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The Effect of Applied Behavior Analysis and Acceptance and Commitment Therapy on Parental Involvement

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Walden University

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Saimary Rivero

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Walden University
2022

Abstract

The Effect of Applied Behavior Analysis and Acceptance and Commitment Therapy on

Parental Involvement

by

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MS, Walden University, 2019

MS, Carlos Albizu University, 2013

BS, University of Miami, 2000

Dissertation Submitted in Partial Fulfillment

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Clinical Psychology

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Abstract

This quantitative causal-comparative research study aimed to examine if there was a significant difference in parents' involvement in handling their children with autism spectrum disorder (ASD) between those who were exposed to both applied behavior analysis (ABA) and acceptance and commitment therapy (ACT) interventions compared to those who were only exposed to ABA. Differences in parental involvement in both groups were measured and compared. The study included a nonrandom convenient sample of parents from a Midwestern region in the United States. A sample size of 57 participants was used. These parents have children with ASD and have been exposed to interventions (ABA or combined ACT and ABA) provided by behavioral therapists. The aim of the study was to produce empirical evidence about the benefit of integrating ACT with ABA interventions to enhance parental involvement in interventions for their children with ASD. The mean child program involvement was greater in the combined ABA and ACT group ($M = 3.89$, $SD = 0.74$) than in the ABA only group ($M = 3.74$, $SD = 0.75$). However, mean agency involvement was greater in the ABA only ($M = 2.68$, $SD = 0.77$). The mean parental involvement (agency involvement) was greater in the combined ABA and ACT group ($M = 2.46$, $SE = 0.189$) than in the ABA only group ($M = 2.63$, $SD = 0.130$). However, these differences were not significant, $F(1, 28) = 0.252$, $p = .619$. Parents and therapists of children with ASD may use the study findings for positive social change to identify the mechanisms to cope with life challenges with their children having ASD.

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Chapter 1: Introduction to the Study

The problem addressed in this study is the low parental involvement of parents in their children's interventions for autism spectrum disorder (ASD). Low parental involvement can be explained by stress, lack of information, confusion due to the availability of different treatments, and the lack of support (Antill, 2019; Shepherd, Csako et al., 2018; Stanislaw et al., 2019). There is currently a gap in research concerning the integration of interventions to enhance parents' involvement through Acceptance and Commitment Therapy (ACT) and Applied Behavior Analysis (ABA) in their children. ACT studies have mainly concentrated on improving parents' psychological functioning to cope effectively with the ASD of their child (e.g., Antill, 2019; Corti et al., 2018). Thus, In this study, I measured the effectiveness of integrating both treatments compared. If proved successful by this research study and supported by other research, the combination of ABA and ACT can be suggested as an appropriate method that may improve parents of children with ASD in terms of their understanding and application of ABA concepts to their children's ASD.

Background

Several studies have explored the interactions between various interventions with parents' involvement with their children with ASD. Parents of children with ASD who seek care are affected by factors such as stress, lack of knowledge, and inadequate support (Antill, 2019; Shepherd et al., 2018). Dieleman et al. (2018) qualitatively explored the need-related experiences and behaviors of parents of children diagnosed with ASD. In another study, Mostafa (2019) explored the stress and coping strategies of

parents of children with ASD. Antill (2019) and Shepherd et al. (2018) provided information regarding the barriers that families of children with ASD experience in accessing services, including parent training.

ACT studies have mainly concentrated on improving parents' psychological functioning to cope effectively with the ASD of their child (Prevedini et al., 2020). There is minimal research on the ACT and ABA's combined impact on improving parents' parental participation in their infant's care (Corti et al., 2018; Jahangiri, 2019; Prevedini et al., 2020). My study can help close this gap by exploring the feasibility of incorporating ACT and ABA treatments into parents' perceptions of their participation in their children's care with ASD. The significance of this research is to produce empirical evidence on the importance of combining ACT with ABA to enhance parental interaction with children with ASD. This can help behavioral therapists establish extensive parent training programs to increase parental involvement, leading to better results for children with ASD.

Problem Statement

The problem is the lack of parents' involvement in their children's interventions for ASD (see Antill, 2019; Shepherd et al., 2018). This lack of parental involvement can be explained by various factors such as stress, lack of information, confusion due to the availability of different treatments, and inadequate support (Antill, 2019; Shepherd et al., 2018; Stanislaw et al., 2019). By promoting positive behaviors that promote engagement in the therapy of their child, the low parental involvement of parents can be resolved through ABA training; however, many parents continue to be unfamiliar with how ABA

learning is applied to their ASD children to develop their functional behaviors (Grigorenko et al., 2018).

To enhance the parental involvement in the therapy of their child with ASD that builds on ABA training, one suggestion has been to integrate ABA with another intervention such as ACT (Raches et al., 2018); however, there is a gap in the research concerning the integration of interventions intended to improve the involvement of parents in their children through ABA and ACT. Studies on the ACT have primarily focused on enhancing parents' psychological functioning to cope successfully with their child's ASD (Prevedini et al., 2020). Limited research is available about ACT and ABA's combined effect in enhancing parents' parental involvement in their child's therapy (Corti et al., 2018; Jahangiri, 2019; Prevedini et al., 2020). Therefore, in this quantitative research study I addressed this gap in the literature by examining if there is a significant difference in the perceptions of parents regarding their involvement in handling their children with ASD between those who were exposed to both ABA and ACT interventions compared to those who were only exposed to ABA training.

