floortime is led by the child’s interests and desires and is mainly a therapist-designed program that incorporates trained parents. The approach is subtitled “Floortime” because it centers on child-driven play with toys “on the floor.” Therapists and trained parents can use DIR/Floortime tactics, talking about what the child is doing, to “woo” him or her into joyful interaction in order to advance the child’s FEDLs in an individualized way. DIR/Floortime is also like RDI in that it does not specify behavioral objectives that identify levels of achievement in the FEDLs.

Solomon, Necheles, Ferch, and Bruckman (2007) conducted a study called the PLAY Project Home Consultation (PPHC) program. The PPHC program trains parents to gain knowledge and skills for their children with autism using a DIR approach. The participants were 68 ASD children and their parents. Parents received training in implementing the DIR model that consisted of knowledge and skills in DIR theory, principles of play-based interventions, knowledge of the sensorimotor preferences and deficits of their child, assessing their child’s unique profile, finding and engaging activities for their child, observing their child’s cues, following their child’s lead, and the ability to model skills in sequences. Parents were asked to deliver one-to-one therapy for 15 hours a week for their child. The parents received a video assessment, which gave immediate feedback of their performance with their child.

"Clinical estimates of improvement, from baseline to post-intervention, were provided by the home consultants using ratings of functional developmental level (FDL) 1 through 6 (i.e., 1, 1.5, 2, 2.5, etc.)" (Solomon et al., 2007, p. 214). The FDL ratings were scored on a Likert scale. Results of the study showed that with the parent training, 52% of the children showed very good (5.5.-6) clinical progress and 14% made good (4.5-5) clinical progress in an 8- to-12–month period. The results prompted the researchers to create a DIR manual, training, and evaluation method. Solomon et al. recommended that additional research be conducted to include an education-only control group to confirm whether training parents with knowledge and skills is truly effective. However, a limitation of this study was that all of the participating children still received some sort of behavioral treatment or special education from the school district. The ultimate results, therefore, could have been skewed by the school-based programs. (Solomon et al., 2007).

Pilarz (2009) conducted a study that examined the effectiveness of providing DIR/Floortime parent training to those with a child of autism, hosted through the public school system. The participants of the study consisted of 26 parent-child dyads (i.e., group of two). Pilarz created two groups, 13 in the treatment group and the other 13 in a comparison group. The treatment group received 16 hours of parent training in the overview of DIR/Floortime (i.e., child's attention, mutual agreement, sensory profile, emotional stages) and held on a weekly basis for 7 weeks. The non-treatment group did not receive any parent training. The data was collected through the school's regular program and staff. The results of the research showed that parents who received short-term training had significant improvement in the quality of interactions with their child.

She stated that the results of her study confirmed the validity of the DIR/Floortime approach for the use of "short-term training programs to improve parent-child interaction" (Pilarz, 2009, p. 59).

Training programs for parents of children with autism. Dillenburger, Keenan, Gallagher, and McElhinney (2004) studied two groups of parents with the goal of discovering the parents' understanding of knowledge and skills in the ABA treatment of ASD. Group one (STG), comprising 12 families, was in the early stages of applying ABA practices with their children after completing an introductory course on ABA therapy. Group two (LTG), comprising 10 families, had two years' experience in ABA therapy. The questionnaire administered to both groups examined the validity of ABA, including goals of intervention, strategies for intervention, and outcomes. The results showed no difference between the two groups in these areas: "They reported that ABA had made a difference already in all the categories, apart from [a] 3-year-old child's independence. There were no statistically significant differences between LTG and STG parents' perceptions" (p. 123) indicated that all participants in the study agreed that ABA treatment had a positive effect on their children in areas such as independence, quality of life, skills development, and social interaction (Dillenburger, Keenan, Gallagher, & McElhinney 2004).

Zingale et al. (2008) conducted a study on the outcomes of three aspects of parent training: behavioral principles, parent participation, and education in autism and communication. The purpose of the research was to simplify and identify specific skills in enhancing educational efficiency within families. The participants were 30 mothers with a child with ASD. Each mother-child dyad was followed for a 4-week period that

included 3 trainings. A professional group consisting of a physician, a psychologist, a social worker, and an educator carried out the ABA treatment for the study. The main goal of the parent training was to enhance the mothers' knowledge and skills in implementing recommended social skills strategies that enhanced their child's problem solving and socialization. The correlated findings from pretest and post-test indicated that the training of the subject mothers improved their behavior management, collaboration, comprehension of autism as a disability, and skill acquisition; collectively, these improvements enhanced the functionality of the entire family system (Zingale et al., 2008).

Murray, Ruble, Willis, and Molloy (2009) conducted a study that investigated the rate of agreement between parents and teachers on their views of social behaviors in children with ASD. They used a questionnaire of 35 items with a Likert scale from 1 (not very well) to 4 (very well). Two autism treatment centers had 45 children between the ages of 5 and 14 enrolled in social skills groups at their respective centers who were observed in the study. The authors reported that the results of the study indicated moderate agreement between teachers and untrained parents on the social-skills rating scores for skills in understanding affect and initiating and maintaining interactions. However, there was little agreement on other specific social items such as understanding emotions and body language. Murray et al. noted that parents need knowledge of social and communication skills in order to effectively treat their children with autism (Murray et al., 2009). Murray et al. (2009) also included an updated literature review to identify specific skilled behaviors (that is, skills manifested in observable behaviors) for behaviorists and parents to focus on for children with autism. These skills included:

maintaining interactions, responding to interactions, initiating interactions, and affective understanding/perspective taking (Murray et al., 2009).

Skills and knowledge for parents of children with autism. Ingersoll and Dvortcsak (2006) studied the parents of 3- and 4-year old children enrolled in public preschool with an educational diagnosis of ASD. The parents ranged in age from early 20s to mid-40s, and represented a wide range of educational as well as income levels. None of the participants had experienced formalized parent-training programs. The teachers who participated in the study were two early childhood special education teachers, an occupational therapist, and a speech pathologist. The goal was to study the results of including trained parents in early education for their ASD children and help parents sustain their educational efforts with their child over time..

The parent training took place once a week for nine weeks in six 90-minute group sessions, along with three 45-minute individual sessions with parent and child. The training for parents consisted of naturalistic teaching (that is, teaching in the child's everyday environment whenever opportunities present themselves) teaching strategies, social and communication skills, and improving parent-child interactions. To determine whether the intervention techniques improved the parents' knowledge and skills, a pre- and post-quiz was administered. The pre-training quiz consisted of 10-multiple choice questions addressing the use of specific treatment strategies in a natural context. In the pre-quiz, the parents scored an average of 29% correct (range = 0%–60%). After the training, the parents scored an average of 75% correct (range = 40%–100%) (Ingersoll & Dvortcsak, 2006). The authors concluded that parents and teachers felt that the parents' education in ASD treatment was beneficial for children with autism in their achieving

and maintaining skills. However, the authors also reported, "Few public school programs include parent training as part of the early childhood special education curriculum" (p. 185) (Ingersoll & Dvortcsak, 2006).

Coolican et al. (2010) conducted a study to examine early behavioral intervention and treatment of autism as a health priority**.** Pointing out that there were long waiting lists for treatment for ASD, they wanted to learn whether parents could be trained in knowledge and skills in the meantime. The specific objective of the study was to assess the value of Pivotal Response Technique (PRT) training for parents of children with autism who are waiting for treatment that is more comprehensive. PRT is a well-validated and widely used behavioral treatment, derived from ABA. It is "play based and child initiated." PRT aims to improve communicative and language development, foster positive social behaviors, and alleviate "disruptive self-stimulatory behaviors" (Autism Speaks, 2014). Coolican et al. reported that the participants in the study were eight preschoolers with autism and their parents. The researchers used a baseline design in which they saw the parents individually for three 2-hour training sessions in PRT techniques including generalization and enhancing social and communication skills. Questionnaires assessed the outcomes as well as observed parents interacting with their children and used coding directly from the video recordings of the child's behavior.

The findings showed that the children's overall communication skills improved following the PRT training for parents; however, the improvement was concentrated primarily in functional utterances (i.e., one-word phrases). Based on these results, Coolican et al. (2010) recommended additional research to help determine what intensity

of parent training is required to optimize parents' knowledge and skills and its effects on their child's treatment in more developmental areas.

Vismara et al. (2011) conducted a study on training parents in the play skills, imitation, and communication of children with autism. The goal was to help children with autism learn from natural-environment experiences (that is, in or around the home rather than in a clinician's office or a treatment center). They provided a 12-week, one hour per week-individualized parent-child education program to eight parents of newly diagnosed toddlers with autism. The training taught parents how to use the natural-environment teaching of the Early Start Denver Model. The results of the study showed that parents established the strategies by the fifth to sixth hour of training, and children showed continued growth in social communication behaviors. The authors suggested that immediately after an ASD diagnosis, it is crucial for parents to gain knowledge and skill to help their toddler with autism engage and communicate. Vismara et al. recommended further research to determine whether the EDSM is effective in enhancing the knowledge and skills parents need to achieve "increased performance" in toddlers with autism (Vismara et al., 2011).

National Autism Center (NAC) (2011) wrote that although "parent education programs can be effective in teaching parents to change child behaviors, limitations exist with these strategies" (p. 42). They reported that several of the published interventions required parents to obtain a minimum of 25 hours of intervention training to gain knowledge and skills about autism. However, NAC pointed out, given their other commitments, not all parents are able to accommodate 25 hours of intervention time. However, Vismara et al. (2011) found that recent studies have "demonstrated parent

mastery of teaching techniques [as well as] improvement in children's language skills as a result of a brief parent delivered program" (p. 95). The National Research Council (2001) posited that the national priority should be to provide support for parents who are dealing with their ASD children's needs.

Note: Each of the studies discussed in this and the previous section provided some subset of the preliminary list of necessary skills and knowledge for parents of ASD children used in the present study. A complete listing of the studies used for each question may be found in Appendix F.

Chapter Summary

The review of research contained in Chapter 2 included key points on the importance of parent knowledge and skills in working with children with autism and research-based treatments for parents to learn in the field of ASD. The literature review also addressed autism specific treatment styles. The review discussed the major objections to Lovaas' (1987) behavioral approach, which has formed the foundation of most ABA-based treatment of ASD children since. The review addressed several key points on both sides of the argument but concluded that the literature strongly indicated that the behavioral approach has a well-validated positive effect on the development of children with autism.

Chapter 3 describes the methodologies used to answer the essential research questions. The methodology chapter uses a general perspective of parent knowledge and skills as the organization in order to set the stage for the research setting, participants, research design, inclusion/exclusion criteria, and data analysis.

Chapter 3: Research Design Methodology

Introduction

Behaviorists who work in the field of autism have not previously prioritized the core skills and knowledge for parents of children with autism from birth to five years old. Parents need such prioritization in order to be sure that the content and structure of parent training programs manifest the knowledge and skills that autism professionals have identified as essential for parents to have. Parents need such prioritization in their training to optimize their collaboration with autism professionals and their own ongoing assistance to their children. Marus, Kunce, and Scholpler (2005) stated that many parent-training interventions are effective. However, clinicians do not currently have a reliable consensus on which skills and knowledge are most important to teach parents and in what order. Coolican, Smith, and Bryson, (2010) remarked that parent training seeks to address the parents' lack of skills and knowledge to improve instruction and overall performance of their child.

Research questions. The following research questions were the basis of the study:

1. What is the viewpoint of practitioners with a behaviorist perspective regarding the knowledge and skills that are necessary for parents to guide children with autism from birth to age 5 in the categories of behavior modification, parental participation, and ABA skills and knowledge?

2. Do behaviorists who are also parents of children with autism have a different perspective regarding autism than other behaviorists in the field, when prioritizing the knowledge and skills parents need in the categories of behavior modification, parental participation and ABA skills and knowledge?

Method. The researcher addressed these questions by means of a survey of autism-treatment professionals across the United States, whereby these professionals would each prioritize a list of likely needed parental knowledge and skills. The results of the survey were scored and analyzed in order to obtain an optimum prioritization, and the results from the two participant subgroups (nonparent and parent behaviorists working in the autism field) compared. The skills and knowledge (learning outcomes) to be itemized in the survey were obtained in the following way:

1. To obtain a raw preliminary list of needed skills and areas of knowledge, two types of source materials were examined: peer-reviewed articles that included discussion of such skills and knowledge; and articles and books by autism professionals (including speech therapists and speech pathologists, pediatricians, and other practitioners as well as autism-focused behavioral therapists) written for the parents of ASD children and intended to teach them what the authors viewed as necessary parental skills and areas of knowledge. Most of these latter materials were not themselves peer-reviewed. (However, see Appendix F).
2. The raw list of 94 listed skills and areas of knowledge derived from these articles and books was then screened by the researcher for redundancy (the

same skill presented under more than one descriptive name) and distilled to a shortlist of 47 skills (See Appendix H).

3. A content-validity trial with 47 questions (each question addressing one of the shortlisted skills) was distributed to a panel of six doctoral-level behaviorists in the field of autism with a background in ABA. The panel members analyzed the draft survey for readability and validity. Initially, nine such practitioners were chosen to assist in the development of the survey tool. These nine were a convenience sample whose members knew the investigator through professional practice of therapy for children with ASD. Six of the individuals were behaviorists with a background in ABA; the other three had backgrounds in relationship development. Because the survey was to be of ABA practitioners only, these three non-behaviorists were excluded from the final trial panel (see Appendix H for comments from the content-validity trial). Any skill or knowledge that had a mean of 5 or higher became a learning outcome for the final survey.

Research Context

Pilot study. A pilot study was conducted using 34 ABA practitioners to determine reliability of the three scales designed by the researcher. Reliability analysis was done to determine whether Behavioral Modification (BM), Parental Participation (PP), and ABA knowledge and skills (ABA) were reliable. A Cronbach's alpha reliability analysis determined the reliability of the scale. The scale's reliability is assumed if the coefficient is $\geq .60$. Based on the analysis, the scales were found to be reliable (BM, $r = .666$; PP, $r = .796$; and ABA, $r = .864$).

Main study. In summer 2014, the survey of skills and knowledge areas necessary for parents to guide children with autism was distributed through digital media. The researcher posted a web link created using Survey Monkey to Yahoo and LinkedIn groups. School districts, agencies that treat autism and other government programs received an email sharing the web link. Recruitment for this study came from Fairfield County, CT, Westchester County, NY, and Duchess County, NY.

Yahoo Groups and LinkedIn provide individuals from all over the world the opportunity to expand their professional networks. The network allows people to find new professional resources. Users of these platforms create and manage their own content. They can search for jobs or clients, distribute listings, and discuss potential research. They are able to create a profile and document their qualifications in the form of a digital résumé (Doyle, 2014).

The research was conducted through Survey Monkey, a web service that hosts surveys ”in the cloud”—that is, on remote secure servers not identified to the user. The researcher inputted the letter of introduction (Appendix I), the consent form (Appendix J), self-identifying demographics, and survey questions into the Survey Monkey interface. Survey Monkey then generated a single, anonymous survey link that allowed distribution from the researcher to emails and web postings. The web link gathered responses that were anonymous aside from the collection of respondents' IP addresses.

Research Participants

The quantitative study used a survey of behaviorists working in the field of autism to prioritize a list of knowledge and skills for parents to guide children with autism from birth to age five. A convenience sample was obtained using a “snowball” recruiting

method via social media. Morgan (2008) describes such a snowball sample as a small pool of initial informants who then nominate other potential sample members through their social networks. Two exclusion criteria for the study were presented to the participants prior to their completing the survey: those who were not behaviorists and behaviorists without experience working with young children with autism. This was intended to ensure that the only participants were behaviorists with experience in autism treatment. If they acknowledged meeting the exclusion criteria, they were not permitted to participate further. (Outliers were eliminated during statistical analysis). Each sample member selected through social networking was asked to recruit additional sample participants. The results of the survey were analyzed using both descriptive statistics and regression analysis.

Eligible participants, therefore, were respondents who self-identified as behaviorists (i.e., BCBAs, ABA therapists, and special educators) with training in ABA therapy for children aged birth to 5 with autism. Eligible participants were asked for self-identifying demographic information, such as educational background, experience, profession, and whether they were a parent of a child with autism. No direct contact occurred between the researcher and study participants. Prior to completing the survey, the participants received information on the risks, procedures, rights, and benefits of the research and were given the opportunity to opt out of taking the survey.

The participants received assurance that participation was anonymous, and informed consent (Appendix J) was requested via Survey Monkey prior to beginning the survey. The survey was made available for three weeks and took approximately 5-10 minutes to complete. Once the survey was completed, each participant was asked if she

or he knew of other participants who met the criteria, and if so was asked to refer the survey to them—that is, by sending them the link.

Data Collection Instruments

As earlier noted, the survey tool was developed from parent learning outcomes in knowledge and skills presented in already published works. Most of the parent training programs were not peer reviewed (See Appendix F for a complete list of "skills and knowledge" sources). In the development of the final list of needed skills and knowledge for the survey, there was a strong overlap between peer-reviewed and non-peer reviewed sources. These included the following (citations of peer-reviewed articles supporting these selections follow each one):

- Knowledge of joint attention for their child (Rogers & Dawson, 2010; Schertz, H., & Odom, S., 2007)
- Knowledge of the importance of clear language to match their child's understanding (Johnson-Martin, Attermeier, & Hacker, 2004; Vismara et al., 2009)
- Functional skills for their child (Coolican et al., 2010; Dunlap, Wilson, Strain, & Lee, 2013; Koegel, Koegel, & Symon, 2002; Leaf & McEachin, 1999)
- Teaching generalization of skills (Ingersoll and Dvortcsak, 2006; Crockett & Fleming, 2007; Dunlap, Wilson, Strain, & Lee, 2013; Koegel & Koegel, 2012)
- Identifying specific skills through observation (Johnson et al., 2009; Leaf & McEachin, 1999)

- Knowledge of a variety of reinforcers (Bennett, 2012; Crockett & Fleming, 2007; Dozier et al., 2012; Dunlap, Wilson, Strain, & Lee, 2013; Koegel, Koegel, & Symon, 2002; Leaf & McEachin, 1999; Levine & Levine, 2012; Randolph, Stichter, Schmidt, & O'Connor, 2012),
- Knowledge of different therapy approaches (Crockett & Fleming, 2007; Dunlap, Wilson, Strain, & Lee, 2013; Vismara, Young, & Rogers, 2011; Wiseman, 2006, Lord & Bishop, 2010),
- Knowledge of cognitive, developmental and achievement assessments for their child (Denno, Carr, & Bell, 2010; Solomon et al., 2008; Wiseman, 2006)
- Knowledge of characteristics of autism and its effect on early development (Heron et al., 2007, Johnson-Martin, Attermeier, & Hacker, 2004).
- Knowledge of the therapy format for their child (Leaf & McEachin, 1999; Levine & Chedd, 2012; Skinner, 1960)

The self-evaluating, closed-ended survey instrument asked the participants to prioritize learning outcomes for parents of skills and knowledge necessary to train parents to guide children with autism aged from birth to 5 years. The survey was organized into three categories. In each category, the questions were tailored to query specific parent learning outcomes. The categories for the survey were:

1. Behavior Modification (i.e., what behavior or actions parents of children with autism should perform to modify their child's behavior)
2. Parental Participation (i.e., parents' participation in an autism program)
3. ABA Knowledge and Skills (i.e., structured teaching techniques for parents to guide their children with ASD) (see Appendix F for complete list).