Purpose of the Study

The purpose of this quantitative causal-comparative research study was to examine if there is a significant difference in parent involvement regarding handling their children with ASD between those exposed to both ABA and ACT interventions and those who were only exposed to ABA training. This study's independent variable is intervention type, a nominal dichotomous variable. This consisted of ABA training or both ABA and ACT interventions. The study's dependent variable was the parents'

parental involvement in handling their children with ASD. Possible covariates to be considered in this study are the parent's age, the gender of the child, and attendance records for sessions.

Research Questions and Hypotheses

The following research questions and the corresponding null and alternative hypotheses directed the study. :

RQ1: Is there a statistically significant difference in parents' involvement in handling their children with ASD between those who were exposed to both ABA and ACT interventions compared to those who were only exposed to ABA?

H_01 : There is no statistically significant difference in parents' perceptions regarding their involvement in handling their children with ASD between those who were exposed to both ABA and ACT interventions compared to those who were only exposed to ABA.

H_{a1} : There is a statistically significant difference in parents' involvement in handling their children with ASD between those who were exposed to both ABA and ACT interventions compared to those who were only exposed to ABA

RQ2: Is there a statistically significant difference in parents' involvement who were exposed to both ABA and ACT compared to parents who were only exposed to ABA in terms of their involvement in handling their children with ASD after controlling for initial differences in parent's age, the gender of the child, and attendance records for sessions?

H₀₂: No statistically significant difference in parents' involvement was exposed to both ABA and ACT compared to parents who were only exposed to ABA in terms of their involvement in handling their children with ASD after controlling for initial differences in parent's age, the gender of the child, and attendance records for sessions.

H_{a2}: There is a statistically significant difference in parents' involvement who were exposed to both ABA and ACT compared to parents who were only exposed to ABA in terms of their involvement in handling their children with ASD after controlling for initial differences in parent's age, the gender of the child, and attendance records for sessions.

Theoretical Framework for the Study

The study's theoretical framework was based on the relational frame theory (RFT) developed by Hayes (1993). Relational frame theory describes human behavior functionally and contextually, where the main argument of RFT is that humans learn communication through their interaction with the environment, a process called functional contextualism (Hayes, 1993). A key clinically important RFT insight is that relational framing is regulated by two distinguishable features: the relational and functional contexts (Hayes et al., 2013). The relational context determines how and when events are related to each other; the functional context determines which functions will be transformed about the relationship (Hayes et al., 2013). The relational context defines what an individual thinks; the functional context determines the psychological effect of what they believe. It is presumed that an unwanted thought, behavior, and emotion can be

changed by changing the type, frequency, or situational sensitivity of private events themselves. RFT theorists argued that exposure to ACT and ABA promotes parents' behavioral adjustment, leading to increased involvement with their kids (citation).

Nature of the Study

A quantitative causal-comparative method was chosen because the design was used to compare parents' involvement in handling their children with ASD between those who were exposed to both ABA and ACT interventions compared to those who were only exposed to ABA. Other comparisons may reveal significant differences in the parent's perception of involvement in handling their children with ASD based on demographic characteristics of the parent's age, the gender of the child, and attendance records for sessions.

A quantitative methodology affords the collection of quantified responses from survey instruments when engaging statistical procedures for analysis (Creswell, 2009). Quantitative research also provides a platform for researchers to delve into the complexities of a group or some human problems. At the same time, quantitative approach seeks to yield a complete understanding by measurable variables. Quantitative research methods offer a canvas that can be instrumental in leading a researcher to posit more precise details and complex statistical reasoning regarding the roles of all the variables involved in the study (Creswell, 2009). Therefore, I determined that a quantitative approach was the most suitable research design to demonstrate the efficacy of parents who have undergone both ABA and ACT treatments compared to those who have only been exposed to ABA in their participation in the care of their children.

Definitions

Acceptance and Commitment Therapy (ACT): Acceptance and Commitment Therapy (ACT) encourages people to embrace their thoughts and feelings rather than fighting or feeling guilty for them (Levin & Twohig, 2017). ACT develops psychological flexibility and is a form of behavioral therapy that combines mindfulness skills with the practice of self-acceptance (Levin & Twohig, 2017).

Applied behavior analysis (ABA) training: Applied Behavior Analysis (ABA) is a therapy based on the science of learning and behavior (Carr et al., 2016). ABA is a primary method of treating aberrant behavior in individuals with autism (Carr et al., 2016).

Autism spectrum disorder (ASD): Autism spectrum disorder (ASD) is a developmental disorder that affects communication and behavior (National Institute of Mental Health [NIMH], 2020). Although autism can be diagnosed at any age, it is considered a developmental disorder because symptoms generally appear in the first 2 years of life (NIMH, 2020).

Assumptions

There are several assumptions in this quantitative, casual-comparative study. The first assumption I made is that the comparative design can show differences between the two groups after analyzing the intervention type's independent variable. The rationale is that nonexperimental and quasi-experimental research designs are weak in their ability to show causal relationships when competing hypotheses or characteristics of the two groups may have affected the observed outcome (Polit & Beck, 2008). Second, while I

assumed that participants would be honest, there may be circumstances where the participant did not answer truthfully, also known as self-report bias. Access to participants and data was based on professional relationships, which made data collection easier. Third, I assumed that the Parental Involvement Questionnaire (PIQ) would accurately capture parent involvement in handling their children with ASD of the intervention groups. A comparison can be extrapolated. The rationale is that the PIQ has been validated and the reliability tested in other studies (see Cai, 2003; Solish & Perry, 2008). Both studies found good reliability and validity.

Fourth, I also made statistical assumptions. I assumed the appropriateness of one-way analysis of variance and covariance (ANOVA and ANCOVA) is justified. ANOVA is used to test for statistically meaningful differences in a continuous dependent variable (Meyners & Hasted, 2021), in this case, parental involvement, based on different levels of a nominal variable, in this case, treatment type, “ABA training” or “Both ABA and ACT” interventions. ANCOVA is similar to ANOVA. However, ANCOVA allows for the control of other variables (Meyners & Hasted, 2021), in this case, parents' age, the gender of the child, and attendance records for sessions.

Limitations and Delimitations

The barriers for my study were potential self-report bias and access to participants. While I assumed that participants would be honest, there may have been circumstances where the participant did not answer truthfully, which is known as self-report bias. Potential bias was addressed by asserting voluntary participation and granting participants the choice to withdraw from this research if requested. Moreover, data was

collected from participants with whom I have no previous or existing professional relationship.

The limitations are social desirability bias, sample bias, and eligible participants' identification. Social desirability bias poses a problem and can interfere with interpreting the results. This was addressed by reminding the participants to be as truthful as possible and that all data will remain confidential. Another limitation is sample bias, as the study participants may not accurately represent the population. This limitation was emphasized to prevent inappropriate generalizations. A third limitation was attributed to ACT use among ABA service providers. There may not be enough behavior analysts using ACT as part of their behavioral parent training program. I modified the recruitment criteria to ensure enough participants were recruited..

The delimitations were the sample composition, data collection method, and instrumentation. The study was delimited to the participation of parents of children with ASD who have been exposed to behavioral therapists' interventions. No children with ASD directly participated in this study, and all data came from parents' recollections and perceptions of their children with ASD. Another delimitation of this study was that all data came from self-report questionnaires, which means that no direct observation or experimentation will be conducted in this study.

Significance

This research's importance is producing empirical evidence on the value of combining ACT with ABA interventions to increase parental engagement with children with ASD. In terms of positive social change, the information gained from this study may

be useful for behavioral therapists in developing comprehensive parent training programs that can enhance parental involvement, which may lead to better outcomes for children with ASD. This is because the findings will support whether, according to parents' self-report based on the PIQ, ACT and ABA together positively impact parental involvement. The combination of ABA and ACT may be recommended as an optimal intervention if proven successful through this research study and confirmed by other studies. This may enhance parents' participation with ASD in understanding and applying ABA principles to their children.

Summary

Chapter 1 included the purpose, significance, and background of the study. Additionally, the theoretical framework was provided and the design's nature. Limitations, delimitations, and assumptions were also addressed. The purpose of my quantitative causal-comparative research study was to examine if there is a significant difference in parents' perceptions regarding their involvement in handling their children with ASD between those exposed to both ABA and ACT interventions compared to those who were only exposed to ABA training. ANOVA and ANCOVA were conducted with SPSS to address the purpose. Chapter 2 contains a review and synthesis of existing research related to ASD, ABA, and ACT interventions.

Chapter 2: Literature Review

Parents of children with ASD are often overlooked when society considers the challenges that face the entire family (Buzhardt et al., 2016). Most focus goes to ASD children, yet parents of ASD children have reported increased stress levels and low support information levels (Buzhardt et al., 2016). Current literature reveals that exposure to ABA and ACT with ASD interventions could improve parental involvement with their children, but research is lacking (Corti et al., 2018). As for why involvement is so low, the research reveals many weaknesses in the way parents engage with ASD and its treatment approaches: parents have admitted to being uninformed regarding the types of treatments, and even when they are informed, many are distant and unengaged. (Stanislaw et al., 2019). ABA has been identified as an effective intervention for children with ASD. However, various parents continue to be inexperienced and unfamiliar with its application (Raches et al., 2018). Research has shown that integrating ABA with other ASD interventions effectively empowers parents in helping their children with ASD (Raches et al., 2018). Combined with ACT, the involvement of parents with ASD children could potentially be raised. Still, there is a gap in the literature regarding the effectiveness of ACT in enhancing the perceived parental involvement of parents in assisting their children with ASD when used with ABA. This gap is what I aimed to address with my study.

Several authors have underscored various issues regarding treatment approaches for ASD. Parents reported being confused and uninformed regarding the availability of different combinations of treatment approaches for ASD (Wetherston et al., 2017).

Parents of children with ASD are unfamiliar with the range of treatments available for ASD. In one study, only 13% of the parents had a practical understanding of the procedures (Wetherston et al., 2017). This is vital to address, given that the experienced stress and lack of information, guidance, and support could result in low participation and parents' engagement in the ASD interventions. Parents of children with ASD are inconsistent in participating in programs and treatments for ASD (Praphatthanakunwong et al., 2018)). ABA has been identified as an effective intervention for children with ASD (citation). However, parents continue to be unfamiliar with their application (Grigorenko et al., 2018). This inexperience with ABA results in even lower participation rates and parents' engagement in the ASD interventions (Grigorenko et al., 2018). Therefore, parents need to be guided and trained in ABA applications and other ASD interventions. This could increase parent engagement rates for children with ASD (Fenning & Butter, 2019). Add summary and synthesis throughout the paragraph to balance out the use of information from the literature

In this chapter, I provide the process and strategy of identifying relevant literature, the conceptual framework, the study's population, and a review of research related to parents' experiences in ASD interventions, parents' role in ABA, and ACT for parents of children with ASD. I then present the framework's details based on the (RFT of ACT, developed by Hayes (1993). Discussions about the integration of interventions for parents of children with ASD, ways to empower parents to help their children with ASD, and enhancing the psychological flexibility aimed at this population follow. Chapter 2

concludes with synthesizing the most relevant literature related to the study and critical points to consider for its purposes.