The survey used a 7-point Likert scale that ranked the level of importance of the knowledge and skills recommended for training parents to guide children with autism aged from birth to 5 years. Response options consisted of seven choices ranging from "not a priority" to neutral to "essential priority." The responses received scores from 1 to 7.

Validity trial. As noted, for the purposes of the study, a behavioral perspective was the foundation for the surveys. Conflicting views expressed by practitioners in the validity trial alerted the primary investigator to a potential problem in trying to include all treatment preferences. The researcher chose a behavioral approach due to personal training, experience, the strong preference among informed practitioners for using behaviorism as a foundation for treatment of children with autism and training of parents, and the still much wider acceptance and research base available towards behaviorism (see Appendix H). Before the survey was launched, 34 behaviorists in the field of autism who had not participated in the validity trial took part in a pilot study. Results of the pilot determined reliability for the constructed scales.

Data Analysis

The research design was developed to measure the importance service providers place on educating parents in the particular knowledge area or skill. The principal investigator verified data analysis and its completeness using a pilot study (see above). The principal investigator used Statistical Package for the Social Sciences (SPSS) 22.0 to analyze the data.

This researcher used descriptive statistics to describe the data sets by examining measures of mean, standard deviation, skewness, and kurtosis. For the behaviorists, the

following information was summarized: professional title, years of experience treating autism, background of professional training, level of education, parent training experience, and whether or not a parent of a child with autism. For quantitative variables, the mean, median, standard deviation, and range was computed. For qualitative variables, the percentage of the sample who gave each response was presented. The variables summarized for each of the two respondent groups and for all respondents in total.

For the survey questions, the 7-point scored scales were summarized by mean, median, and standard deviation. Based on the mean scores, the knowledge and skills were ranked. Those in the 50^{th} percentile were identified as those knowledge and skills that the behaviorists believe should be part of a parent-training program.

For each of the three survey categories (e.g. behavior modification, parental participation, and ABA knowledge and skills), a composite average score from the survey questions from each category was obtained. These composite scores were summarized using descriptive statistics. The quantitative responses for the two-responder groups (e.g. ABA professional with a child with autism and those without) were compared using a multivariate analysis of variance (MANOVA) and the qualitative responses for the two-responder groups compared by a chi-square test. These results provided an overall description of the data to examine if there are large differences or similarities between the respondents scores (Laerd Statistics, 2014). Results of the data analyses created a professional prioritized list of skills and knowledge areas for training parents to guide children with ASD aged from birth to 5 years.

Research question 2 evaluated using multivariate analysis of variance (MANOVA) to determine whether there were any significant differences in practitioners'

perspectives regarding knowledge and skills between those that have children with autism and others that do not. Practitioners' perspectives regarding the knowledge and skills were evaluated using three constructs: behavior modification, parental participation, and ABA knowledge and skills. Composite scores were calculated by averaging case scores across each survey construct. Composite scores for each of the three constructs were used as the dependent variables for research question 2. For the MANOVA analysis, the critical alpha was set at the 5% level of significance. Chapter 4 is the review of the results.

Chapter 4: Results

This chapter will present the research questions and the results of the data gathered from the study of professionally prioritized core skills and knowledge necessary for parents to guide children aged from birth to 5 years with autism, as prioritized by practitioners with a behavioral perspective. A brief summary of the findings for each research questions is provided here. Specific details for each research question analysis are discussed and reported later in this chapter and displayed in tables. This researcher used Statistical Package for the Social Sciences (SPSS) to code and tabulate scores collected from the survey and provide summarized values where applicable including mean, standard deviation, skewness, and kurtosis as indicated by the participants. Demographic statistics provided including count and percent statistics. Reliability analyses conducted on dependent variables to determine the constructs' internal consistencies.

An examination of the data for missing scores, univariate outliers, and multivariate outlier's ensured accuracy was complete. Furthermore, for research question 2, an evaluation of the data for parametric assumptions including normality, homogeneity of variance, homogeneity of variance-covariance matrices, and multicollinearity was also completed. Lastly, this researcher conducted descriptive statistics and multivariate analysis of variance (MANOVA) to evaluate the two research questions. The final part of this chapter concludes with an overall summary of the results.

Research Questions

This chapter reports the results of the data analyses and findings for each research question. Two research questions guided this study:

1) What is the viewpoint of practitioners with a behaviorist perspective regarding the knowledge and skills that are necessary for parents to guide children with autism-aged birth to 5 in the categories of behavior modification, parental participation, and ABA skills and knowledge?
2) Do behaviorists who are also parents of children with autism have a different perspective regarding autism than other behaviorists in the field, when prioritizing the knowledge and skills parents need in the categories of behavior modification, parental participation and ABA skills and knowledge?

Data Analysis and Findings

Demographics. Survey Monkey was used to collect data from 568 ABA practitioners (e.g. ABA therapists, special educators, and BCBAs). The calculation of the percentage data was done using the total of 568. However, participants could indicate multiple responses (check all that apply) to the question. Specifically, 74% of the participants' were BCBA certified (n = 419), 26% were ABA therapists (n = 145), 22% were special educators (n = 126), and 7% professionals with a child with autism (n = 39). Appendix K displays qualitative responses of participants' foundations of theoretical practice. Displayed in Table 4.1 are frequency and percent statistics of participants' qualifications.

Table 4.1

Frequency and Percent Statistics of Participants' Qualifications

Demographic	Frequency	Percent
Qualifications		
BCBA	419	73.8
ABA Therapist	145	25.5
Special Educator	126	22.2
Professional with ASD child	39	6.9

Note: Participants could indicate multiple responses

Additionally, 75% of the participants' foundation for theoretical practice was based on applied behavior analysis (n = 426); less than one percent of the participants' foundation was based on relationship development (n = 3); and 10% studied both theoretical practices (n = 57). In Table 4.2 are frequency and percent statistics of participants' foundations of theoretical practices.

Table 4.2

Frequency and Percent Statistics of Participants' Title and Foundation of Theoretical Practice

Demographic	Frequency	Percent
Foundation of Theoretical Practice		
Applied Behavior Analysis	426	75.0
Relationship Development	3	0.5
Both	57	10.0
Missing	82	14.4

Note. Missing n = 82 (listwise)

Data collection from 568 behaviorists with levels of education was performed via Survey Monkey (See Appendix L). Specifically, 0.5% of the participants had achieved a High School Diploma or Equivalent (*n* = 3), 7.6% had Bachelor's degrees (*n* = 43), 67.3% had Masters degrees (*n* = 382), and 10.2% had Doctoral degrees (*n* = 58). Additionally, 14.4% of the participants' showed missing information (*n* = 82). Displayed in Table 4.3 are frequency and percent statistics of participants' level of education.

Table 4.3

Frequency and Percent Statistics of Participants' Level of Education

Level of Education	Frequency	Percent
High School Diploma or Equivalent	3	0.5
Bachelor's Degree	43	7.6
Master's Degree	382	67.3
Doctoral Degree	58	10.2
Missing	82	14.4
Total	568	100.0

Note. Missing n = 82 (listwise)

Data was collected from 568 behaviorists regarding their years of experience as ABA professional and training parents on a weekly basis. Specifically, 1.8% of the participants' had less than 1 year experience as an ABA professional (*n* = 10), 8.8% had 1 to 3 years (*n* = 50), 23.2% had 4 to 6 years (*n* = 132), and 51.8% had 7 years and more (*n* = 294). Furthermore, 14.4% of the participants' showed missing information (*n* = 82).

Displayed in Table 4.4 are frequency and percent statistics of participants' experience as an ABA professional.

Table 4.4

Frequency and Percent Statistics of Participants' Years of Experience as an ABA Professional

Demographic	Frequency	Percent
Years of Experience as ABA Professional		
Less than 1 year	10	1.8
1 to 3 years	50	8.8
4 to 6 years	132	23.2
7 years and more	294	51.8
Missing	82	14.4

Note. Missing n = 82 (listwise)

Additionally, 38.6% of the participants had experience training parents once a week (n = 219), 41.4% had trained parents two or more times a week (n = 235), and 5.6% had never trained parents of children with autism (n = 39). Furthermore, 14.4% of the participants' showed missing information (n = 82). Displayed in Table 4.5 are frequency and percent statistics of participants' experience in training parents.

Table 4.5

Frequency and Percent Statistics of Participants' Experience Training Parents on a Weekly Basis

Demographic	Frequency	Percent
Experience Training Parents		
Once a week	219	38.6
Two or more times a week	235	41.4
Never	32	5.6
Missing	82	14.4

Note. Missing n = 82 (listwise)

Reliability analysis. Cronbach's alpha reliability analysis was conducted on the dependent variables of *Behavior Modification*, *Parental Participation*, and *ABA Knowledge and Skills* to determine the internal consistencies of the dependent variable constructs (Reynaldo & Santos, 1999). Findings indicated that the scales reliability was ≥.60 and sufficiently reliable and internally consistent; specifically, the results were *Behavior Modification* (p =.665), *Parental Participation* (p = .821), and *ABA Skills and Knowledge* (p =.882). A summary of the reliability analyses conducted on the three dependent variables is displayed in Table 4.6.

Table 4.6

Model Summary of Reliability Analyses of Participants' Behavior Modification, Parent Participation, and ABA Knowledge and Skills Scores

Dependent Variable	N	# of items	Sig.
Behavior Modification	518	6	.665
Parental Participation	504	7	.821
ABA Knowledge & Skills	492	15	.882

Note. Significance value ≥.60

Findings of research question 1 (Q1). What is the viewpoint of practitioners with a behaviorist perspective regarding the knowledge and skills that are necessary for parents to guide children with autism from birth to age five in the categories of behavior modification, parental participation and ABA skills and knowledge?

Survey responses to research question 1 were examined using descriptive statistics to prioritize a list of knowledge and skills necessary to guide parents of children with autism. The 28 items were as follows: 6 items in *Behavior Modification*, 7 items in *Parent Participation*, and 15 items in ABA *Knowledge and Skills*. Response parameters for the subcategory items were measured on a 7-point Likert scale where 1 = *not a priority*, 2 = *low priority*, 3 = *somewhat priority*, 4 = *neutral*, 5 = *moderate priority*, 6 = *high priority*, and 7 = *essential priority*. For the six survey items measuring behavior modification, high scores indicate a higher level of priority. Specifically, a high score for *Behavior Modification* demonstrates that ABA professionals view behavior modification as a priority-learning outcome of training parents with children with autism. For the seven items measuring *Parental Participation*, high scores indicate higher level of priority. Specifically, a high score for *Parental Participation* demonstrates that ABA

professionals view parental participation as a priority-learning outcome in training parents with children with autism. Lastly, for the 15 items measuring *ABA Knowledge and Skills*, high scores also indicate a higher priority. Specifically, a high score for *ABA Knowledge and Skills* suggests that ABA professionals view ABA skills and knowledge as a priority-learning outcome for parents of children with autism.

For the subcategory of *Behavior Modification*, results indicated that the ABA practitioners placed the highest priority on the parent learning outcome [Parent will practice behavior management for challenging behaviors] with a high score of item #1 (M = 6.54, SD = 0.747). Findings also revealed that ABA practitioners placed the lowest priority on [Parent will record data into an ABCs (Antecedent, Behavior, Consequence) chart of behavior] with a low score of item #6 (M = 5.070, SD = 1.400). Descriptive statistics of the six items measuring *Behavior Modification* displayed in Table 4.7. Table 4.7 includes sample size, minimum and maximum scores, mean, standard deviation, and skewness and kurtosis statistics.

Table 4.7

Descriptive Statistics of Participants' [Behavior Modification] Scores

Behavior Modification	N	Min	Max	Mean	Std. Deviation	Skewness	Kurtosis
Item 1	518	2	7	6.537	0.747	-2.274	7.654
Item 2	518	2	7	5.676	1.114	-1.037	1.253
Item 3	518	2	7	6.056	0.926	-1.241	2.118
Item 4	518	1	7	6.334	0.872	-1.898	5.559
Item 5	518	1	7	5.199	1.506	-0.867	0.193
Item 6	518	1	7	5.070	1.400	-0.863	0.517

Note. Scores below the mean of 5 is considered lower priority
Missing n = 53 (listwise)

For the subcategory *Parental Participation*, results indicated that the ABA practitioners placed the highest priority on the parent learning outcome [Parent will identify a variety of reinforcers] with a high score of item #13 ($M = 6.204$, $SD = 0.865$). Findings also revealed that ABA practitioners placed the lowest priority on [Parent will recognize splinter skills (e.g., "reads but does not dress")] with a low score of item #12 ($M = 4.446$, $SD = 1.400$). Descriptive statistics of the seven items measuring parental participation displayed in Table 4.8. Table 4.8 includes sample size, minimum and maximum scores, mean, standard deviation, and skewness and kurtosis statistics.

Table 4.8

Descriptive Statistics of Participants' [Parental Participation] Scores

Parental Participation	N	Min	Max	Mean	Std. Deviation	Skewness	Kurtosis
Item 7	504	2	7	5.833	1.156	-1.184	1.499
Item 8	504	2	7	5.689	1.042	-0.969	1.379
Item 9	504	1	7	5.681	1.103	-1.094	1.676
Item 10	504	1	7	4.552	1.382	-0.584	-0.167
Item 11	504	1	7	4.833	1.326	-0.668	0.009
Item 12	504	1	7	4.446	1.422	-0.529	-0.220
Item 13	504	2	7	6.204	0.865	-1.204	2.026

Note. Score below the mean of 5 is considered lower priority
Missing n = 66 (listwise)

For subcategory *ABA Skills and Knowledge*, results indicated the ABA practitioners placed the highest priority on the parent learning outcome [Parent will use clear language that matches their child's understanding] with a high score of item #21 (M = 6.175, SD = 0.933). Findings also revealed that ABA practitioners placed the lowest priority on [Parent will recall the history of autism and how the perspectives have changed over the years] with a low score of item #27 (M = 2.705, SD = 1.602). Descriptive statistics of the fifteen items measuring *ABA Skills and Knowledge* are displayed in Table 4.9. Table 4.9 includes sample size, minimum and maximum scores, mean, standard deviation, and skewness and kurtosis statistics.

Table 4.9

Descriptive Statistics of Participants' [ABA Knowledge and Skills] Scores

ABA Knowledge & Skills	N	Min	Max	Mean	Std. Deviation	Skewness	Kurtosis
Item 14	492	1	7	3.535	1.617	-0.014	-1.007
Item 15	492	1	7	4.309	1.464	-0.417	-0.576
Item 16	492	1	7	4.797	1.339	-0.724	0.066
Item 17	492	2	7	5.929	1.026	-1.108	1.499
Item 18	492	1	7	5.756	0.964	-1.082	2.476
Item 19	492	2	7	5.825	1.030	-1.026	1.327
Item 20	492	2	7	5.616	1.037	-0.960	1.149
Item 21	492	1	7	6.175	0.933	-1.701	4.722
Item 22	492	1	7	4.715	1.469	-0.722	0.040
Item 23	492	1	7	3.953	1.509	-0.277	-0.734
Item 24	492	1	7	3.933	1.602	-0.242	-0.934
Item 25	492	1	7	5.974	1.082	-1.391	2.420
Item 26	492	1	7	4.024	1.659	-0.299	-0.914
Item 27	492	1	7	2.705	1.602	0.593	-0.804
Item 28	492	1	7	5.000	1.530	-0.589	-0.376

Note. Scores below the mean of 3.5 is considered lower priority
Missing n = 78 (listwise)

The parent learning outcomes were ranked using mean scores to determine the priority that participants placed on each of the 28 items. Results showed that ABA

practitioners placed first priority on survey item #1: [Parent will practice behavior management for challenging behaviors]. The second priority was survey item #4; [Parent will implement behavioral intervention plans]. The third priority was survey item #21: [Parent will use clear language that matches their child's understanding]. Finally, the lowest-priority parent learning outcomes were recorded as items #15, 26, 23, 24, 14, and 27. Each of these six items was in the 15-item *ABA Knowledge and Skills* construct. Displayed in Appendix M and listed by priority ranking are descriptive statistics of the 28 survey items used to assess research question 1. Additionally, for a complete representation of the distribution of the data, see Appendix N for histograms of all 28-survey items and Appendix O for the 50th percentile scores and items (16 highest ranked scored skills) recommended for development into an ABA-based parent curriculum.

Findings of research question 2. Do behaviorists who are also parents of children with autism have a different perspective regarding autism than other behaviorists in the field, when prioritizing the knowledge and skills parents need in the categories of behavior modification, parental participation and ABA skills and knowledge?

Research question 2 was examined using multivariate analysis of variance (MANOVA) to determine whether or not ABA practitioners who are also parents of children with autism have a different perspective from that other behaviorists in the field when analyzing parental knowledge and skills for educating their child with autism. Specifically, participants' responses were given composite scores for the three subcategories of *Behavior Modification* (6-items), *Parental Participation* (7-items), and *ABA Knowledge and Skills* (15-items). Averaging scores yielded the composite scores across each subcategory. Composite scores were used as the dependent variables for

research question 2. The independent variable was whether the ABA practitioner had a child with autism.

Data cleaning. Before assessing the research question, a screening for missing information, univariate outliers, and multivariate outliers using frequency counts was implemented and 76 cases were found (list wise) and were removed from the analysis. The data was screened for univariate outliers by transforming raw scores to z-scores and comparing z-scores to a critical value of +/- 3.29, $p < .001$ (Tabachnick & Fidell, 2007). Z-scores that exceed this critical value are more than three standard deviations away from the mean and represented outliers. Evaluation of the distributions yielded nine cases with univariate outliers, causing their removal from the analysis.

Multivariate outliers were evaluated using Mahalanobis distance. Mahalanobis distance measures how many standard deviations away the data point is from the mean of distribution. The Mahalanobis distances were computed for each case for comparison to a critical value from the chi square distribution table. Mahalanobis distance for three dependent variables indicates a critical value of 16.27 with no cases within the distributions exceeding this value. Hence, 568 responses from participants were received and 483 were evaluated by the MANOVA model ($n = 483$).

A MANOVA analysis conducted to examine the differences between the two groups across the three dependent variables (*Behavior Modification*, *Parental Participation*, and *ABA Knowledge and Skills*). The two groups consisted of the *no* group, ABA practitioners without a child with autism; and the *yes* group, ABA practitioners that have a child with autism.

Specifically, for *Behavior Modification*, the *no* group prioritized *Behavior Modification* scores for training parents at a score of (M = 5.852) and the *yes* group had an average *Behavior Modification* score of (M = 5.957). For *Parental Participation*, the *no* group prioritized *Parental Participation* scores for training parents at a score of (M = 5.316) and the *yes* group had an average *Parental Participation* score of (M = 5.725). Lastly, for *ABA Knowledge and Skills*, the *no* group prioritized *ABA Knowledge and Skills* scores for training parents at a score of (M = 4.893) and the *yes* group had an average *ABA Knowledge and Skills* score of (M = 5.271). The descriptive statistics of ABA participants' prioritization of skills in *Behavior Modification*, *Parental Participation*, and *ABA Knowledge and Skills* scores are displayed in Table 4.10.

Assumption test of normality. Before research question 2 was analyzed, basic parametric assumptions were evaluated. That is, for the dependent variables (*Behavior Modification*, *Parental Participation*, and *ABA Knowledge and Skills*), assumptions of normality, homogeneity of variance, homogeneity of variance-covariance matrices, and multicollinearity were tested. Specifically, *z*-skew coefficients outside of the critical value range of +/-3.29 may indicate non-normality. Group *yes* (ABA practitioners with a child of autism) had z-skew scores of behavioral modification (*z-skew* = -2.942), parental participation (*z-skew* = -1.526) and ABA skills and knowledge (*z-skew* = -1.474). Group *no* (ABA practitioners without a child of autism) had z-skew scores of behavioral modification (*z-skew* = -4.181), parental participation (*z-skew* = -5.828) and ABA skills and knowledge (*z-skew* = -1.767). Based on the evaluation of the z-skew coefficients, two of the distributions exceeded the critical value (*No* group: behavior modification *z-skew* = -4.181 and parent participation *z-skew* = -5.828).

Table 4.10

Descriptive Statistics of Participants' Behavior Modification, Parent Participation, and ABA Knowledge and Skills Scores by Groups

ABA Practitioner with an ASD Child	N	Min	Max	Mean	Std. Deviation	Skewness	Kurtosis
No							
Behavior Modification	444	3.83	7.00	5.852	0.588	-0.485	0.362
Parent Participation	444	2.71	7.00	5.316	0.804	-0.676	0.456
ABA Knowledge & Skills	444	2.53	7.00	4.803	0.813	-0.205	-0.265
Yes							
Behavior Modification	39	4.00	7.00	5.957	0.735	-1.112	1.143
Parent Participation	39	3.71	7.00	5.725	0.726	-0.577	0.816
ABA Knowledge & Skills	39	3.53	6.73	5.270	0.690	-0.557	0.178

Note. $n_{total} = 483$

Evaluation for kurtosis using the same method yielded no distributions to be significantly kurtotic, see Table 4.11 for skewness and kurtosis statistics of the three dependent variables by groups. Although two of the distributions showed significantly skewed results, according to Tabachnick and Fidell (2013) they noted that when a sample size exceeds 100, it does not violate the distributions of normality. Thus, the distributions

conditionally assumed to be normally distributed and allowable in the MANOVA analysis of research question 2.

Table 4.11

Skewness and Kurtosis Statistics of Behavior Modification, Parent Participation, and ABA Knowledge and Skills Scores by Groups

ABA Practitioner with an ASD Child	Skewness	Skew Std. Error	z-skew	Kurtosis	Kurtosis Std. Error	z-kurtosis
No						
Behavior Modification	-0.485	0.116	4.181*	0.362	0.231	1.567
Parent Participation	-0.676	0.116	5.828*	0.456	0.231	1.974
ABA Knowledge & Skills	-0.205	0.116	-1.767	-0.265	0.231	-1.147
Yes						
Behavior Modification	-1.112	0.378	-2.942	1.143	0.741	1.543
Parent Participation	-0.577	0.378	-1.526	0.816	0.741	1.101
ABA Knowledge &Skills	-0.557	0.378	-1.474	0.178	0.741	0.240

Note. Groups: No child with autism n = 440, Child with autism n = 39
Distribution is significantly skewed and/or kurtotic (z-skew and z-kurtosis +/- 3.29, sig. < .001)

Assumption of homogeneity of variance. Levene's Test of Equality of Error Variance was run to examine the distribution of scores across the two groups' prioritization of skills on each of the three dependent variables (*Behavior Modification*, *Parental Participation*, and *ABA Knowledge and Skills*). The two groups consisted of the

independent variables (*ABA participants with a child of autism* and *ABA participants without a child with autism*). The two groups showed distribution in *Behavior Modification* (p = .163), *Parental Participation* (p = .301) and *ABA Knowledge and Skills* (p = .164). Results indicated that the distribution of dependent variables did meet the assumption of homogeneity of variance of significance value < .05. These results suggest that the distribution for the *yes* group and the *no* group indicated that there were equal distributions across the two groups. Displayed in Table 4.12, are details of Levine's Tests for the three dependent variables used to evaluate research question 2.

Table 4.12

Summary of Levene's Tests of Error Variances for Research Question 2

Dependent Variable	F	df1	df2	Sig.
Behavior Modification	1.9480	1	481	.163
Parental Participation	1.0710	1	481	.301
ABA Knowledge & Skills	1.9400	1	481	.164

Note. Significance value < .05

Assumption of homogeneity of variance-covariance matrices. Box's M Test of Equality of Covariance Matrices conducted to examine the assumption of homogeneity of variance-covariance matrices. The test examines the distribution of scores across the two groups (ABA practitioners with a child with autism and ABA practitioners without a child with autism) on the prioritization of skills for each of the three dependent variables (*Behavior Modification*, *Parental Participation*, and *ABA Knowledge and Skills*). The critical value determining the violation of the assumption is p < .001. Results from the test found that the distributions were equal across the independent variables of ABA practitioners and ABA practitioners with a child with autism, with a score of (p = .165).

These results suggest that that the distribution of the dependent variables scores for each group were relatively equal.

Assumption of multicollinearity. The assumption of multicollinearity was tested to examine the three dependent variables and determine whether they were significantly related to each other. Correlations were determined between the three dependent variables. The significance value was > .80. Specifically, the correlation of *Behavior Modification* and *Parental Participation* was a score of (p = .529) and *Behavior Modification* and *ABA Skills and Knowledge* was a score of (p = .524). Additionally, the correlation of *Parental Participation* and *ABA Skills and Knowledge* was a score of (p = .722). Results indicated that there were no significant correlations found between the three dependent variables. Displayed in Table 4.13 are the details of the correlational results for the three dependent variables used to evaluate research question 2.

Table 4.13

Summary of Correlational Results between Dependent Variables

	Pearson Correlation		
Dependent Variable	1	2	3
Behavior Modification (1)	1.000	.529	.524
Parental Participation (2)		1.000	.722
ABA Knowledge and Skills (3)			1.000

Note. Significance value > .8

Analysis of research question 2. A MANOVA analysis conducted to determine whether there were any significant differences in practitioners' perspectives regarding knowledge and skills necessary for parents to guide children with autism between ABA

practitioners with an ASD child (the yes group) and ABA practitioners without (the no group). Results indicated that a significant difference did exist. Specifically, the independent variable (ABA professional with a child of autism) showed a score of (p = .003). Specifically, results indicated that a significant difference did exist between the two groups on a model containing the three dependent variables. The partial eta-squared indicates the effect size (*partial eta-squared* = .028). That is, 2.8% of participants scored the way they did on the three dependent variables according to whether or not they had a child with autism. Although significant, the effect size is small. If the means of two groups' do not differ by 2 standard deviations or more, the difference is unimportant, even if it is statistically significant (Cohen, 1988). Table 4.14 shows a model summary of the MANOVA analysis.

Table 4.14

Model Summary of MANOVA Analysis for Research Question 2

Source	Wilks' Lambda	F	Hypothesis Df	Error df	Sig.	Partial Eta Squared	Observed Power
Intercept	0.032	4850.144	3	479	<.001	.968	1.000
ABA professional with a child of Autism	0.972	4.652	3	479	.003	.028	.892

Note. Significance value < .05

To determine which dependent variables (*Behavior Modification, Parental Participation,* and *ABA Knowledge And Skills*) were significantly different on the prioritization of skills across the two groups, a test of between-subjects effects was conducted, (see Appendix P). Results indicated that significant differences existed in

Parental Participation with scores of (*sig.* = .002) and *ABA Knowledge and Skills* with scores of (*sig.* = .001). That is, ABA practitioners with children with autism showed significantly higher scores for *Parental Participation* (*M* = 5.73, *SD* = 0.726) than those without children with autism (*M* = 5.316, *SD* = 0.804). Additionally, ABA practitioners with children with autism had significantly higher prioritization of skills for *ABA Knowledge and Skills* scores (*M* = 5.270, *SD* = 0.690) than those without children with autism (*M* = 4.803, *SD* = 0.813). There was no significant difference in prioritizing skills in *Behavior Modification* scores between ABA practitioners with children with autism (*M* = 5.957, *SD* = 0.735) and those without (*M* = 5.852, *SD* = 0.588). A means plot of the three dependent variables by groups is displayed in Figure 4.1.

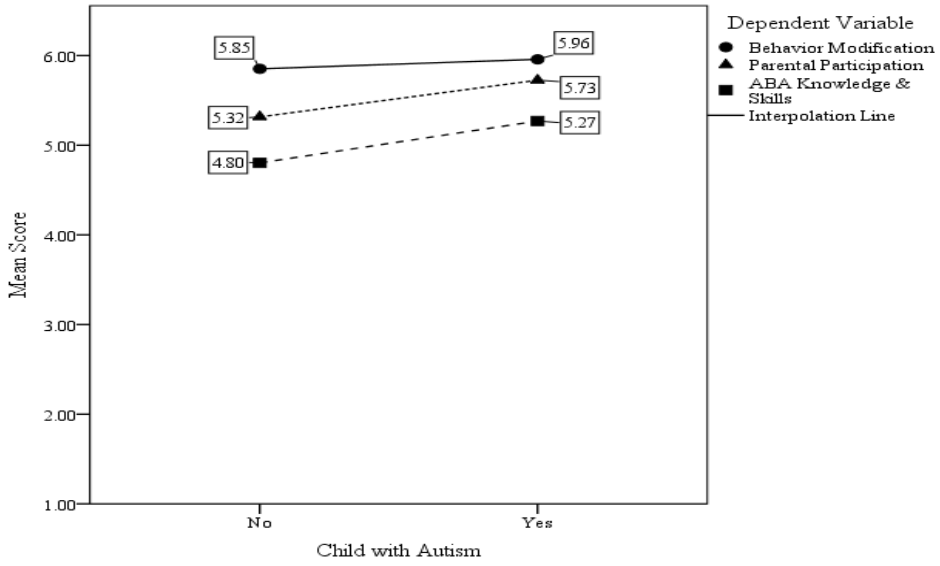

Figure 4.1. Means plot of behavior modification, parental participation, and ABA knowledge and skills scores.

Summary of Results

Using the research methods detailed in Chapter 3 and the statistical analysis detailed above, the study prioritized a list of skills and knowledge needed in the

development of a curriculum geared to guide parents in optimizing the help they \give their children with autism. Coolican et al. (2010) indicated that children must have a range of learning environments. They stated that such learning environments include family, schools, and out-of-school time programs. Bryson, Koegel, Koegel, Openden, and Nefdt (2007) found that training parents in evidence-based intervention techniques is an efficient way to expand the resources and services available to children with autism.

The study used a self-evaluating, closed-ended survey of behaviorists working in the field of autism in identifying a professional prioritized list of knowledge and skills for parents to guide children with autism from birth to age five. A convenience sample was used via the recruiting method of a snowball sample. The results of the quantitative analysis were essential in establishing a prioritized list of skills and knowledge needed for developing a curriculum to guide parents in optimizing the help they give their children with autism.

The results of the MANOVA analysis revealed that there were significant differences in prioritization of *Parental Participation* (*sig.* = .002) and *ABA Knowledge and Skills* scores (*sig.* = .001) with an effect size of (*partial eta-squared* = .028) between ABA practitioners who have children with autism and those who do not. The effect size of 2.8% is small: even if it is statistically significant, the difference is unimportant. Similarly, there were no significant differences in the prioritization of *Behavior Modification* scores between ABA practitioners with children with autism and those without. ABA professionals with ASD children thus have a slightly different perspective on the priorities of skills needed in *Parent Participation* and *ABA Skills and Knowledge*, but the difference is not significant enough to be relevant. Moreover, *Behavior*

Modification scores were prioritized as similar across all participants. The following and final chapter of this study will provide further summary of the findings while also describing the implications for recommendations and the study's limitations.

Chapter 5: Discussion

This chapter will address the study's implications, findings, limitations, recommendations and conclusions for research and practice related to what behaviorists believe are the skills and knowledge needed in order to support children with autism. Recommendations will be made, based on the implications, in order to assist ABA practitioners and parents in what to teach these children. The study generated a prioritized list of skills and knowledge that can be used to guide parents of children with autism.

Introduction

In this dissertation study, 483 behaviorists with training in ABA therapy for the field of autism evaluated two research questions. Data entry into the Statistical Package for the Social Sciences (SPSS) 22.0 and analysis using descriptive statistics and multivariate analysis of variance (MANOVA) were used to evaluate the research questions. This study includes implications guided by the research questions. The research questions are:

What is the viewpoint of practitioners with a behaviorist perspective regarding the knowledge and skills necessary for parents to guide children with autism aged birth to 5 years in the categories of behavior modification, parental participation, and ABA skills and knowledge; and

Do behaviorists who are also parents of children with autism have a different perspective regarding autism than other behaviorists in the field, when prioritizing the

knowledge and skills parents need in the categories of behavior modification, parental participation and ABA skills and knowledge?

These questions are important because aside from this study, a professionally prioritized list of skills and knowledge for training parents in how to guide their children with autism is essentially un-researched (Bennett, 2012; Trevarthen, Robarts, Papoudi , & Aitken, 1998; Vismara, Young, & Rogers, 2011; Zingale, Belfiore, Trubia, & Buono, 2008).

Analysis related to the research question 1. An evaluation of the literature of 15 non-peer reviewed curricula found only sets of established but statistically untested skills to train parents of children with autism. Of these 15, only two sets overlapped by at least five of the top 16 prioritized parent-learning outcomes from this study (Appendix N); an overlap of three was typical. Leaf and McEachin (1999) incorporated seven skills sets of the top 16 in their parent curriculum for ASD children. Dunlap, Wilson, Strain, and Lee (2013) also created a curriculum to train parents of children with autism. Theirs matched 13 of the top 16 prioritized skills from the present study's list. Given these significant overlaps between Leaf and McEachin's (1999) and (especially) Dunlap et al.'s curricula and the present study's prioritized list of skills, parts of their curricula can be applied efficiently and effectively to train parents of special needs learners such as children with autism.

Nevertheless, curricula for training parents remain vague, especially in relation to children with autism. ABA practitioners can use the list from this study as a foundation to training parents in combination with Dunlap et al.'s curriculum to address a number of skills established in the prioritized list. The top 16 prioritized skills and knowledge

displayed in Figure 5.1 with a comparison of Dunlap et al. (2013), Leaf, and McEachin (1999).

Priority	Prioritized Skill/Knowledge	Dunlap et al. (2013)	Leaf and McEachin (1999)
1	Parent will practice behavior management for challenging behaviors	X	
2	Parent will implement behavioral intervention plan	X	
3	Parent will identify a variety of reinforcers	X	
4	Parent will use clear language that matches their child's understanding	X	
5	Parent will practice antecedent manipulation	X	
6	Parent will recognize the family's role in the home and school program for their child	X	X
7	Parent will recognize different forms of functional communication for their child	X	X
8	Parent will participate in developing and implementing goals for their child	X	X
9	Parent will practice natural environment teaching	X	X
10	Parent will recognize self-help skills and daily living skills for their child		X
11	Parent will practice play time activities in their child's routine	X	X
12	Parent will recognize and assist in developing joint attention with their child		
13	Parent will recognize pro-social behaviors	X	
14	Parent will practice breaking tasks into smaller steps for their child	X	X
15	Parent will analyze the function behind challenging behaviors	X	
16	Parent will record data into ABC's		

Note: The list of priorities was developed based on the 50th percentile from the result of this study

*Figure 5.1***.** A comparison of the 50th percentile from the prioritized list and the two most concordant non-prioritized curricula.

Analysis related to research question 2. An analysis of research question 2 focused on behaviorists who have children with ASD versus behaviorists who do not and their respective prioritizations of skills for training parents of children with autism. The researcher had hypothesized those ABA professionals with an ASD child would prioritize skills in training parents differently from those who did not because of the personal experience of having a child with ASD. However, the study's findings showed that ABA professionals who are parents of ASD prioritized the needed parent skills very similarly to the way the nonparent ABA professionals did.

Implications of Findings

The prioritized list developed through the dissertation research contributes to a foundation of skills and knowledge for parents of children with autism. According to the CDC (2013), Autism Speaks (2014), and the National Autism Center (2011), parents may choose what treatment is right for their child immediately after diagnosis. If they select an ABA-based approach, the ABA practitioner could then use the list of prioritized skills and knowledge to train them.

That said, because the study included only behaviorists in the field of autism, the findings do not generalize for training parents in non-behavioral (or at any rate less behaviorally focused) methods of intervention such as those discussed in chapters 1 and 2 of this dissertation. However, it is up to the practitioners to decide whether they want to incorporate the skills from the prioritized list in training parents. Despite the differences between behaviorist and non-behaviorist approaches to autism treatment, the National Autism Center (2011) indicates that many ostensibly non-behavioral therapies include

behaviorist components. Hence, non-behaviorists may find parts of the prioritized list useful in training parents.

In addition, this study will enhance scholarship by providing the foundation of a prioritized list of skills and knowledge to ABA practitioners in developing standardized practice for training parents of children who have autism. Moreover, this standardized parent-training practice may increase parental engagement in the overall process of autism treatment as well as improve skill acquisition for their child with ASD. (As earlier noted, research by Bennett (2012) and Solomon, Ono, Timmer, and Goodlin-Jones (2008) showed that parents who received training in autism treatment had an overall positive impact on their child with ASD and the child's rate of skill acquisition.) Furthermore, the improved effectiveness of parents trained from the prioritized list may assist the ABA practitioner in utilizing all members of the child's "team" to optimize that child's growth, academically and socially.

Furthermore, the prioritized list could be used as a basis for the full development of a parent-training curriculum (including lesson plans and pedagogical approaches for practitioners, textual and audiovisual materials, and so forth) that can help ABA practitioners build the knowledge and skills needed by parents of children with ASD. This curriculum would sequentially inculcate the 16 highest-ranked prioritized skills in behavior modification, parental participation, and ABA skills and knowledge. Moreover, such a standardized curriculum developed from the prioritized list should also substantially increase parental engagement in the overall treatment process by reducing feelings of anxiety and intimidation and bestowing confidence.

Lastly, the prioritized list of skills and knowledge can be used to evaluate other existing curricula in the short term, and ABA practitioners selecting and applying a published curriculum for training parents can use the list as a guide in both selection and instruction. Even parents who choose to teach themselves can use the list in the same way to choose a curriculum or curricula training and prioritize the skills and knowledge they find there.