Literature Search Strategy

Literature for this study was gathered from the internet, journal articles, and primary archival data. Multiple search engines were used including Google Scholar, ERIC, Global Health, Ingenta Connect, JSTOR, Journal Storage, EBSCOhost Online Research Databases, and Journal Seek. The key search terms and combinations of search terms queried in online databases were as follows; *acceptance and commitment therapy, ACT, applied behavior analysis, ABA, autism, autism spectrum disorder, ASD, eclectic interventions for ASD, behaviors therapists, Relational Frame Theory (RFT) of ACT, and parents of children with autism*. The search terms were used to find literature on this dissertation's main variables. The literature review scope was limited to research published within the last 5 years, except for Hayes' RFT, published in 1993. The reasoning is that the search terms were relevant to the RF) of ACT, coping strategies and methods for parents with autism, and research groups focusing on the topic, expanding the study's considered aspects of the problem.

Theoretical Foundation

The theoretical foundation for this study was based on Hayes' (1993) RFT, which I selected because it is a proven method of understanding human behavior in both contextual and functional ways. RFT theorists posited that humans learn communication through interaction with the environment (citation). The concept that behaviors and communication patterns can be changed or enhanced by engaging in purposive

interaction aided me in understanding if exposure to both ABA and ACT demonstrates higher perceived parental involvement among parents of children with ASD compared to those who are only exposed to ABA, making RFT the ideal theoretical foundation for the problem being addressed (see Hayes, 1993).

RFT was ideal for determining ABA and ACT integration of ASD practices. The main argument of RFT is that humans learn communication through their interaction with the environment, called functional contextualism (Hayes, 1993; Timmer et al., 2018). Serving as the theoretical rationale of ACT as a therapeutic approach, RFT theorists argued that behaviors and communication patterns can be changed or enhanced by engaging in purposive interaction by relating events, mutually and in combination arbitrarily, and to change the functions of events based on these relations to explain problematic human behaviors such as feelings, emotions, and thoughts (Lamar et al., 2014). The assumption is thought to be that an undesirable thought, action, or emotion should be modified by changing the form, frequency, or situational sensitivity of private events themselves (Hayes, 2004).

RFT guided this study by providing the rationale for the hypothesis that parents of children with ASD who received ABA training and ACT from behavior analysts would have higher perceived parent involvement in ABA than parents of children with ASD who only received ABA training from behaviors analysts. From past research studies, it is evident that RFT provides conceptual and procedural guidance for developing therapeutic interventions such as ACT (Bell & Harris, 2017; Timmer et al., 2018). The

six core processes of ACT can be applied in the RFT theory to change the thoughts and language patterns of parents whose children have ASD.

Because RFT provides a means of contextually and functionally understanding human behavior, it is well aligned with the critical variables of my study. This is because the variables are related to human communication development through environmental interaction. According to RFT, the type of intervention received from behavioral therapists is the independent variable and the interactive environment through which learning is achieved (citation). The dependent variable, perceived parental involvement, is learned communication due to the interactive environment. Since RFT focuses on how an interactive environment influences human communication, it was the ideal choice for evaluating how particular learning environments can affect the perceived parental involvement of parents with ASD children.

Literature Review Related to Key Variables

In the following section, I discuss critical variables in this research study. The independent variable of the study was the type of intervention received from the behavioral therapists (ABA only and ABA plus ACT) and it is discussed along with the dependent variable of the study, which is perceived parental involvement. The variable of perceived parental involvement was measured through the use of the PIQ – therapist version developed by Solish et al. (2015). Next, the variables are analyzed in how they apply to this study. Finally, the demographic variables are discussed to provide background as it applies to research.

The Experiences of Parents in ASD Interventions

Parents of children diagnosed with ASD face various challenges that parents of children without ASD do not encounter. Parents of children with ASD have increased needs for support due to heightened stress (Soenens et al., 2018). A qualitative interview-based study to explore the experiences and perceptions of parents of children with ASD revealed several themes: (a) expectation, certainty, and exculpation, (b) the potential vulnerability of the parent's child, and (c) both pragmatism and disappointments (Jacobs et al., 2019). Having also explored the need-related experiences and behaviors of parents of children diagnosed with ASD, Dieleman et al. (2018) found that most children diagnosed with ASD had experiences and behaviors associated with basic psychological needs such as support of day to day activities. These various studies underscore the need for more exploration regarding this topic among parents of children diagnosed with ASD to determine specific needs that are crucial to address (Dieleman et al., 2018). Parents of children with autism require more support in order to ensure their children get access to quality healthcare and education service. Add summary and synthesis throughout the paragraph.

According to Estes et al. (2019), parents experience interventions to help their children directly through interaction with providers within the health care and educational systems. It is vital to explore parents' experiences with ASD and understand how this population group can be better supported, especially in caring for their children (Riossa & Weiss, 2018). Estes et al. added that parental stress and psychological well-being need to be addressed in interventions. This is vital given that parents are major

contributors to family adaptive functioning. Parents' capacities to meet and carry out adaptive functions are significantly associated with their stress levels and psychological well-being (Estes et al., 2019). As such, Estes et al. noted the need to examine the effects of early autism intervention on parents and family adaptive functioning; such interventions include early intensive behavioral intervention, parent-implemented intervention, and programs directly targeting parent stress. According to Teo and Lau (2018), gathering information on parental needs and desires in terms of ASD interventions could help develop new strategies for ASD educators and therapists to work effectively with parents or caregivers. As such, this could justify the need to further explore and assess the effects of ASD interventions on parents to develop effective and new strategies for helping them hone their skills and potential (Teo & Lau, 2018). Riosa and Weiss (2018) added that, in examining the impact of autism intervention on parents, there is a need to explore the perceptions and experiences of parents of children with ASD.

Parents of children who are diagnosed with ASD often experience psychological distress (see Teo & Lau, 2018). Studies by Lunksy et al. (2018) and Mostafa (2019) examined the stress and coping strategies of parents of children with ASD. The exploration results stated that 60% of the parents of children with ASD experienced a moderate level of stress, and 50% actively sought information about ASD, avoided the situation, or engaged in denial coping strategies (citation). The research also showed a significantly positive relationship between stress levels and coping strategies (citation).

This literature body further highlights the need for more effective coping interventions and strategies for children with ASD.

There is a limited number of practical and straightforward interventions for parents of children with ASD (citation). Stanislaw et al. (2019) noted this lack in their study, stating that due to elevated stress levels and the lack of information and support, parents' participation and engagement in the interventions intended for children with ASD remain low and inconsistent. Stanislaw et al. added that the lack of available, precise interventions for ASD had led many parents to be confused and uninformed. Furthermore, barriers among parents exist in accessing interventions for their children with ASD, resulting in the lack of parents' engagement in needed interventions (Shepherd, Csako, et al., 2018). Add summary and synthesis.

Yi et al. (2019) examined parents' experiences of screening, diagnosis, and intervention for children with ASD. The researchers conducted their mixed-methods study among 249 parents of children with ASD. The authors administered open-ended questions to the participants regarding their experiences and views of ASD service provision. Their findings showed that parents often encountered significant delays from screening and diagnosis to intervention due to limited resources for ASD. Parents also reported being confused and frustrated throughout ASD interventions and services, noting a lack of a coherent diagnosis and family needs assessment system. Yi et al.'s results highlighted the need for more effective interventions. Also, it underscores the need for more examination and services for parents of children with ASD regarding the

available interventions for parents of children with ASD and the methods that could increase parental access to these interventions (Yi et al., 2019).

Marital dissatisfaction and parental stress among couples of children with ASD are common (Zody, 2017). Several authors, such as Zody (2017) and Turns et al. (2019), found that parents of children with ASD often experience stress that could cause marital tension and difficulties. Lo (2017) concurred, noting how marital dissatisfaction is commonly found among parents of children with ASD. The study further delved into this topic, examining the link between stress, marital satisfaction, and parents' behavior problems raising a child with ASD. Lo also examined whether the child's behavior problem influenced higher stress levels and lower marital satisfaction and found that the children's problematic behavior was significantly associated with parenting stress, impacting marital relationship quality.

Hartley et al.'s (2018) study examined marital interactions and parenting stress in families of children with ASD by examining daily spillover between the level of parenting stress and marital interactions in a sample of 176 married couples who have a child with ASD. The results of their dyadic multilevel modeling analyses showed that a higher number of negative marital interactions were associated with a higher level of parenting stress for both mothers and fathers of children with ASD. Conversely, a lower number of positive marital interactions was related to having a more stressful parenting day, especially for mothers of children with ASD (Hartley et al., 2018).

Other studies examined child-present and child-themed marital conflict in the daily life of parents of children with and without ASD. These studies' findings showed

that parents of children with ASD reported having more disputes in everyday life with any children present and more conflicts with the target child present than their counterparts with typically developing children did (Papp & Hartley, 2019). Parents of children with ASD are likely to experience marital conflict, primarily due to the child being present during the conflict and discussions of child-themed conflict topics. These factors were significant predictors of higher levels of behavior problems in daily life linked to marital conflict. This is vital to address, given that leaving parental stress unaddressed could lead to adverse marital relationship outcomes among parents of children with ASD (Hartley et al., 2018; Lo, 2017; Papp & Hartley, 2019).

The Role of Parents in (ABA)

ABA has been identified as effective in enhancing outcomes among families of children with ASD (Makrygianni et al., 2018). ABA can be conducted as a training method to increase IQ scores, communication, and language skills of children with ASD (Callahan et al., 2019).

Parents of children with ASD also benefit from ABA-based programs. Cassel (2019) noted that parents' stress levels due to individuals with ASD could be addressed through ABA interventions. In a study employing 58 parents of children with ASD, Cassell (2019) conducted four assessments: Caregiver Strain Questionnaire, Aberrant Behavior Checklist, Family Support Survey, and Family Needs Survey. The author utilized a regression model to analyze the data: the results showed that parental stress is predicted by child utilization of psychotropic medication.

Furthermore, it was found that ABA interventions such as hours per week and parental involvement did not predict stress. Participation in ABA interventions results in less stress on average (Cassell, 2019). Hajhashemi et al. (2016) concurred, examining parental stress, affective symptoms, and marital satisfaction in parents of children with ASD. The authors employed parents of children with ASD as participants in their study; the authors assigned the parents to different programs: ABA ($n=15$), Early Intervention Centre ($n=13$), and no formal program ($n=16$). Their study's findings showed that parents of children with ASD in the ABA group reported significantly lower parental stress levels, lower affective symptoms levels, and higher marital satisfaction levels than the other two groups. These results highlight the beneficial impact of ABA interventions on parents of children with ASD. This body of findings provides empirical evidence regarding ABA interventions for parents of children with ASD and reducing parental stress.