Limitations

One limitation of this study involves the content of the survey questions to ABA practitioners. The introduction to the survey that is the basis of the present study states clearly that the prioritization requested is of skills and knowledge needed by parents of ASD children *from birth to age five*. Within this time range, however, an individual child's needs may change, thus affecting the priorities of skills in which the parents should be trained for a given family's needs. For example, recognizing and acquiring pro-social behaviors (i.e., actions such as helping, sharing, and co-operating) may not be a priority for an 18-month-old, but those skills may be a priority for families with a 4-year-old. Conversely, a four-year-old may already have learned the skill of joint attention (shared focus on an object or activity) while an 18-month-old urgently needs it, so that priority needs to be given to training parents in teaching it. This researcher looks forward to similar studies that focus on practitioners' analogous prioritizations in training parents of children in narrower age ranges such as the first year of life or ages three to five. Also, additional refinement of parent learning outcomes should assist in the resolution of this limitation. Regardless of these differences, the analysis of the survey results provides

valuable information on foundational skills and knowledge for ABA professionals in training parents.

Additional limitations include data errors due to participants' non-response to questions, the potential for differences in responder interpretation, responder uncertainty, and lack of subject knowledge or boredom during the survey. Despite these general limitations to surveys, Visser, Krosnick, Lavrakas, Harry, and Charles, (2000) argued that researchers can confidently apply findings to the entire population if the data sample is well designed.

Recommendations

The results of the study present a prioritized list of parent skills and knowledge derived from the opinions of ABA practitioners in the field of autism. A continuation of the study could further explore whether the ABA practitioners in the sample continue to agree with the prioritized list of skills for parents once implemented. This would be a basic test of the present study's validity and reliability. Moreover, given the rapid increase in early-childhood ASD diagnoses, new studies on ABA pedagogy with ASD children are likely to be published that may alter the participants' views. Moreover, such a study could explore *why* ABA practitioners prioritized some skills as more or less important than others in training parents. Perhaps more important, it should be determined whether or not ABA practitioners believe the prioritized list of skills accurately represents their beliefs and whether the list should be developed into a standardized curriculum for training parents in ASD. To further validate the results, an identical study should be performed in five years using the same inclusion criteria but excluding participants in the present study. This would be an additional test of the

replicability of the results. A still further study would be to establish to what degree practitioners who participated in the study have subsequently used its findings (the prioritized list) to enhance their own practice of training parents. In the next few years, it would of course be valuable to establish to what degree the prioritized list (presumably amended by results from the follow-up studies recommended above) had been incorporated into a standardized curriculum for training parents.

From a review of the current literature on un-prioritized parent training curricula completed for this study, there is a clear need for ABA professionals to ensure a cohesive learning environment through a professionally developed curriculum that incorporates parents into the autism treatment plan. It is recommended that a parent curriculum be developed for training parents of children with autism using the prioritized list.

An additional review of the un-prioritized parent training curricula for parents of children with autism by Dunlap et al. (2013), Leaf, and McEachin (1999) showed a number of skill sets consistent with the prioritized list from the research study. Both curricula—especially Dunlap et al.'s with its concordance of 13 out of the present study's 16 needed skills—can serve as a foundation in the development of a future professional parent-training curriculum utilizing the prioritized list. Perhaps more important, a future study can be conducted that reviews multiple training curricula for parents of children with ASD using the prioritized list as a guideline in assessing each curriculum's parent skill sets and their prioritization, thus laying the groundwork for a "best practices" curriculum for training parents. (Such a synthesized curriculum would of course need further evaluation for the standardization, validity, and reliability of the recommended skill sets and their prioritization.)

A further study could explore the developed parent-training curriculum created from the prioritized list and its practical application in the field through its effectiveness with parents and children with ASD. The study would seek to discover to what extent parents were able to acquire and understand the skills taught by the ABA practitioner as well as the direct effect on their child's skill acquisition, academically and socially. An additional question would examine the parents' perspective on the standardized training based on the list. Another possible topic to explore would examine ABA practitioners' understanding of the parent-training curriculum developed from the list and if they are able to effectively teach it to parents. A further study is recommended to examine parent attitudes about what they need in the way of skills and knowledge in reference to ASD and cross-referenced with the list. The study should include both experienced parents and those just starting out after their child has been diagnosed.

Lastly, the sample size of 483 ABA practitioners is a small proportion of the entire population of ABA professionals in the United States. Therefore, research studies with a larger sample size would be required to ensure appropriate generalization of the findings of the study. A follow-up study to this dissertation research should double the sample size from 483 to 966 participants in order to increase the effect on the significance value and maintain the survey's validity. The 966 participants should include (to a close approximation) 483 ABA professionals with a child with autism and 483 ABA professionals without a child with autism. Continued research and pilot studies such as the one conducted for this dissertation are needed to ensure continuing improvement in the education of parents with children with autism. A final recommendation is that this study be replicated in five years to determine the consistency of the priorities over time.

Conclusions

Recent research studies by Murray, Ackerman-Spain, Williams, and Ryley (2011), and Rogers and Dawson (2010) have provided compelling evidence that parents' participation in autism treatment has a beneficial effect on their child's skill acquisition. Crockett and Fleming (2007) further argued that parent involvement is an important factor that positively influences children with autism and their education. Moreover, Rogers and Dawson (2007) wrote that parental involvement at home during routine daily activities is an important contribution to the successful progress of a child's with autism. Given the importance of parental involvement, the dissertation study identified a set of skills and knowledge that, combined with existing curricula, can contribute to the creation of more professional prioritized training programs for parents of children with autism.

For this purpose, a closed-ended survey from a behavioral perspective was developed using a Likert 1-7 scale on the participants' priorities of parent learning outcomes in training parents of children with ASD. The survey was given to ABA practitioners in the field of autism. Two research questions were used in guiding the study:

1. What is the viewpoint of practitioners with a behaviorist perspective regarding the knowledge and skills that are necessary for parents to guide children with autism from birth to age five in the categories of behavior modification, parental participation, and ABA skills and knowledge; and
2. Do behaviorists who are also parents of children with autism have a different perspective regarding autism than other behaviorists in the field, when

prioritizing the knowledge and skills parents need in the categories of behavior modification, parental participation and ABA skills and knowledge?

An analysis using descriptive statistics and multivariate analysis of variance was performed to evaluate the research questions. The findings of research question one showed the viewpoint of ABA practitioners' prioritization of knowledge and skills that are necessary for parents to guide children with autism. Additionally, the analysis of research question 2 revealed that ABA practitioners with ASD children and those without similarly prioritized the skills needed to guide parents of children with autism. Additionally, the findings showed there were no significant differences in the prioritization of learning outcomes in behavior modification for parents between ABA practitioners with children of autism and those without.

Summary of implications. The study's results imply that the prioritized list developed through the dissertation research will contributes to providing a foundation of skills and knowledge to parents of children with autism. A further implication is that ABA practitioners could use the list of prioritized skills and knowledge to train parents.

The study does not generalize to non-behavioral treatments for training parents. Moreover, it is up to practitioners to decide whether they want to incorporate the skills from the prioritized list in training parents of children with autism. Nonetheless, the prioritized list developed from this study will likely enhance scholarship by assisting (via further studies such as those recommended above) in the development of a newly standardized practice for training parents of children with autism. This standardization of priorities is also likely to increase parental engagement in the overall autism treatment and thereby improve and hasten their children's skill acquisition.

An additional implication is that the prioritized list could assist in the future development of a full parent-training curriculum for building parent knowledge and skills to guide their children with ASD. The curriculum would provide ABA practitioners with set, sequenced lesson plans and other materials and an overall standardized approach to training parents in this area.

Lastly, the list could be used to evaluate other non-prioritized curricula in already established trainings for parents. The list would be a guide to which skills should be taught in which order. Parents who choose to self-train could use the list to set priorities for their own learning from other parent-training curricula in ASD.

Summary of limitations. The limitations to the study involved the content of the survey as well as the sample. The survey questions focused on prioritizing learning outcomes for training parents of children with autism. Moreover, ABA practitioners could shift their perception of these priorities based on a client child's individualized needs, thus affecting the practitioners' scores in ranking priorities for training parents. An additional refinement of parent learning outcomes would help resolve this limitation. Nevertheless, the analysis of the survey results provided valuable information on a prioritized skills list for parent training.

Additional limitations included possible data errors from participants' non-response to questions, differences in interpretation, uncertainty or lack of clarity on questions, lack of subject knowledge, and/or boredom during the survey. However, despite these limitations, it was assumed that the researcher could confidently apply the findings to the entire population due to a well-designed sample.

Summary of recommendations. The recommendations following the study included a continuation of the study to explore the participating ABA practitioners' sustained agreement with the prioritized list of skills for parents once implemented. This follow-up study should also discover *why* ABA practitioners prioritized some skills as less important than others in training parents. This or another study should determine whether ABA practitioners believe the prioritized list of skills is an accurate representation of their opinions and if the development of a standardized curriculum for training parents is important. For additional validation, the study should be replicated with the same inclusion criteria but with a completely new group of participants.

These recommended refinements and validations aside, the review of non-prioritized parent-training curricula indicated a need for ABA professionals to ensure a cohesive learning environment between parents and professionals. It was recommended that a curriculum be developed for training parents of children with autism using the prioritized list as a foundation. Moreover, two non-prioritized training curriculums for parents of children with autism by Dunlap et al. (2013), Leaf and McEachin (1999) showed substantial agreement with the prioritized list from the present study on skills sets for parents. Both curricula could serve as foundational material in the development of a full parent-training curriculum.

The curriculum would need further evaluation during development for standardization, validity and reliability. Also recommended was a further study to evaluate the parent-training curriculum once developed and its effectiveness with parents and children with ASD. The study would examine to what extent parents were able to acquire and understand the skills taught by the ABA practitioner as well as the effect

their teaching had on their child's skill acquisition. Additional studies would assess how well ABA practitioners understood the parent-training curriculum and their effectiveness in instructing parents in it.

A further study would examine parents' perspectives on standardized training they receive from an ABA practitioner. Lastly, given that the sample size of 483 is a small proportion of the population of ABA professionals in the US, it was recommended a larger-scale study (at least 966 participants) be conducted to ensure appropriate generalization of the findings of the findings. A final recommendation for the study would be a replication in five years to determine the consistency of the priorities over time.

Overall summary. The dissertation study adds new findings to the literature on a professionally prioritized curriculum for parents. Due to the phenomenon of increased diagnosis at such an early age and the positive effects of ABA therapy on children with autism, ABA professionals need tools to meet the needs of the parents of these children. It is important for ABA professionals to consider a high-quality parent-training model that enhances the parents' skills, which in turn will positively affect the success of their children with autism.

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Appendix A

APA Diagnostic Checklist 2013

Diagnosis of Autism Spectrum Disorder (American Psychiatric Association, 2013)

	Impairment Type	Characteristic
(A)	Qualitative impairment in social interaction, as manifested by at least two of the following:	1. Marked impairments in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body posture, and gestures to regulate social interaction. 2. Failure to develop peer relationships appropriate to developmental level. 3. A lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest to other people). 4. Lack of social or emotional reciprocity (the description gives the following as examples: not actively participating in simple social play or games, preferring solitary activities, or involving others in activities only as tools or "mechanical" aids).
(B)	Qualitative impairments in communication as manifested by at least one of the following:	1. Delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime) 2. In individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others 3. Stereotyped and repetitive use of language or idiosyncratic language 4. Lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level
(C)	Restricted repetitive and stereotyped patterns of behavior, interests and activities, as manifested by at least two of the following:	1. Encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus 2. Apparently inflexible adherence to specific, nonfunctional routines or ritual 3. Stereotyped and repetitive motor mannerisms (e.g. hand or finger flapping or twisting, or complex whole-body movements) 4. Persistent preoccupation with parts of objects

Appendix B

Seven Dimensions of Applied Behavior Analysis

Seven Dimensions of Applied Behavior Analysis (Baer, Montrose , & Risley, 1968)

Applied: Applied interventions deal with problems of demonstrated social importance. Behavioral: Applied interventions deal with measurable behavior

Analytic: Applied interventions require an objective demonstration that the procedures caused the effect
Technological: Applied interventions are described well enough that they can be implemented by anyone with training and resources

Conceptual Systems: Applied interventions arise from a specific and identifiable theoretical base rather than being a set of packages or tricks

Effective: Applied interventions produce strong, socially important effects

Generality: Applied interventions are designed from the outset to operate in new environments and continue after the formal treatments have ended

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Appendix C

Autism in the DSM-I, DSM-II and DSM-III

DSM I (1952)

000-x28 Schizophrenic reaction, childhood type
Here will be classified those schizophrenic reactions occurring before puberty. The clinical picture may differ from schizophrenic reactions occurring in other age periods because of the immaturity and plasticity of the patient at the time of onset of the reaction. Psychotic reactions in children, manifesting primarily autism, will be classified here.

DSM II (1968)

[autism was not mentioned; the word appears only under the following category]

295.8 Schizophrenia, childhood type

This category is for cases in which schizophrenic symptoms appear before puberty. The condition may be manifested by autistic, atypical and withdrawn behavior; failure to develop identity separate from the mother's; and general unevenness, gross immaturity and inadequacy of development. These developmental defects may result in mental retardation, which should also be diagnosed.

DSM III (1980)

Diagnostic criteria for Infantile Autism

B. Onset before 30 months of age

B. Pervasive lack of responsiveness to other people (autism)

C. Gross deficits in language development

D If speech is present, peculiar speech patterns such as immediate and delayed echolalia, metaphorical language, pronominal reversal.

E. Bizarre responses to various aspects of the environment, e.g., resistance to change, peculiar interest in or attachments to animate or inanimate objects.

F. Absence of delusions, hallucinations, loosening of associations, and incoherence as in Schizophrenia.

Appendix D

Autism in DSM-III-R

Diagnostic criteria for autistic disorder need eight of the following sixteen items present, these to include at least two items from A, one from B, and one from C:

A. Qualitative impairment in reciprocal social interaction (the examples within parentheses are arranged so that those first listed are more likely to apply to younger or more disabled, and the later ones, to older or less disabled) as manifested by the following:

1.Marked lack of awareness of the existence or feelings of others (for example, treats a person as if that person were a piece of furniture; does not notice another person's distress; apparently has no concept of the need of others for privacy);

2. No or abnormal seeking of comfort at times of distress (for example, does not come for comfort even when ill, hurt, or tired; seeks comfort in a stereotyped way, for example, says "cheese, cheese, cheese" whenever hurt);

3. No or impaired imitation (for example, does not wave bye-bye; does not copy parent's domestic activities; mechanical imitation of others' actions out of context);

4. No or abnormal social play (for example, does not actively participate in simple games; refers solitary play activities; involves other children in play only as mechanical aids); and

5. Gross impairment in ability to make peer friendships (for example, no interest in making peer friendships despite interest in making friends, demonstrates lack of understanding of conventions of social interaction, for example, reads phone book to uninterested peer.

B. *Qualitative impairment in verbal and nonverbal communication and in imaginative activity, (the numbered items are arranged so that those first listed are more likely to apply to younger or more disabled, and the later ones, to older or less disabled) as manifested by the following:*

1. No mode of communication, such as: communicative babbling, facial expression, gesture, mime, or spoken language;

2. Markedly abnormal nonverbal communication, as in the use of eye-to-eye gaze, facial expression, body posture, or gestures to initiate or modulate social interaction (for example, does not anticipate being held, stiffens when held, does not look at the person or smile when making a social approach, does not greet parents or visitors, has a fixed stare in social situations);

3. Absence of imaginative activity, such as play-acting of adult roles, fantasy character or animals; lack of interest in stories about imaginary events;

4. Marked abnormalities in the production of speech, including volume, pitch, stress, rate, rhythm, and intonation (for example, monotonous tone, question-like melody, or high pitch);

5. Marked abnormalities in the form or content of speech, including stereotyped and repetitive use of speech (for example, immediate echolalia or mechanical repetition of a television commercial); use of "you" when "I" is meant (for example, using "You want cookie?" to mean "I want a cookie"); idiosyncratic use of words or phrases (for example, "Go on green riding" to mean "I want to go on the swing"); or frequent irrelevant remarks (for example, starts talking about train schedules during a conversation about ports); and

6. Marked impairment in the ability to initiate or sustain a conversation with others, despite adequate speech (for example, indulging in lengthy monologues on one subject regardless of interjections from others);

C. Markedly restricted repertoire of activities and interests as manifested by the following:

1. Stereotyped body movements (for example, hand flicking or twisting, spinning, head-banging, complex whole-body movements);

2. Persistent preoccupation with parts of objects (for example, sniffing or smelling objects, repetitive feeling of texture of materials, spinning wheels of toy cars) or attachment to unusual objects (for example, insists on carrying around a piece of string);

3. Marked distress over changes in trivial aspects of environment (for example, when a vase is moved from usual position);

4. Unreasonable insistence on following routines in precise detail (for example, insisting that exactly the same route always be followed when shopping);

5. Markedly restricted range of interests and a preoccupation with one narrow interest, e.g., interested only in lining up objects, in amassing facts about meteorology, or in pretending to be a fantasy character.

D. *Onset during infancy or early childhood*

Specify if childhood onset (after 36 months of age)

Appendix E

Autism in DSM-IV (1994) and DSM-IVR (2000)

299.00 Autistic Disorder

1. *A total of six (or more) items from (1), (2), and (3), with at least two from (1), and one each from (2) and (3):*

1. Qualitative impairment in social interaction, as manifested by at least two of the following:
    1. marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction.
    2. failure to develop peer relationships appropriate to developmental level
    3. a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest)
    4. lack of social or emotional reciprocity
2. Qualitative impairments in communication as manifested by at least one of the following:
    1. delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime)
    2. in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others
    3. stereotyped and repetitive use of language or idiosyncratic language
    4. lack of varied spontaneous make-believe play or social imitative play appropriate to developmental level
3. Restricted, repetitive, and stereotyped patterns of behavior, interests, and activities, as manifested by at least of one of the following:
    1. encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus
    2. apparently inflexible adherence to specific, nonfunctional routines or rituals
    3. stereotyped and repetitive motor mannerisms (e.g. hand or finger flapping or twisting, or complex whole body movements)
    4. persistent preoccupation with parts of objects

2. *Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: (1) social interaction, (2) language as used in social communication, or (3) symbolic or imaginative play.*

3. *The disturbance is not better accounted for by Rett's disorder or childhood disintegrative disorder.*

Appendix F

Needed Knowledge and Skills from Peer-Reviewed Articles

These included the following (citations of peer-reviewed articles supporting these selections follow each one

- Knowledge of joint attention for their child (Schertz, H., & Odom, S.,2007; Rogers & Dawson, 2010)
- Knowledge of the importance of clear language to match their child's understanding (Johnson-Martin, Attermeier, & Hacker, 2004; Vismara et al., 2009)
- Functional skills for their child (Coolican et al., 2010; Dunlap, Wilson, Strain, & Lee, 2013; Koegel, Koegel, & Symon, 2002; Leaf & McEachin, 1999)
- Teaching generalization of skills (Ingersoll and Dvortcsak, 2006; Crockett & Fleming, 2007; Dunlap, Wilson, Strain, & Lee, 2013; Koegel & Koegel, 2012)
- Identifying specific skills through observation (Johnson et al. ,2009; Leaf & McEachin, 1999)
- Knowledge of a variety of reinforcers (Crockett & Fleming, 2007; Bennett, 2012; Dozier et al., 2012; Randolph, Stichter, Schmidt, and O'Connor, 2012; Levine & Levine, 2012; Koegel, Koegel, & Symon, 2002; Dunlap, Wilson, Strain, & Lee, 2013; Leaf & McEachin, 1999),
- Knowledge of different therapy approaches (Wiseman, 2006, Lord & Bishop, 2010; Dunlap, Wilson, Strain, & Lee, 2013; Crockett and Fleming, 2007; Vismara, Young, & Rogers, 2011),
- Knowledge of cognitive, developmental and achievement assessments for their child (Denno, Carr, & Bell, 2010, Solomon et al., 2008 & Wiseman, 2006)
- Knowledge of characteristics of autism and its effect on early development (Heron et al., 2007, Johnson-Martin, Attermeier, & Hacker, 2004).
- Knowledge of the therapy format for their child (Levine & Chedd, 2012; Leaf & McEachin, 1999; Skinner, 1960)

Appendix G

Raw List of Knowledge and Skills

Note: These set of skills were gathered from written works of experts in the field of autism.