ABA interventions could become an approach to autism education of parents. According to Denne et al. (2017) and Kohli and Kohli (2016), parents may be supported and educated regarding autism through ABA interventions. Denne et al. (2017) developed and tested the Parental Beliefs about ABA and Autism scale (P-BAA) to evaluate parents' perceptions regarding ABA. The findings revealed that ABA significantly predicted parent education, knowledge levels, and child diagnosis. Kohli and Kohli (2016) examined parents' perceptions regarding ABA and its effectiveness. The authors conducted an assessment and training curriculum based on ABA procedures to train family members of children diagnosed with autism. The authors proposed

integrating electronic skill assessment tools (VB-MAPP or Verbal Behavior Milestones Assessment and Placement Program) and a web-based training curriculum of ten videos. These videos and assessments were designed and developed based on ABA principles for children diagnosed with autism (Kohli & Kohli, 2016). In their study, the web-based training curriculum integrated cultural, language, and affordability factors, to be utilized by family members of the children diagnosed with ASD to improve their ABA therapeutic skills. After the program, parents demonstrated a higher skill acquisition rate, especially when the mother was trained on ABA procedures. In implementing ABA procedures, it should be noted that parents need to work with their children on the same goals as those practiced at the autism clinic for the ABA intervention to be most effective (Kohli & Kohli, 2016). This body of knowledge provides more empirical information regarding ABA procedures' effectiveness and how ABA principles could develop intervention programs for parents of children with ASD. This could yield positive results in supporting parents and developing the required skills in caring for their children with ASD (Kohli & Kohli, 2016).

ABA intervention programs are also useful in online-delivery settings. Several authors noted the need for more ABA-oriented online programs for parents of children with ASD in coping with stress (Blackman, 2017; Duffney, 2019). Duffney (2019) examined the impact of online ABA training on parents' stress levels with a child with ASD through a quantitative study. The study examined the effects of an online ABA training program. Also, it evaluated parenting stress levels through the Parenting Stress Inventory Short Form and self-reported scores, measured before and after the training.

The study results showed that parents reported significantly decreased stress levels from baseline to post-test in both measures (Duffney, 2019). Blackman (2017) reported similarly, as the author conducted a study to compare the impact of online and in-vivo parent training on the parental acquisition of skills in promoting appropriate behaviors in children diagnosed with ASD. The study reported that the most common method of parent training is thorough in-vivo training, costly and time-consuming. After the online ABA training, the findings showed that participants reported significant decreases in parental stress, increased knowledge regarding ASD, and increased parent-child interaction (Blackman, 2017). Therefore, this body of findings could provide empirical conclusions regarding the effectiveness of ABA training programs for parents of children with ASD, even when delivered in an online setting. The online ABA training program could be a useful tool for decreasing parenting stress and general stress levels and being more efficient (Blackman, 2017; Duffney, 2019).

Even though ABA training has been identified as an effective intervention for children diagnosed with ASD, many parents continue to be inexperienced with its application. Bagaiolo et al. (2017) found that programs with ABA techniques have low compliance rates among parents of children with ASD. This is due to the lack of knowledge regarding the application of ABA techniques even after playing video modeling training (Bagaiolo et al., 2017). This is vital to address, given that ABA techniques (delivered online or through videos) are one of the most promising and cost-effective ways to improve social skills for parents with ASD children.

Furthermore, Ingersoll et al. (2019) underscored this in their study's findings, examining ABA's use for parent training with children with autism. The study administered questionnaires online to 1,089 ABA providers. The findings showed that only 15% of ABA providers used manualized parent training programs. This resulted in lower levels of training extensiveness and a lack of knowledge among parents of children with ASD (Ingersoll et al., 2019). Conversely, the use of manuals in parent training programs was a significant predictor of training extensiveness, impacting and predicting providers' parent training use. As such, ABA providers could enhance training programs for parents of children with ASD by utilizing training manuals (Bagaiolo et al., 2017; Ingersoll et al., 2019).

ACT for Parents with ASD

ACT has been identified as an effective intervention for parents of children diagnosed with ASD. According to Raches et al. (2018), the ACT intervention improves parents' psychological flexibility of children diagnosed with ASD, enhancing their behaviors concerning acceptance and commitment. Also, Lunsy et al. (2018) noted that exposure to ACT training/intervention could be a helpful strategy/technique for alleviating the psychological and mental functioning difficulties experienced by parents.

Fung et al. (2018) examined ACT interventions or therapeutic processes and their impact on helping parents of children with ASD manage their stress. The study focused on the population of mothers. The study was conducted among 33 mothers of children with ASD, wherein the authors assessed changes in ACT process measures (psychological flexibility, cognitive fusion, values). Fung et al. (2018) evaluated these

factors in three months and found that mothers reported positive and significant improvement post-intervention in all ACT process measures. The positive results were seen across various life domains of the mothers, including parenting, relationships, and self-care. This body of knowledge could provide valuable information regarding the effectiveness of ACT as an intervention to support parents of children with ASD (Fung et al., 2018).

According to Gould et al. (2018), ACT is "a contemporary behavioral approach to increasing adaptive, flexible repertoires of behavior, by reducing control by problematic rule-deriving and rule-following" (p. 81). Gould et al. (2018) found support for ACT intervention's effectiveness in alleviating parents' stress of children with ASD. The authors noted that exposure to ACT showed significant increases in values-directed behaviors, including self-compassion among parents of children with ASD. The positive impact of ACT was also sustained throughout and for more than six months after exposure to ACT training. Furthermore, exposure to ACT results in significant decreases in parental experiential avoidance among parents of children with ASD (Gould et al., 2018).

Joekar et al. (2016) concurred as the authors explored the impact of ACT in supporting parents of children with high-functioning autism. The study's authors noted how ACT is a psychotherapy method that aids parents in processing difficult thoughts and feelings. The study examined 24 mothers of children with high functioning autism and ACT experiences throughout an eight-week ACT intervention. The study results revealed that mothers who received ACT had significantly lower depression, stress, and

anxiety (Joekar et al., 2016). This body of knowledge provides empirical evidence regarding the positive outcomes linked to ACT interventions, especially when dealing with psychological distress related to the care of children with autism or ASD (Gould et al., 2018; Joekar et al., 2016).