- Knowledge of sensory integration and regulating
- Knowledge of emotional self-understanding and emotional self-regulation
- Knowledge of executive functioning and cognitive control of behaviors
- Knowledge of visual scaffolding and visual teachings
- Knowledge of social thinking and social thinking vocabulary
- Knowledge of the development of self-awareness (Kuypers, 2011).

- Awareness of practical activities, their purpose, and the impact they have and how they can build their child's skills (Roberts & Harpley, 2007).

- Understanding of expectation for their child's independence, social competence and compliance (Denno, Carr, & Bell, 2010)

- Knowledge of the impact the diagnosis of autism has on a family Knowledge of characteristics of autism and its effect on early development (Johnson-Martin, Attermeier, & Hacker, 2004).

- Understanding of Natural Environment interventions
- Understanding of Applied Behavioral Analysis (Leach, 2012).

- Understanding why affection is important
- Understanding why encouragement is important
- Understanding why teaching is important
- Understanding why observing your child is important (Roggman, Cook, Innocenti, Norman, Christiansen, & Anderson, 2013).

- Understanding of a formal screening and assessment for autism
- Understanding of the diagnosis
- Awareness of how to select the right treatment (Wiseman, 2006).

- Understanding of how to prompt their child's behavior in natural settings
- Understanding of that natural parenting procedures do not work with children on the spectrum
- Knowing what is myth and reality about autism
- Knowing child with autism gain appropriate behaviors through observing typically developing peers
- Understanding an absence of good role models for their child may cause them to learn atypical behaviors
- Knowing what a measurable goal is for their child (Koegel & Koegel, 2012).

- Understanding how brain development supports acquisition (Rogers & Dawson, 2010).
- Knowledge of clear, uninterrupted instructions to the child while maintaining the child's attention
- Knowledge that instruction should vary frequently, and maintenance tasks (i.e., tasks that the child has already master) should be interspersed with acquisitions tasks (i.e., targeted skills).
- Knowledge that the child should have significant input in the selection of the toys and activities
- Knowledge that rewards are functional and should be administered immediately and contingently following a child's behavior

- ❖ Knowledge that reinforcer should be directly related to the child's response
- ❖ Knowledge that reinforcer should be administered to the child following clear attempts as well as correct responses (Koegel, Koegel, & Symon, 2002).

- ❖ Knowledge to use home toys while play face-face activities to promote interactions (Schertz & Odom, 2007).

- ❖ Knowledge of the cost of ASD
- ❖ Knowledge of valid and reliable research for treatment of ASD (Lord & Bishop, 2010).

- ❖ Knowledge of DIR theory
- ❖ Understanding contingently and reciprocally for enganment of their child (Solomon, Necheles, Ferch, & Bruckman, 2007).

- ❖ Avoiding Challenging Behaviors
- ❖ Socially Appropiate Skills
- ❖ Acceptable Choices in Offering Reinforcement
- ❖ Prevention Stratigies in Behaviors
- ❖ Language and terms of an ABA program plan
- ❖ Participating in their child's routine
- ❖ Identifying Specific Skills
- ❖ Child Development Stages
- ❖ Generalization of Skills
- ❖ Implementation of Treatment Plan
- ❖ Function of Challenging Behaviors
- ❖ Awareness that their contribution in their child's program provides valuable knowledge (parents are equal members of the team)
- ❖ Knowledge that cultural and language differences can affect child's treatment
- ❖ Knowledge that it is equally important to express positive and challenging behaviors of their child performance
- ❖ Knowledge on efficient an defective team meetings for their child's program
- ❖ Knowledge that as parents they provide valuable contributions in identifying functional goals for their child
- ❖ Understanding their child's realistic accomplishment certain goals (Dunlap, Wilson, Strain, & Lee, 2013).

- ❖
- ❖ Identifying Scripting, Modeling, and Role Playing (Dunlap, Wilson, Strain, & Lee, 2013).

- ❖ Playfully Engaging with Their Child
- ❖ Recogonzing Schemas (Roberts & Harpley, 2007).

- ❖ Child Management Strategies (Denno, Carr, & Bell, 2010).
- ❖ Knowledge on how many hours of intervention a child will need
- ❖ Knowledge of the families role
- ❖ Knowledge of the therapy format for their child
- ❖ Knowledge of the teaching format for their child
- ❖ Knowledge of teaching setting for their child
- ❖ Knowledge of the stages of therapy Knowledge of assessments for their child
- ❖ Knowledge of program effectiveness
- ❖ Understanding of splintering of skills (i.e., reads but does not dress)
- ❖ Rate of Reinforcement for their child
- ❖ Guidelines for teaching their child

- ❖ Functional (Non-speech) Communication for their child
- ❖ Self-Help and Daily Living Skills for their child
- ❖ Natural Environment Teaching for their child
- ❖ Functional Skills for their child
- ❖ Play and Social Skills for their child
- ❖ Social Skills Training for their child (Leaf & McEachin, 1999).

- ❖ Ability to follow the child's lead when teaching
- ❖ Providing choices for their child
- ❖ Making consequences count for their child
- ❖ Guidelines for making consequence effective
- ❖ Breaking tasks into smaller steps for their child
- ❖ Building learning experiences into their child's daily routines
- ❖ Using clear language for their child
- ❖ Allowing for quiet time for their child
- ❖ Provide sameness and change for their child
- ❖ Offer safety and Security for their child
- ❖ Provide an appropriate amount of stimulation without being overwhelming to their child
- ❖ Enrich the environment for their child through music and movement (Johnson-Martin, Attermeier, & Hacker, 2004).

- ❖ Data Collection and Analysis of their child's program (Leach, 2012).

- ❖ Parent Advocating for their child (Wiseman, 2006).

- ❖ Generalization and maintenance of their child's skill
- ❖ Location of intervention for their child (Koegel & Koegel, 2012).

- ❖ Teaching imitation to their child
- ❖ Teaching Joint Attention to their child
- ❖ Teaching eye contact to their child
- ❖ The training protocols experimentation, even if carried out (Rogers & Dawson, 2010)

Appendix H

47 Skills and Knowledge Areas Prioritized by the Study (with comments)

The survey questions have been developed based on the knowledge and skills taught to parents in already established curricula for training parents of individuals with autism. Appendix G contains the complete list of skills and knowledge. Below are the responses from the six behaviorists in the field of autism that used the Likert scale to rank the skills and knowledge they felt were necessary to train parents in guiding children aged birth to 5 with autism. Each respondent was asked to comment as an optional choice. The results of the responses that were scored "Somewhat Agree" or "Agree" were given a learning outcome and place in the final survey. Additionally, ~~l~~earning outcomes that have a reference cite in red font are those knowledge and skills that have been scholarly reviewed. Other reference sites in black font are those skills and knowledge that came from non-scholarly curricula for parents. Results from the behaviorists were put into the final survey for the pilot study.

Knowledge of sensory integration and regulating

Comments: As a reinforcer though, not a big fan of this one
Comments: I don't like how this is worded, there is no scientific evidence for sensory
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Knowledge of emotional self-understanding and emotional self-regulation

Comments: Operationally Define this
Comments: I need more clarification, not sure if this is necessary for parents
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Knowledge of executive functioning (i.e., transitioning to new places)

Comments: In behavioral terms, I don't think this is necessary for parents to know
Average Rating: Somewhat Agree
PARENT LEARNING OUTCOME: Parent will identify how to incorporate executive functioning skills into their child's daily routine (Kuypers, 2011).

Understanding of splinter skills

Comments: Make sure to define splinter skills
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME:
Parent will recognize splinter skills (i.e., reads but does not dress) (Leaf & McEachin, 1999).

Understanding how to explain activities or events in a manner verse abstract

Comments: Define this better
Comments: I don't think this is a necessary skills for parents
Comments: This is a good skill to know but not really for training parents
Average Rating: Strongly Disagree
NO LEARNING OUTCOME

Knowledge of cognitive, developmental and achievement assessments for their child

Comments: No Comments
Average Rating: Somewhat Agree
PARENT LEARNING OUTCOME:
Parent will recognize the distinctions in assessments for their child: cognitive, achievement, developmental, speech and occupational (Denno, Carr, & Bell, 2010, Solomon et al., 2008 & Wiseman, 2006).

Knowledge of characteristics of autism and its effect on early development

Comments: No Comments
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME:
Parent will interpret the characteristics of autism and its effect on early development (Heron et al., 2007, Johnson-Martin, Attermeier, & Hacker, 2004).

Understanding how brain development supports acquisition

Comments: No Comments
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Knowledge of the family expenses for their child with autism

Comments: No Comments
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Understanding how brain development supports acquisition

Comments: Acquisition of what
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Knowledge of the impact the diagnosis of autism has on a family

Comments: No Comments
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Knolwedge of the family expenses for their child with autism

Comments: No Comments
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Knowledge of insurance and the effects it has on their child's treatment

Comments: No Comments
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Knowledge of how many hours of intervention a child will need

Comments: I would rather say quality of intervention. Not quality and parent based on repairing guiding relationship has a better outcome for quality of life
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Knolwedge of the families role in home and school program

Comments: No Comments
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME:
Parent will recognize the family's role in the home and school program for their child (Johnson-Martin, Attermeier, & Hacker, 2004).

Knowledge of the therapy format for their child

Comments: Breaking thing down into small steps
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME:
Parent will practice breaking tasks into smaller steps for their child (Levine & Chedd, 2012; Leaf & McEachin, 1999; Skinner, 1960).

Knolwedge of teaching setting for their child

Comments: No Comments
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Knowledge of the stages of therapy (i.e., how their child will work through the program)

Comments: Do you mean readiness for increase capacity?
Average Rating: Somewhat Agree
PARENT LEARNING OUTCOME: Parent will differentiate readiness for increased capacity (e.g., knowing when to move to the next skill in their child's program (Dunlap, Wilson, Strain, & Lee, 2013, Roberts & Harpley, 2007, Leaf & McEachin, 1999, & Johnson-Martin, Attermeier, & Hacker, 2004).

Knowledge of program effectiveness

Comments: No Comments
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Knowledge on what a measurable goal is for their child

Comments: Operational terms
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Knowledge of different therapy approaches

Comments: ABA interventions, they are evidenced based
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME:
Parent will recognize different treatments of ABA for their child (i.e., Lovaas, ESDM, PRT, VB) (Wiseman, 2006, Lord & Bishop, 2010; Dunlap, Wilson, Strain, & Lee, 2013; Crockett and Fleming, 2007; Vismara, Young, & Rogers, 2011)

Understanding the possible causes of autism

Comments: No Comments
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Knowledge of the history of autism

Comments: Perspectives have changed over the years, so yes
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME:
Parent will recall the history of autism and how the perspectives have changed over the years (Johnson-Martin, Attermeier, & Hacker, 2004).

Knowledge of what are the myths and truths about autism

Comments: No Comments
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME:
Parent will distinguish myths and truths about autism (Koegel & Koegel, 2012).

Understanding the importance of ABA as a form of treatment

Comments: I think that is covered in a what good treatment approaches mentioned earlier
Comments: This is mentioned in an earlier question
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Understanding of a formal screening and assessment for autism

Comments: No Comments
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Understanding the characteristics in the DSM-5 of autism

Comments: Use the updated DSM-5
Comments: Very Important
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME: Parent will recognize the characteristics in the DSM-5 for autism (Leaf & McEachin, 1999).

Acceptable choices in offering reinforcement

Comments: No Comments
Average Rating: Somewhat Agree
NO LEARNING OUTCOME

Knowledge of variety a reinforcers

Comments: No Comments
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME: Parent will identify a variety of reinforcers (Crockett & Fleming, 2007; Bennet, 2012; Dozier et al., 2012; Randolph, Stichter, Schmidt, and O'Connor, 2012; Levine & Levine, 2012; Koegel, Koegel, & Symon, 2002; Dunlap, Wilson, Strain, & Lee, 2013; Leaf & McEachin, 1999).

Prevention strategies in behaviors

Comments: Do you mean antecedent manipulations, very important!
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME: Parent will practice antecedent manipulation (e.g., an event that existed before the event with the aim to change the behavior) (Roggman, Cook, Innocenti, Norman, Christiansen, & Anderson, 2013; Dunlap, Wilson, Strain, & Lee, 2013).

Language and terms of an ABA program

Comments: No Comments
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Participating in their child's routine

Comments: Making daily routines meaningful
Comments: Participating in playtime activities
Average Rating: Somewhat Agree
PARENT LEARNING OUTCOME: Parent will practice play time activities in their child's routine (Johnson-Martin, Attermeier, & Hacker, 2004).

Identifying specific skills through observation

Comments: Do you mean ABC data taking?
Average Rating: Somewhat Agree
PARENT LEARNING OUTCOME: Parent will record data into ABC's chart (e.g., Antecedent, Behavior, Consequence) of behavior (Johnson et al. ,2009; Leaf & McEachin, 1999).

Teach generalization of Skills

Comments: No Comments
Comments: I think parents don't teach they guide, I would use guide it's better
Average Rating: Somewhat Agree
PARENT LEARNING OUTCOME: Parent will identify when skills are generalized (e.g. when skill occurs across people, places, and teaching materials) (Ingersoll and Dvortcsak, 2006; Crockett & Fleming, 2007; Dunlap, Wilson, Strain, & Lee, 2013; Koegel & Koegel, 2012).

Avoiding challenging behaviors

Comments: We don't want to teach parents to avoid behaviors but feel comfortable addressing them
Comments: I don't like how this is worded
Comments: "avoid" is the wrong term, I suggest rewording it differently
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME:
Parent will practice behavior management for challenging behaviors Playing (Dunlap, Wilson, Strain, & Lee, 2013; Denno, D., Carr, V., & Bell, S., 2010).

Implementation of treatment plan

Comments: Actively participate in implementing goals?
Average Rating: Somewhat Agree
PARENT LEARNING OUTCOME: Parent will participate in developing and implementing goals for their child (Dunlap, Wilson, Strain, & Lee, 2013).

Function of challenging behaviors

Comments: Determine function of behavior
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME: Parent will analyze the function behind challenging behaviors (Dunlap, Wilson, Strain, & Lee, 2013 & Koegel, Koegel, & Symon, 2002)

Identifying scripting, modeling, and role playing

Comments: No Comments
Average Rating: Strongly Disagree
NO LEARNING OUTCOME

Playfully engaging with their child

Comments: No Comments
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Recognizing schemas

Comments: No Comments
Average Rating: Somewhat Disagree
NO LEARNING OUTCOME

Rate of reinforcement for their child

Comments: No Comments
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME:
Parent will demonstrate knowledge of rate of reinforcement in reference to parent-child interactions (Leaf & McEachin, 1999).

Guidelines for teaching their child

Comments: Strategies for guiding their child, like a BIP
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME: Parent will implement behavioral intervention plan (e.g. a plan to promote positive behavior for a child whose behavior impedes their ability to learn or is disruptive to others) (Leaf & McEachin, 1999).

Functional (non-speech) communication for their child

Comments: all functional communication
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME: Parent will recognize different forms of functional communication for their child (Leaf & McEachin, 1999).

Self-help and daily living skills for their child

Comments: Develop independence accordance with child readiness, self-help and daily living skills
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME: Parent will recognize self-help skills and daily living skills for their child (Leaf & McEachin, 1999).

Natural environment teaching for their child

Comments: Learning to play with their child
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME: Parent will practice natural environment teaching (Leaf & McEachin, 1999; Leach, 2012)

Functional skills for their child

Comments: recognized developmental stages for their child
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME: Parent will recognize the developmental sequences for children aged-birth to 5 (Coolican et al., 2010; Dunlap, Wilson, Strain, & Lee, 2013; Koegel, Koegel, & Symon, 2002; Leaf & McEachin, 1999).

Play and social skills for their child

Comments: This is NET teaching skills
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME: Parent will recognize pro-social behaviors (e.g. voluntary behavior intended to benefit another's consisting of actions such as helping, sharing, and co-operating) (Leaf & McEachin, 1999).

Knowledge of the importance of clear language to match child's understanding

Comments: No Comments
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME: Parent will use clear language that matches their child's understanding (Johnson-Martin, Attermeier, & Hacker, 2004; Vismara et al., 2009).

Knowledge of Joint attention for their child

Comments: No Comments
Average Rating: Strongly Agree
PARENT LEARNING OUTCOME: Parent will recognize and assist in developing joint attention with their child (Schertz, H., & Odom, S.,2007; Rogers & Dawson, 2010)

Appendix I

Letter of Introduction to Participants

Dear member of the group,

I am conducting a study that seeks to identify a prioritized list of skills and knowledge necessary to train parents to guide their child with autism aged from birth to 5 years. The identification of a prioritized list of skills and knowledge for parents will aid in future parent curriculum for training parents of children with autism. The researcher will also examine any response differences between practitioners who are also parents of a child with ASD and those who are not.

As a working professional in the field of autism, your experiences and background are of great importance to the successful completion of this study. We request your assistance by completing the survey: Skills and Knowledge Necessary for Training Parents to Guide Children with Autism From Birth to Age 5. The survey consists of four sections. Section I asks simple demographic information. Section II asks for responses regarding areas of behavior. Section III asks for responses on participation of the parent. Section IIII asks for responses on awareness of Applied Behavior Analysis. It is estimated that the survey will take no longer than 10-15 minutes to complete.

Follow this link to the Survey:

Take the Survey

Or copy and paste the URL below into your internet browser:

https://www.surveymonkey.com/s/Parenttrainingsurvey

There are no known physical or psychological risks associated with completing the survey. You may refuse to answer any questions, and may withdraw from completing the survey at any time. By completing this survey, you consent to participate. No personally identifiable information will be associated with your responses in any published and reported results of this study.

It would be greatly appreciated if you would complete the survey by July 20, 2014. Feel free to contact my committee chair, Dr. Steven Block or myself. Thank you very much for your assistance.