Other studies addressed the same issue. Hahs et al. (2019) conducted a randomized controlled trial of a brief ACT intervention for parents of individuals diagnosed with ASD. The examination analysis revealed that parents of children with ASD benefitted from an ACT intervention and that the brief version of ACT required fewer resources to be effective (Hahs et al., 2019). Lamb's (2018) study explored the impact of a two-session ACT training for parents of adolescents and young adults with ASD. Specifically, the study evaluated a brief ACT training compared to a traditional parent support group, consisting of two two-hour sessions. The study showed that acceptance levels among the study participants significantly improved after the ACT training. This body of knowledge could provide practical information regarding the use of ACT as a strategy to decrease parental stress and psychological difficulties linked to caring for children with ASD (Gould et al., 2018; Hahs et al., 2019; Lunskey et al., 2018; Raches et al., 2018).

According to Poddar et al. (2017), ACT is a therapy that “focuses on accepting things that are beyond control and on the commitment to possibly changeable aspects by increasing the psychological flexibility of the person, thereby aiding to better realistic adjustments” (p. 555614). Poddar et al. (2017) examined the impact of ACT on valuing the behavior of parents of children with neurodevelopmental disorders such as ASD,

noting the effectiveness of ACT for parents of children with ASD. The study employed five parents of children with neurodevelopmental disorders receiving a six-week ACT intervention revealing that ACT is an effective intervention that significantly increases parents' values and psychological flexibility. These studies' results are consistent with the ACT principles, underscoring the need for more ACT treatments for ASD families. This could also add more information regarding factors that impact ACT interventions virtually, such as the number of resources (Hahs et al., 2019; Poddar et al., 2017).

Ahmadi (2019) and Heidarian et al. (2017) focused on ACT interventions for mothers of children diagnosed with ASD. The authors examined the effectiveness of ACT in improving the level of self-efficacy of mothers of children diagnosed with ASD. The analysis results revealed that ACT intervention effectively increased mothers' self-efficacy with ASD. Self-efficacy was measured as a single construct and its components such as “responsibility, self-management, accepting the child as an individual, and positive evaluation about the child” (Ahmadi, 2019, p. 123). The researchers concluded that ACT could help mothers of children with ASD face difficulties with their current situation. Heidarian et al. (2017) conducted a similar study to explore the effectiveness of group-based ACT intervention in the mindfulness and acceptance of mothers of children with ASD. The results of the analysis revealed a significant improvement in the selected criteria. Thus, the researchers concluded that group-based ACT interventions could be useful in improving mothers' ability to be psychologically more prepared in handling the needs of their children with ASD. This body of literature could highlight ACT

interventions to enhance well-being outcomes among parents of children with ASD, especially mothers. (Ahmadi, 2019; Heidarian et al., 2017; Lunsy et al., 2018).

Integration of Interventions for ASD

Integrating ABA training with other interventions has been proposed to empower parents to help their children with ASD. According to Raches et al. (2018), integrating ABA with other interventions can effectively empower parents to help their children with ASD acquire and develop functional skills. The study noted how children's development is highly dependent on adults, and positive adult relationships, underscoring the need for effective interventions for parents of children with ASD, integrating the ABA informed Early Start Denver Model (ESDM) and Infant/Early Childhood Mental Health (I/ECMH). As such, both therapies can be combined or utilized simultaneously within the context of an interdisciplinary team in the treatment of the child with ASD and his/her relationships and the child's parents or caregivers (Raches et al., 2018). Vivanti (2017) examined individual and combination interventions for ASD based on theory-driven research, noting that current research on ASD interventions that combine different treatment approaches is limited. This literature body underscores the need for more exploration regarding integrating interventions for those caring for individuals diagnosed with ASD. More research is needed regarding innovative strategies and more effective interventions within the ASD field.

Effective management of ASD requires complex and integrated interventions, especially for those caring for individuals diagnosed with ASD. Robles et al. (2019) underscored how professionals, families, and patients face difficulties when choosing

options and interventions for ASD. Furthermore, patients and parents of patients with ASD are often not presented with evidence that shows the effectiveness and efficacy of these interventions. Cachia et al. (2016) added to these findings, examining mindfulness, stress, and well-being of parents of children with ASD, underscoring how parents of children with ASD often face lowered quality of life, heightened stress levels, depression, and anxiety due to the ongoing nature of care. The study's authors conducted a mindfulness-based intervention among parents of children with ASD, wherein the findings showed positive results after the intervention. This body of findings presents alternative methods and interventions for parents of children with ASD, such as mindfulness-based interventions. This could be an initial reference in developing programs and interventions that integrate intervention methods within the ASD field (Cachia et al., 2016; Robles et al., 2019).

Scholars have underscored the need to provide practical behavioral assessments and interventions for parents of children with ASD and other developmental disabilities. Marleau et al. (2019) examined interactive web training to teach parents to select function-based interventions for challenging behavior. The researchers employed 26 parents of children with a developmental disability, wherein the participants were tasked to complete interactive web training (IWT) to teach behavioral function identification and intervention selection. The results revealed that parents were more accurate in identifying behavioral function and selected more adequate interventions following IWT, indicating its effectiveness. Further results indicated that parents spent less than two and a half hours to complete the IWT and overall had positive ratings regarding the

intervention (Marleau et al., 2019). Integrating parent and child-focused interventions is an essential focus within the ASD field. Pickard and Ingersoll (2017) proposed a family-focused service delivery model, recommending using the Double ABCX Model of Stress and Adaptation to address families' needs with children diagnosed with ASD, highlighting the model's effectiveness in integrating ASD interventions.