Sincerely,

Rachel Albone-Bushnell
Saint John Fisher College Doctoral Student
raa06463@sjfc.edu
(914) 374-2601

Dr. Steven Block
Saint John Fisher College Committee Chair
sblock@sjfc.edu
(845) 876-5588

Appendix J

Informed Consent Form

St. John Fisher College
Institutional Review Board

Title of study: A List of Core Skills and Knowledge Necessary for Parents of Children Birth to 5-years with Autism, as Prioritized by Practitioners with a Behavioral Perspective

Name(s) of researcher(s): Rachel Albone
Faculty Supervisor: Dr. Steven Block Phone for further information: 914-374-2601

Purpose of study:

The purpose of this quantitative study is to identify a prioritized list of skills and knowledge necessary for training parents to guide children, birth to 5 with autism from behaviorists in the field of autism. The study will also examine the demographic data by systematically collecting information through self-identify questions. The demographic question of whether a behaviorist has a child with autism will be used to obtain a comparison of results of those professionals who do not have a child with autism on their priority of skills and knowledge. The additional demographic questions of years of experience, background of personal professional training, level of education, and parent training experiences will not add to the analyses or interpretations. These additional demographics will let readers of the study know the sample population and provide a better understanding of the sample by limiting the limitations of the study.

Study Procedures:

You will complete a survey, which will take 10-15 minutes to complete. Exclusion from the survey will be those professionals without a background in applied behavior analysis. The survey asks behaviorists to prioritize what skills and knowledge are necessary to teach parents to guide children with autism. We also will ask for some demographic information (e.g., identifying your educational background and experiences), whether you are a parent of children with autism, and what is your identified area of work so that we can accurately describe the general traits of those who participate in the study. Your participation is voluntary; you are free to withdraw your participation from this study at any time. If you do not want to continue, you can simply leave this website. If you do not click on the "submit" button at the end of the survey, your answers and participation will not be recorded. You also may choose to skip any questions that you do not wish to answer.

Appendix K

Qualitative Responses for their Foundation of Theoretical Practice

Foundation for Theoretical Practice (other)	Frequency	Percent
ABA & Autism	1	0.2
ABA & RPM	1	0.2
ABA & Speech/Language Pathology	1	0.2
Child Development	1	0.2
Child Development as a Social Worker (MSW)	1	0.2
Clinical Psychology	1	0.2
Communication Disorders	1	0.2
Good training in ABA includes how to build skills in developing personal Interactions/Relationships	1	0.2
PBIS	1	0.2
PRT, TEACCH	1	0.2
Social Thinking & Emotional Regulation	1	0.2
Son has autism	1	0.2
Special Education	1	0.2
Special Education	1	0.2
Specifically Verbal Behavior	1	0.2
Speech language Pathology	1	0.2
Verbal Behavior	1	0.2
Verbal Behavior	2	0.4
Total	568	100

Appendix L

Qualitative Responses for their Level of Education

Level of Education (other)	Frequency	Percent
ABD	1	0.2
Additional Hours towards BCBA Certification	1	0.2
Anticipation of Doctoral Degree: 2015	1	0.2
BCaBA	2	0.4
BCaBA (there was no option for that above, I selected ABA therapist as I cannot call myself a BCBA)	1	0.2
BCaBA working on Masters in Behavior Analysis	1	0.2
BCBA	1	0.2
CAGS	1	0.2
CAGS	1	0.2
Certificate of Advanced Graduate Study: School Psychology	1	0.2
Comments: Q.1: it's Behavior Analyst (not "Behavioral"), Q.5: it's DSM-5 (not DSM-V), Q.27: these are not txs they are technologies - see Kimball (2002) to better understand	1	0.2
Completed Coursework for BCaBA	1	0.2
Continued Grad credits After Master Degree	1	0.2
Currently working in teaching credentials	1	0.2
Currently working on Master's degree	1	0.2
Doctoral Candidate	1	0.2
Doctoral Candidate	1	0.2
Ed.S. (Educational Specialist)	1	0.2
Education Specialist Credential	1	0.2
Educational Specialist	1	0.2
Educational Specialist (Ed.S & two masters)	1	0.2
MA and M.Ed.	1	0.2
Master in Clinical Psychology, ABA Education post MA degree	1	0.2

Master's Degree in progress	1	0.2
Masters in Speech and Language Pathology	1	0.2
Not quite a Bachelor's	1	0.2
Plus grad classes for BCaBA	1	0.2
Plus supervisory certificate is Spec Ed	1	0.2
Post Graduate	1	0.2
Post masters graduate certificates	1	0.2
Pursuing Doctorate	1	0.2
Some Doctoral Studies	1	0.2
Specialist	2	0.4
Taking masters classes now	1	0.2
Teaching Credential, Administrative Credential	1	0.2
With BCaBA certificate	1	0.2
Working towards Doctoral degree	1	0.2
Working towards Masters	1	0.2
Total	568	100

Appendix M

Descriptive Statistics of Participants' Scores on all 28 Survey Items

Priority	Item #	Skill/Knowledge	*n*	Min	Max	Mean	Std. Deviation
1	Item 1	Parent will practice behavior management for challenging behaviors	515	2	7	6.538	0.749
2	Item 4	Parent will implement behavioral intervention plan	515	1	7	6.338	0.872
3	Item 13	Parent will identify a variety of reinforces	502	2	7	6.205	0.864
4	Item 21	Parent will use clear language that matches their child's understanding	490	1	7	6.178	0.933
5	Item 3	Parent will practice antecedent manipulation	515	2	7	6.064	0.918
6	Item 25	Parent will recognize the family's role in the home and school program for their child	490	1	7	5.974	1.084
7	Item 17	Parent will recognize different forms of functional communication for their child	490	2	7	5.927	1.027
8	Item 7	Parent will participate in developing and implementing goals for their child	502	2	7	5.835	1.158
9	Item 19	Parent will practice natural environment teaching	490	2	7	5.822	1.031
10	Item 18	Parent will recognize self-help skills and daily living skills for their child	490	1	7	5.751	0.963
11	Item 8	Parent will practice play time activities in their child's routine	502	2	7	5.687	1.042
12	Item 9	Parent will recognize and assist in developing joint attention with their child	502	1	7	5.683	1.104
13	Item 2	Parent will recognize pro-social behaviors	515	2	7	5.676	1.115
14	Item 20	Parent will practice breaking tasks into smaller steps for their child	490	2	7	5.616	1.039
15	Item 5	Parent will analyze the function behind challenging behaviors	515	1	7	5.202	1.508
16	Item 6	Parent will record data into ABC's	515	1	7	5.078	1.393
17	Item 28	Parent will distinguish myths and truths about autism	490	1	7	5.000	1.528
18	Item 11	Parent will identify when skills are generalized	502	1	7	4.833	1.327
19	Item 16	Parent will demonstrate knowledge of rate of reinforcement in reference to parent, child interactions	490	1	7	4.800	1.339
20	Item 22	Parent will identify how to incorporate executive functioning skills into their child's daily routine	490	1	7	4.716	1.472
21	Item 10	Parent will differentiate readiness for increased capacity	502	1	7	4.558	1.380
22	Item 12	Parent will recognize splinter skills	502	1	7	4.446	1.424

23	Item 15	Parent will recognize the developmental sequences for children aged-birth to 5-years	490	1	7	4.314	1.465
24	Item 26	Parent will recognize different treatments of ABA for their child	490	1	7	4.033	1.658
25	Item 23	Parent will recognize the distinctions in assessments for their child: cognitive, achievement, developmental, SLP and OT	490	1	7	3.957	1.509
26	Item 24	Parent will interpret the characteristics of autism and its effect on early development	490	1	7	3.941	1.600
27	Item 14	Parent will recognize the characteristics in the DSM-5 for autism	490	1	7	3.537	1.619
28	Item 27	Parent will recall the history of autism and how the perspectives have changed over the years	490	1	7	2.712	1.602

Appendix N

Survey Questions and Histograms

List of Survey Item Statements used to Evaluate Research Questions 1 and 2

Item #	Knowledge and Skills
Behavior Modification	
Item 1	Parent will practice behavior management for challenging behaviors
Item 2	Parent will recognize pro-social behaviors (e.g. voluntary behavior intended to benefit another's consisting of actions such as helping, sharing, and co-operating)
Item 3	Parent will practice antecedent manipulation (e.g., an event that existed before the event with the aim to change the behavior)
Item 4	Parent will implement behavioral intervention plan (e.g. a plan to promote positive behavior for a child whose behavior impedes their ability to learn or is disruptive to others)
Item 5	Parent will analyze the function behind challenging behaviors
Item 6	Parent will record data into ABC's chart (e.g., Antecedent, Behavior, Consequence) of behavior
Parental Participation	
Item 7	Parent will participate in developing and implementing goals for their child
Item 8	Parent will practice play time activities in their child's routine
Item 9	Parent will recognize and assist in developing joint attention with their child
Item 10	Parent will differentiate readiness for increased capacity (e.g., knowing when to move to the next skill in their child's program)
Item 11	Parent will identify when skills are generalized (e.g. when skill occurs across people, places, and teaching materials)
Item 12	Parent will recognize splinter skills (i.e., reads but does not dress)
Item 13	Parent will identify a variety of reinforces
ABA Knowledge & Skills	
Item 14	Parent will recognize the characteristics in the DSM-V for autism
Item 15	Parent will recognize the developmental sequences for children aged-birth to 5-years
Item 16	Parent will demonstrate knowledge of rate of reinforcement in reference to parent, child interactions
Item 17	Parent will recognize different forms of functional communication for their child
Item 18	Parent will recognize self-help skills and daily living skills for their child
Item 19	Parent will practice natural environment teaching
Item 20	Parent will practice breaking tasks into smaller steps for their child

Item 21	Parent will use clear language that matches their child's understanding
Item 22	Parent will identify how to incorporate executive functioning skills into their child's daily routine
Item 23	Parent will recognize the distinctions in assessments for their child: cognitive, achievement, developmental, speech and occupational
Item 24	Parent will interpret the characteristics of autism and its effect on early development
Item 25	Parent will recognize the family's role in the home and school program for their child
Item 26	Parent will recognize different treatments of ABA for their child (i.e., Lovaas, ESDM, PRT, VB)
Item 27	Parent will recall the history of autism and how the perspectives have changed over the years
Item 28	Parent will distinguish myths and truths about autism

Frequency Statistics

Frequency and Percent Statistics of the 6 Items Measuring Behavior Modifications

Behavior Modification	Not a priority	Low priority	Somewhat priority	Neutral	Moderate priority	High priority	Essential priority
Item 1	0	2	3	5	27	147	331
Item 2	0	9	22	24	136	205	119
Item 3	0	1	13	11	80	232	178
Item 4	1	1	8	6	47	186	266
Item 5	10	31	35	47	143	144	105
Item 6	10	24	36	60	169	148	68

Note. Missing *n* = 53 (list wise)

Frequency and Percent Statistics of the 7 Items Measuring Parental Participation

Parental Participation	Not a priority	Low priority	Somewhat priority	Neutral	Moderate priority	High priority	Essential priority
Item 7	0	11	16	21	115	173	166
Item 8	0	6	18	21	144	206	107
Item 9	1	8	18	24	135	201	115
Item 10	10	45	55	77	200	90	25
Item 11	6	25	64	54	190	129	34
Item 12	17	41	66	86	185	83	24
Item 13	0	1	6	9	73	197	216

Note. Missing *n* = 66 (list wise)

Frequency and Percent Statistics of the 15 Items Measuring ABA Knowledge and Skills

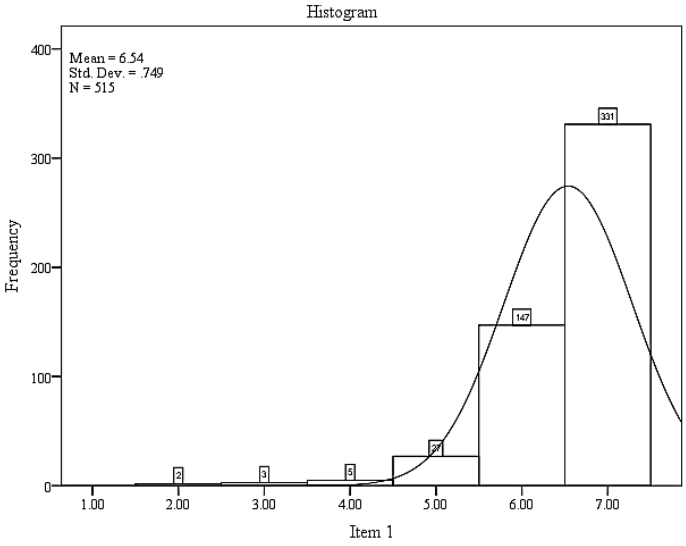
ABA Knowledge and Skills	Not a priority	Low priority	Somewhat priority	Neutral	Moderate priority	High priority	Essential priority
Item 14	65	94	64	108	108	41	10
Item 15	19	44	91	63	174	81	18
Item 16	7	29	57	53	189	126	29
Item 17	0	3	17	12	109	189	160
Item 18	1	3	14	10	144	217	101
Item 19	0	4	15	23	112	204	132

Item 20	0	4	25	22	138	216	85
Item 21	2	0	9	13	54	208	204
Item 22	17	36	40	75	168	116	38
Item 23	33	69	73	104	145	54	12
Item 24	38	82	61	91	140	64	14
Item 25	1	5	16	15	88	187	178
Item 26	43	74	54	81	150	67	21
Item 27	148	127	46	86	57	22	4
Item 28	10	23	65	53	132	122	85

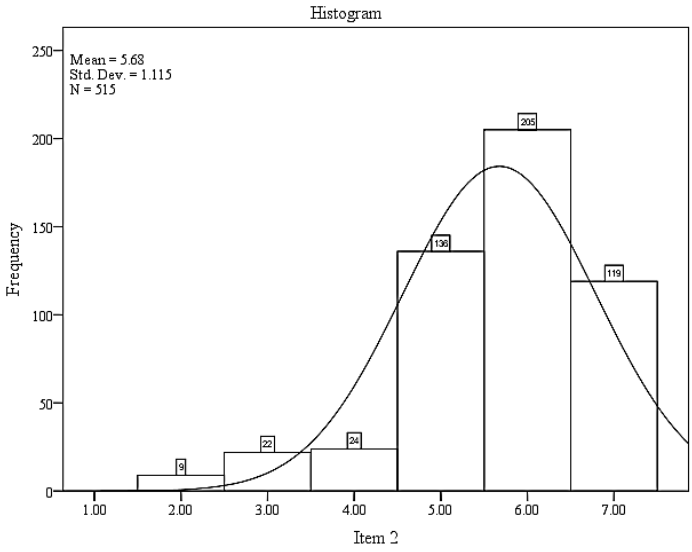
Note. Missing $n = 78$ (list wise)

Histograms

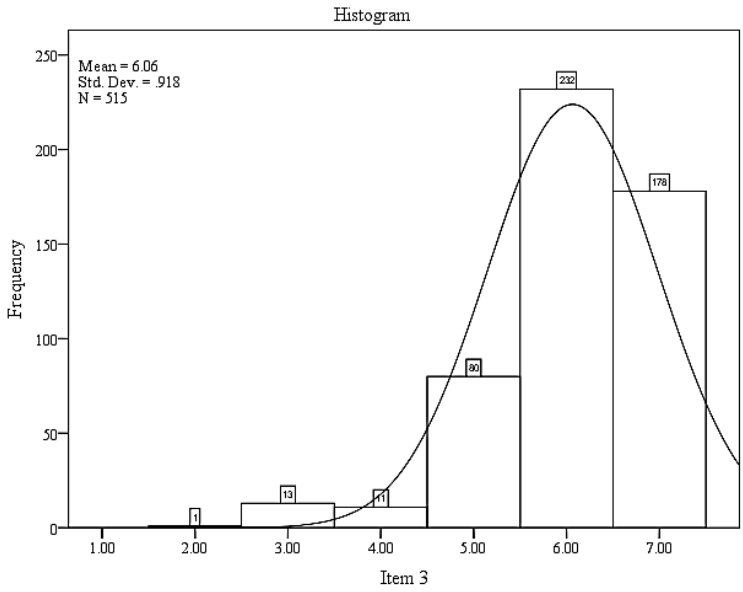
Behavior Modification



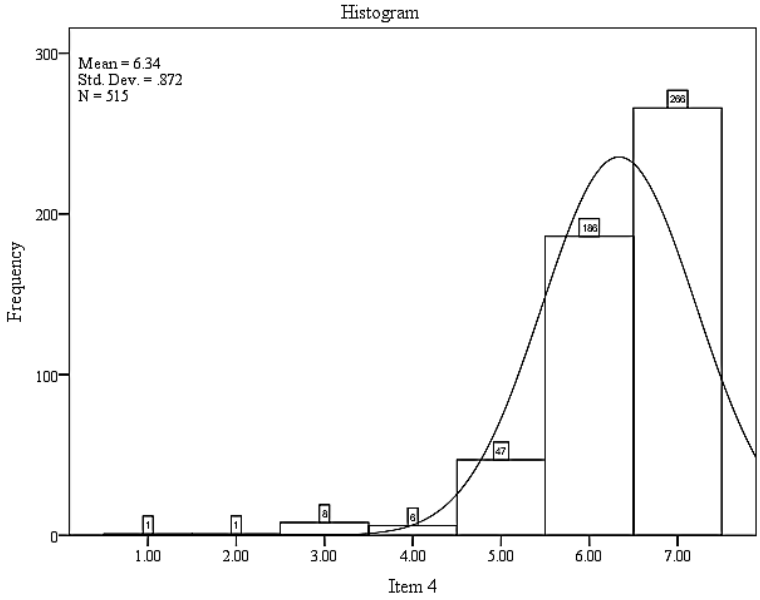
Histogram of participants' responses on survey item #1



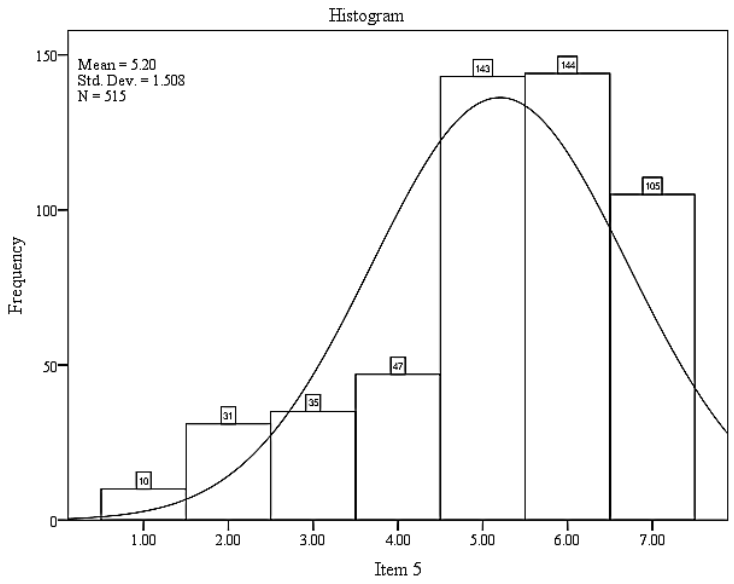
Histogram of participants' responses on survey item #2



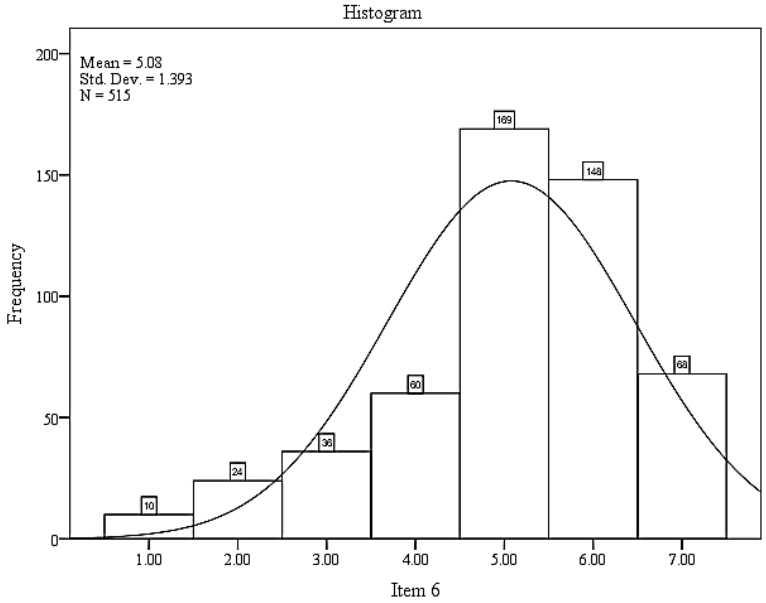
Histogram of participants' responses on survey item #3



Histogram of participants' responses on survey item #4

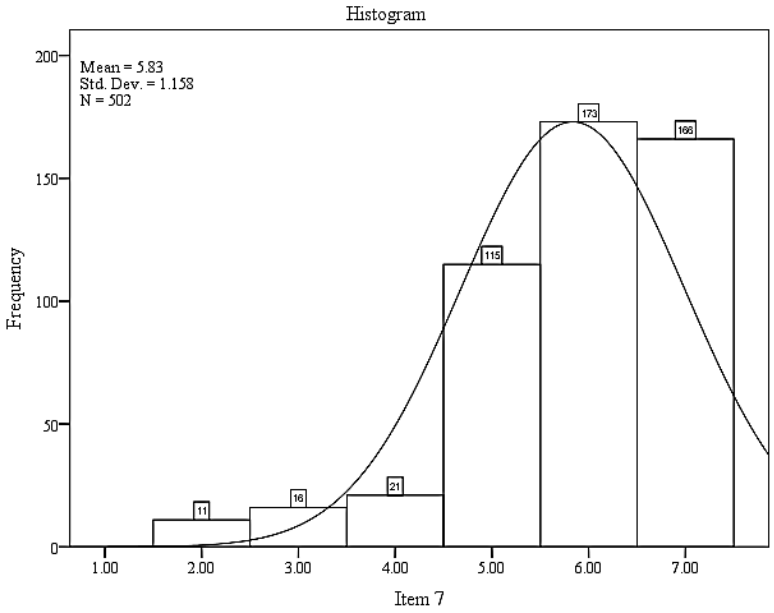


Histogram of participants' responses on survey item #5

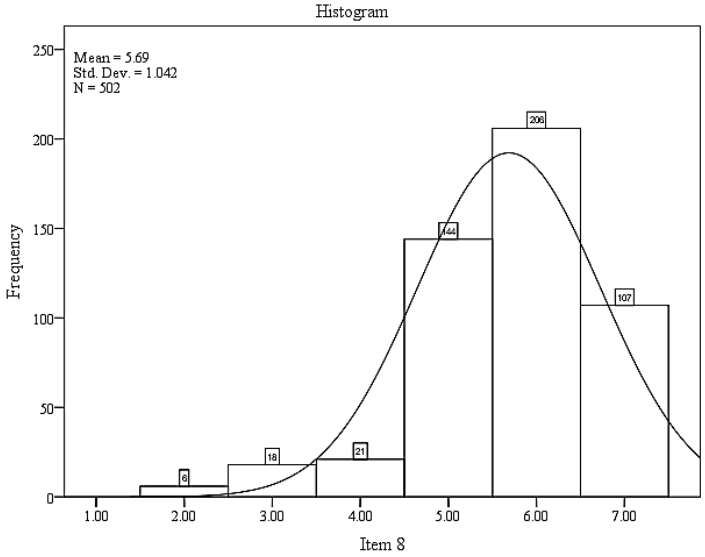


Histogram of participants' responses on survey item #6

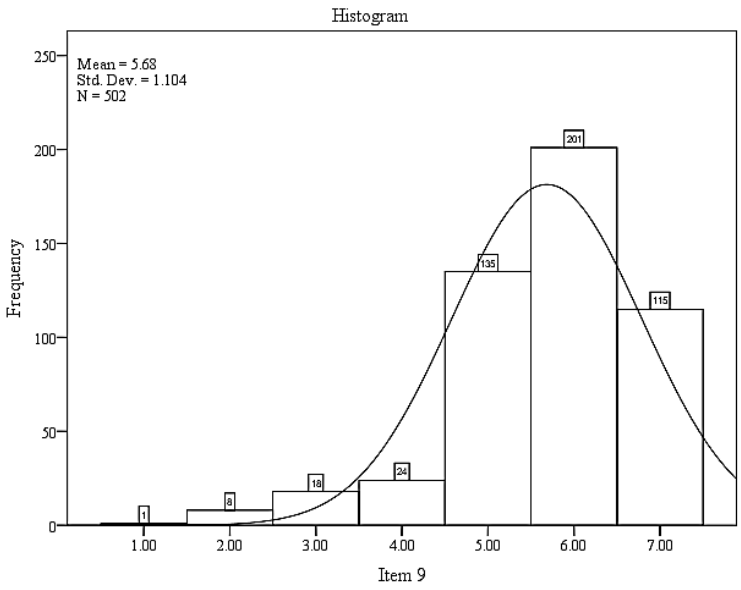
Parental Participation



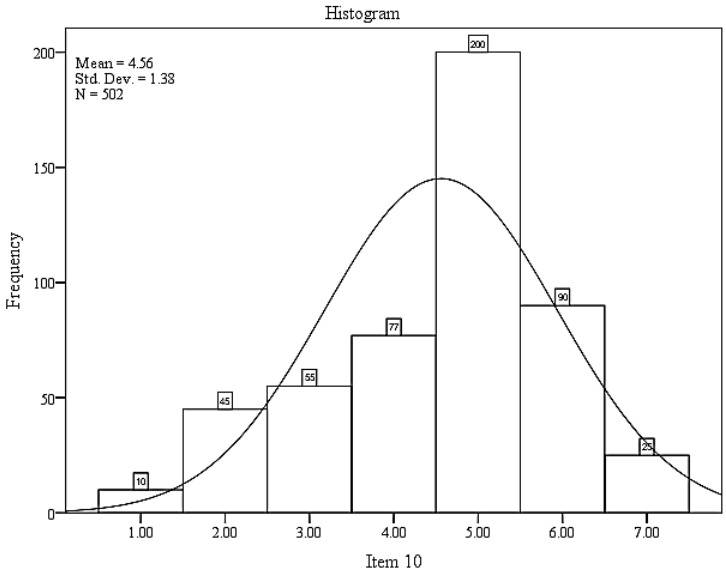
Histogram of participants' responses on survey item #7



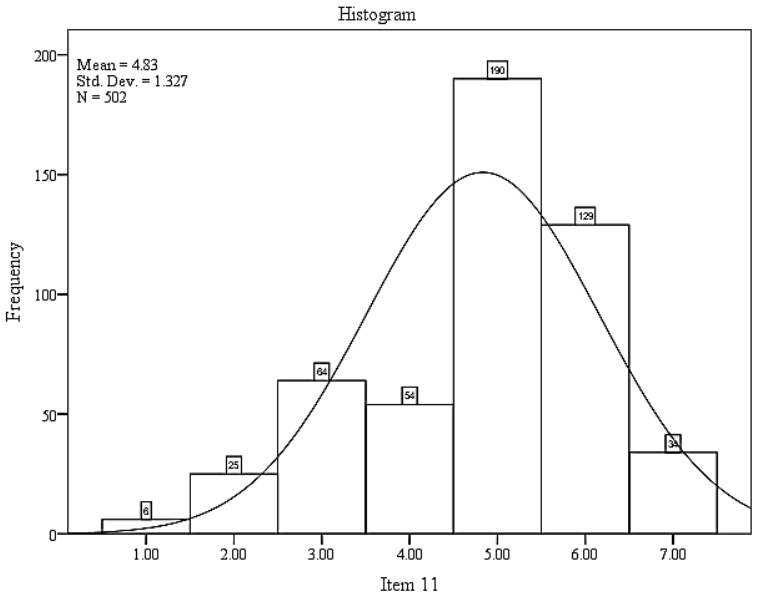
Histogram of participants' responses on survey item #8



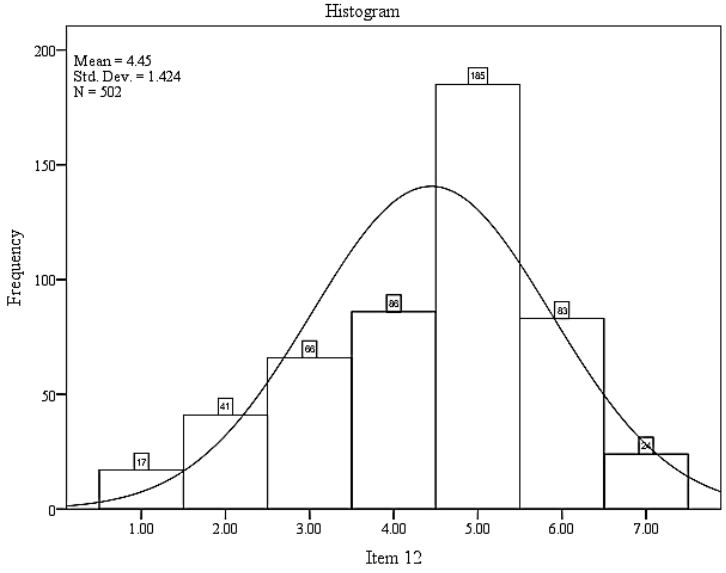
Histogram of participants' responses on survey item #9



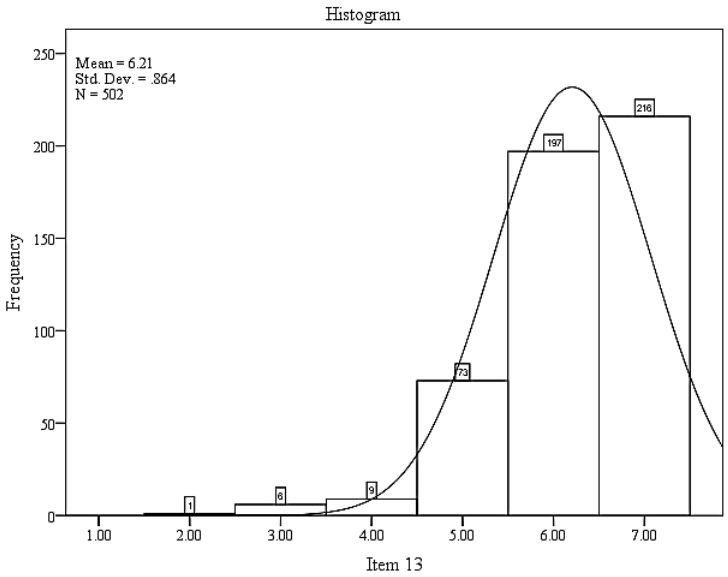
Histogram of participants' responses on survey item #10



Histogram of participants' responses on survey item #11

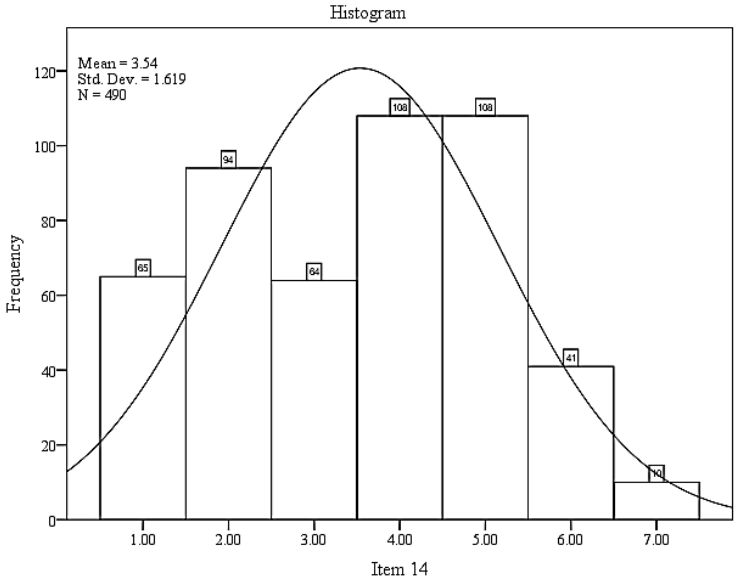


Histogram of participants' responses on survey item #12

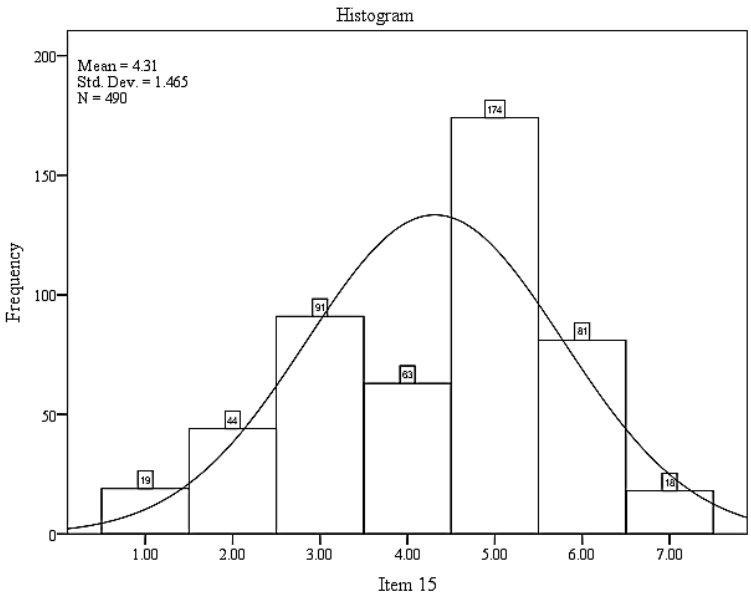


Histogram of participants' responses on survey item #13

ABA Knowledge and Skills



Histogram of participants' responses on survey item #14



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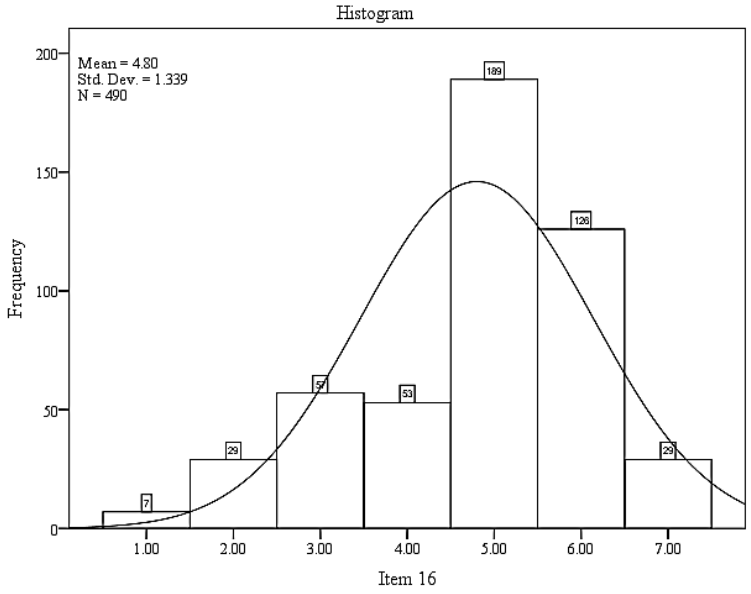
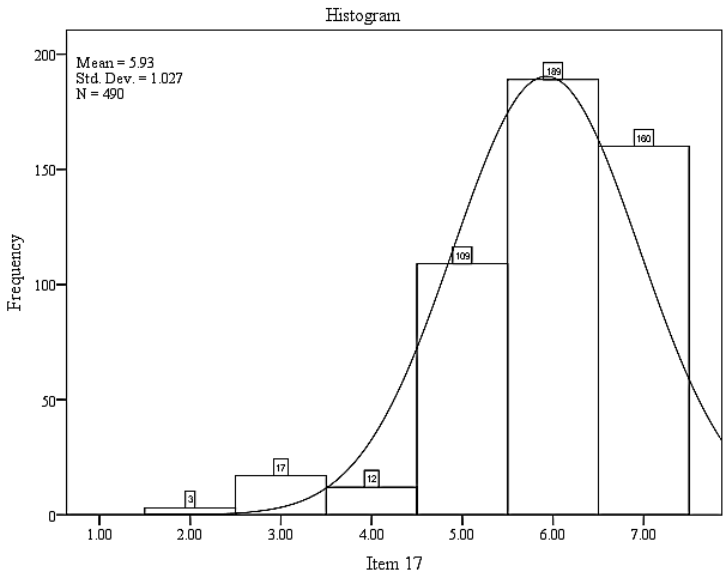
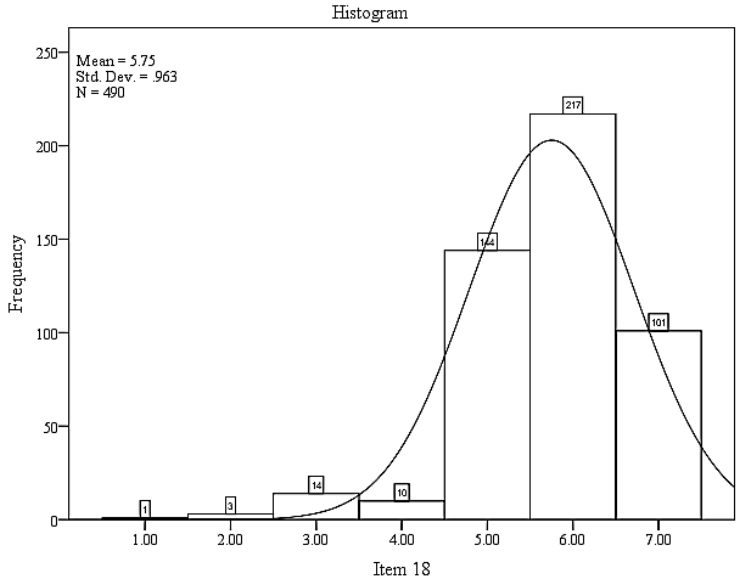


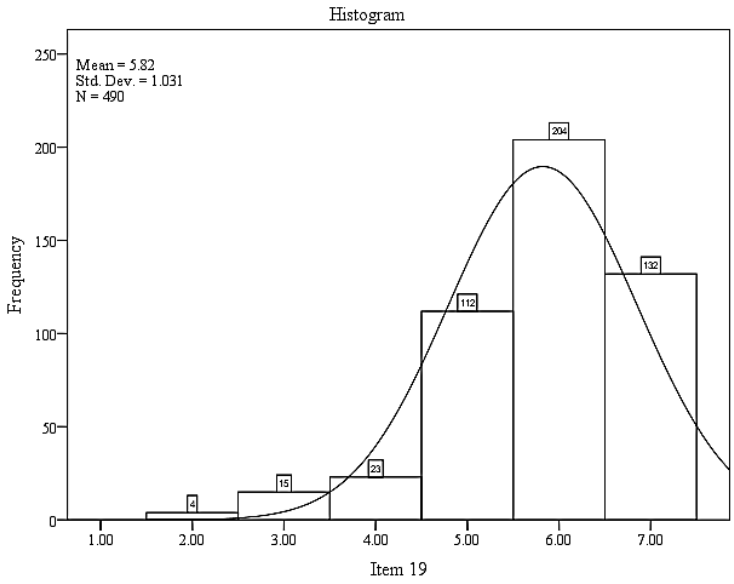
Histogram of participants' responses on survey item #16



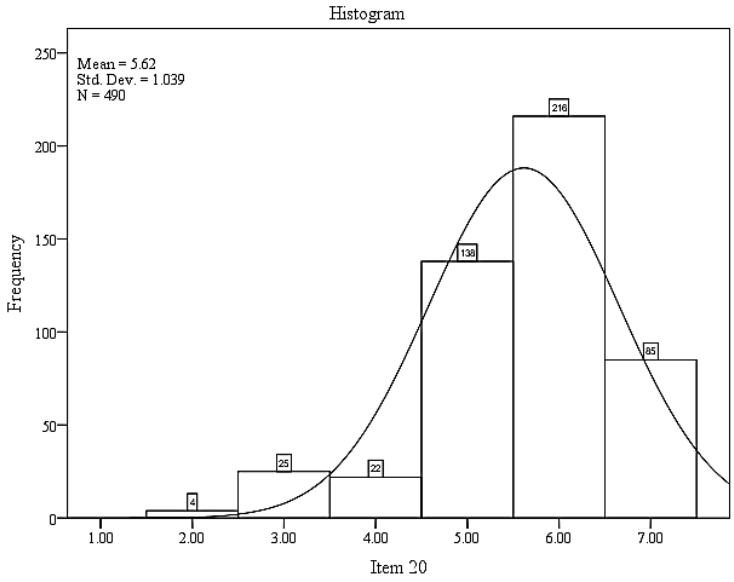
Histogram of participants' responses on survey item #17



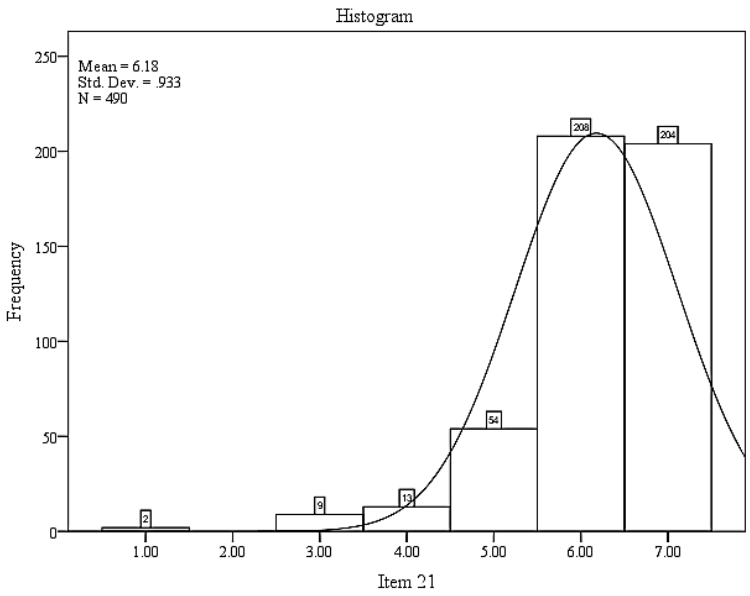
Histogram of participants' responses on survey item #18



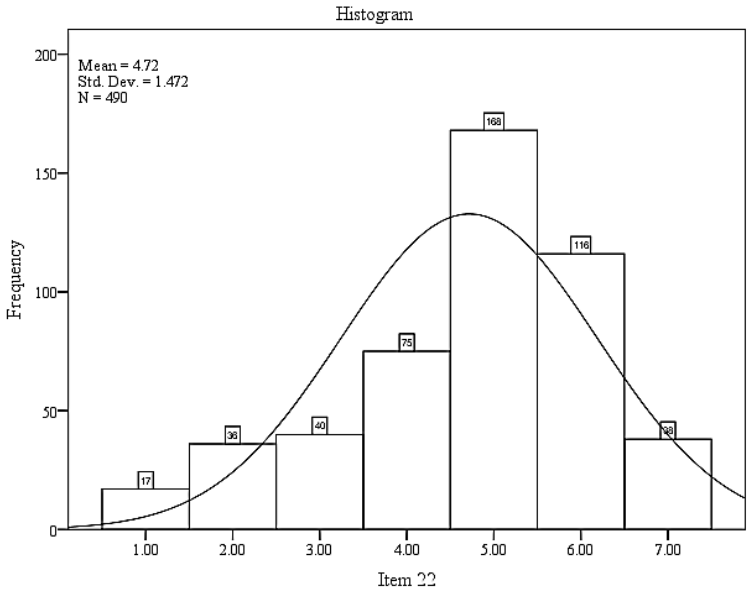
Histogram of participants' responses on survey item #19



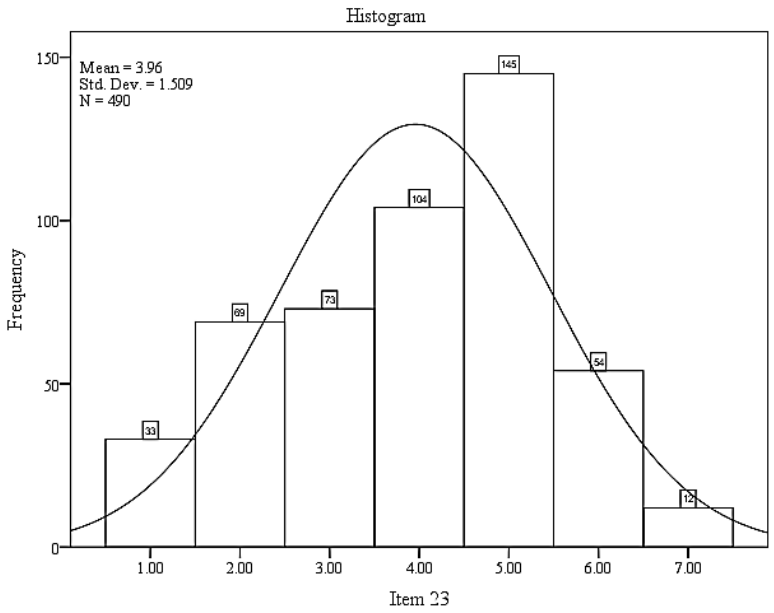
Histogram of participants' responses on survey item #20



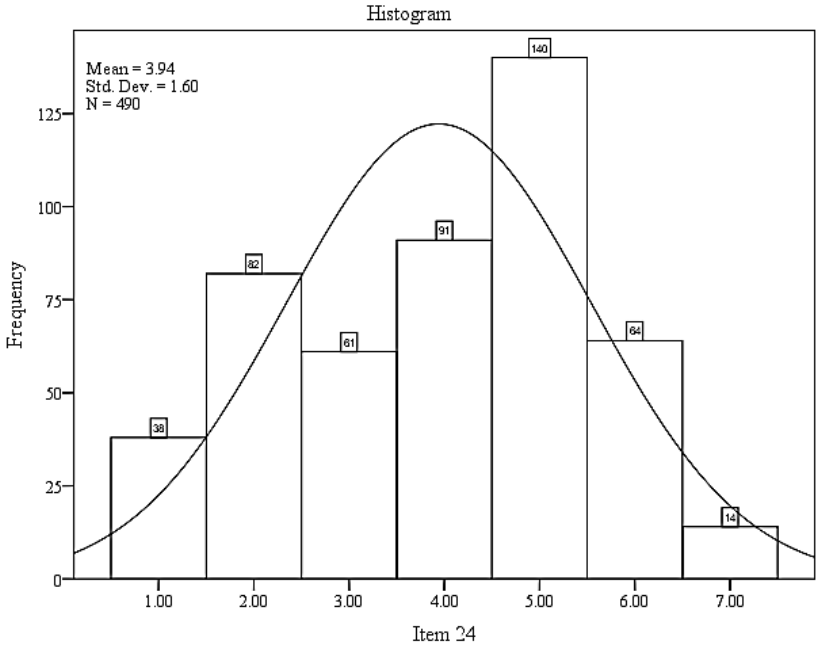
Histogram of participants' responses on survey item #21



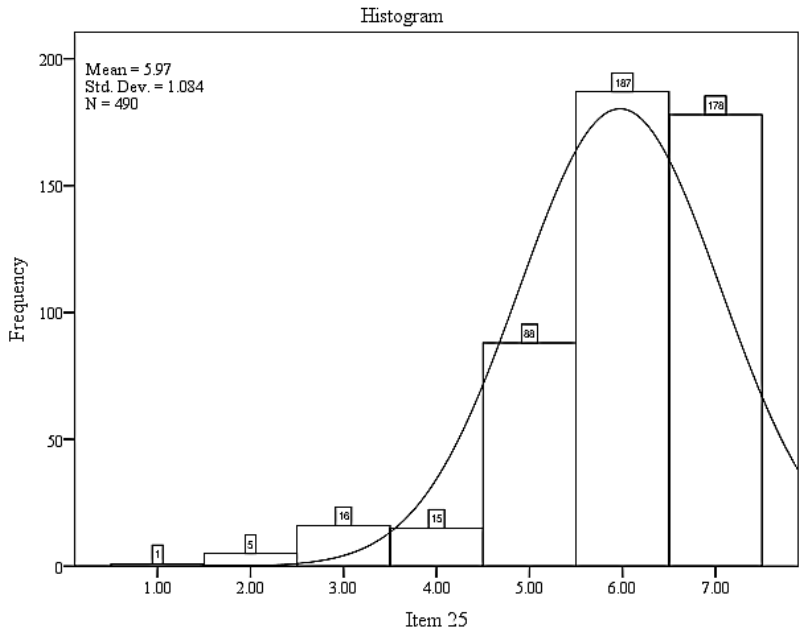
Histogram of participants' responses on survey item #22



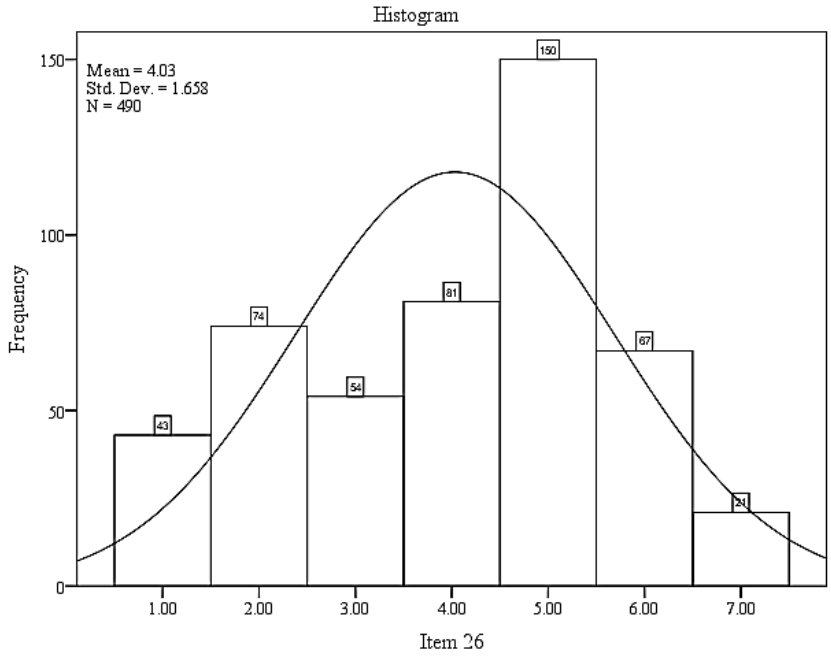
Histogram of participants' responses on survey item #23



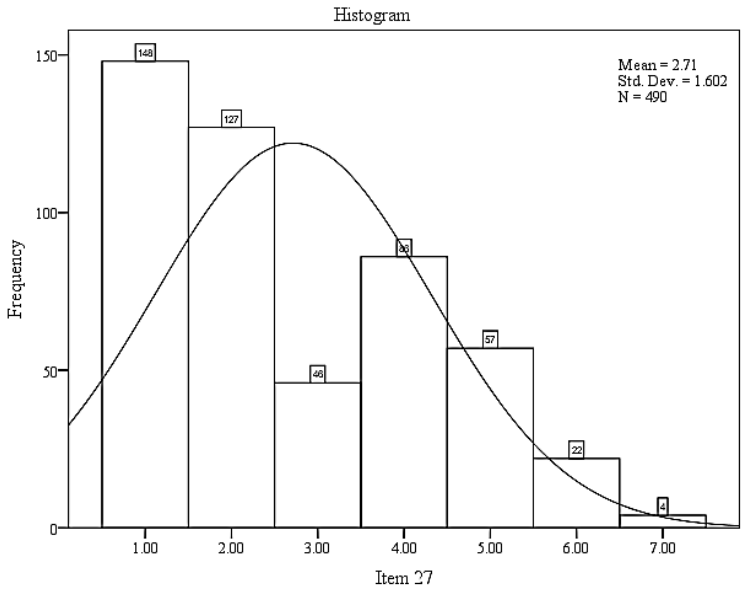
Histogram of participants' responses on survey item #24



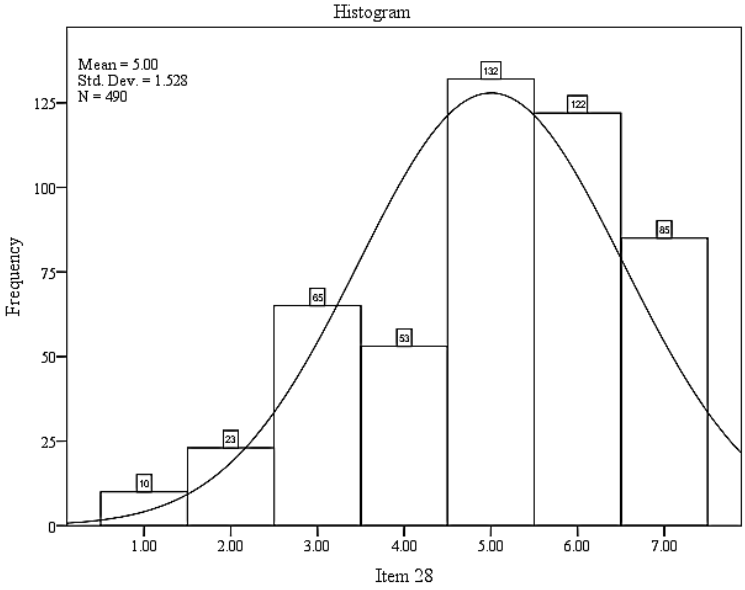
Histogram of participants' responses on survey item #25



Histogram of participants' responses on survey item #26



Histogram of participants' responses on survey item #27



Histogram of participants' responses on survey item #28

Appendix O

Prioritized List of Skills and Knowledge

A List of Core Skills and Knowledge Necessary for Parents of Children Birth to 5 with Autism, as Prioritized by Practitioners with a Behavioral Perspective *** The list of priorities were developed based on the higher 50th percentile			
#1. Parent will practice behavior management for challenging behaviors (*M*= 6.538) **BEHAVIOR**	**#5.** Parent will practice antecedent manipulation (*M*= 6.064) **BEHAVIOR**	**#9.** Parent will recognize and assist in developing joint attention with their child (*M*= 5.822) **ABA KNOWLEDGE**	**#13.** Parent will recognize pro-social behaviors (*M*= 5.676) **BEHAVIOR**
#2. Parent will implement behavioral intervention plan (*M*= 6.338) **BEHAVIOR**	**#6.** Parent will recognize the family's role in the home and school program for their child (*M*= 5.974) **ABA KNOWLEDGE**	**#10.** Parent will recognize self-help skills and daily living skills for their child (*M*= 5.751) **ABA KNOWLEDGE**	**#14.** Parent will practice breaking tasks into smaller steps for their child (*M*= 5.616) **ABA KNOWLEDGE**
#3. Parent will identify a variety of reinforces (*M*= 6.205) **PARTICPATITON**	**#7.** Parent will recognize different forms of functional communication for their child (*M*= 5.927) **ABA KNOWLEDGE**	**#11.** Parent will practice play time activities in their child's routine (*M*= 5.687) **PARTICPATITON**	**#15.** Parent will analyze the function behind challenging behaviors (*M*= 5.202) **BEHAVIOR**
#4. Parent will use clear language that matches their child's understanding (*M*= 6.178) **ABA KNOWLEDGE**	**#8.** Parent will participate in developing and implementing goals for their child (*M*= 5.835) **BEHAVIOR**	**#12.** Parent will practice natural environment teaching (*M*= 5.683) **ABA KNOWLEDGE**	**#16.** Parent will record data into ABC's (*M*= 5.078) **BEHAVIOR**

Appendix P

Between-Subjects Effects of MANOVA Analysis (R2)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power
Corrected Model							
Behavior Modification	0.400	1	0.400	1.109	.293	.002	.183
Parental Participation	6.009	1	6.009	9.440	.002	.019	.866
ABA Knowledge and Skills	7.821	1	7.821	12.099	.001	.025	.935
Intercept							
Behavior Modification	4999.584	1	4999.584	13858.420	< .001	.966	1.000
Parental Participation	4370.602	1	4370.602	6865.842	< .001	.935	1.000
ABA Knowledge and Skills	3637.687	1	3637.687	5627.363	< .001	.921	1.000
Autism Child							
Behavior Modification	0.400	1	0.400	1.109	.293	.002	.183
Parental Participation	6.009	1	6.009	9.440	.002	.019	.866
ABA Knowledge and Skills	7.821	1	7.821	12.099	.001	.025	.935
Error							
Behavior Modification	173.526	481	0.361				
Parental Participation	306.191	481	0.637				
ABA Knowledge and Skills	310.932	481	0.646				
Total							
Behavior Modification	16761.465	483					
Parental Participation	14131.722	483					
ABA Knowledge and Skills	11636.687	483					
Corrected Total							
Behavior Modification	173.926	482					
Parental Participation	312.200	482					
ABA Knowledge and Skills	318.753	482					