Similarly, Noblejas et al. (2016) underscored how families with children with ASD could be supported using a double ABCX model. A dual ABCX model, A stands for stressors, B for coping strategies and support, C for the appraisal of the situation, and X for parents' potential adaptive behavior. The findings gathered responses from parents of children with ASD (54 mothers and 35 fathers), wherein the results indicated varying degrees of depression among 58% of mothers and 67% of fathers. The authors concluded that the cognitive definition of stressors and meaning in life experience needs to be integrated into support programs for ASD families. This pool of findings introduces the model of a double ABCX in the assessment and development of strategies for effective coping for parents of children with ASD. Employing a dual ABCX model and other intervention models such as ABA or ACT could result in positive outcomes in addressing the specific psychological and mental needs of parents of children with ASD (Noblejas et al., 2016; Pickard & Ingersoll, 2017).

Besides child-focused interventions, parent-focused interventions are also crucial within the ASD field. Rutherford et al. (2019) explored this topic by conducting a systematic review with meta-analysis, which revealed that interventions for ASD were mostly parent education and training, mindfulness or relaxation training, parent support

groups, and multicomponent interventions. Positive well-being outcomes were also found, including increased quality of life, parent stress, self-efficacy, parenting style, and satisfaction (Rutherford et al., 2019).

Furthermore, the author found significant results for reducing parent stress via a mindfulness training approach. Mindfulness-based training substantially improved parent style and satisfaction and parent education (Rutherford et al., 2019). Leadbitter et al. (2018) found similar results, as the authors administered autism family experience questionnaires among relevant parents. The researchers surveyed the parents of children enrolled in the Pre-school Autism Communication Trial and its 6-year follow-up study. Leadbitter et al. (2018) found that interventions such as parent education and training enhance levels of child adaptive functioning, parental mental health, and parental well-being. These findings underscore the importance of converging various intervention approaches, resulting in optimal parental well-being measures (Leadbitter et al., 2018; Rutherford et al., 2019).

The application of these interventions could result in positive well-being outcomes and improved psychological levels. This is vital to address, given that parents of children with ASD have lower parenting self-efficacy levels and more emotional challenges than parents of children with no developmental disabilities (Zhou et al., 2019).

There are some integrated approaches related to the care of children with ASD. Several authors outlined how parents integrate complementary and alternative medical (CAM) treatments for ASD with regular care (Feldman, 2016; Klein & Kemper, 2016). Klein and Kemper (2016) examined and categorized treatment modalities into four

categories: recommended, monitored, tolerated, and therapies that should be avoided. Overall, the authors noted that the most promising therapies recommended are ABA, parent-implemented training, melatonin supplements to improve sleep, supplements to correct deficiencies, and music therapy. Additionally, interventions linked to diet and medications may also be helpful but requires careful attention (Klein & Kemper, 2016). Feldman (2016) added that commonly recommended treatments might not work for every child with ASD. More efforts to develop and innovate treatment and interventions are needed over time, considering the gradual alteration of developmental changes. The re-evaluation of such interventions is crucial for both the parents of children with ASD and children with ASD themselves (Feldman, 2016; Klein & Kemper, 2016).

One possible integrated intervention for ASD is combining ABA with cognitive-affective strategies such as ACT. Raches et al. (2018) and Pennefather et al. (2018) noted how interventions with ABA with ACT could improve individuals' psychological flexibility to improve their behaviors concerning commitment. Pennefather et al. (2018) evaluated an online training program to enhance family routines, parental well-being, and the behavior of children with autism using ABA and ACT. The authors reported that parents caring for their children with ASD have high rates of stress that may interfere with ABA intervention implementation—as such, integrating ACT strategies could increase parents' cognitive-affective skills. The study employed 23 parents of children with ASD. The participants engaged in a three-week online training program, and they were regularly exposed to ABA principles, stress reduction strategies, and mediation practice based on ACT principles. After the weekly intervention meetings, the parents

reported significant decreases in parental stress, increased relevant knowledge regarding ASD, improvements in child prosocial behavior, decreased hyperactive behaviors, and high levels of satisfaction with the intervention. These findings could provide the basis of a study regarding the effectiveness of combining ACT and ABA principles to develop interventions for parents of children with ASD (Pennefather et al., 2018; Raches et al., 2018).

Summary

Many researchers have addressed the experienced difficulties and stress among parents of ASD children; however, few put direct emphasis on the effectiveness of ACT in enhancing the perceived involvement of parents in assisting their children with ASD when used in combination with ABA (Antill, 2019; Shepherd et al., 2018b; Shepherd et al., 2018c). A few studies have touched on the effectiveness of combining these intervention strategies or combining types of alternative medical care, but they did not explicitly focus on the specific benefits of ACT and ABA as a combined treatment option (Feldman, 2016; Klein & Kemper, 2016). However, the research they provided still proves that great potential lies in combining these two elements. That said, more research still needs to be conducted as to the effectiveness of ABA and ACT combination therapy for children with ASD (Noblejas et al., 2016; Pickard & Ingersoll, 2017). This study will utilize RFT to accurately gauge the effectiveness of combined therapy in increasing the perceived parental involvement of parents with children with ASD.

Raches et al. (2018) noted that ABA, coupled with other interventions, could empower parents to help their children with ASD acquire and develop functional skills.

Therefore, using the framework of Hayes' (1993) RFT of ACT as a point of reference, psychologists, psychiatrists, and therapists can better understand the needs of the parents of children with ASD (Bell & Harris, 2017). Finally, psychologists, psychiatrists, and therapists should consider emphasizing the possible benefits of integrating ACT with ABA to enhance parents of ASD children and undergo interventions from behavior therapists. This could ultimately increase parents' perceived parental involvement in assisting their children with ASD when used with ABA and how parents of children with ASD could be better supported (Bell & Harris, 2017).

Across the literature, the researcher found that integrating ABA training with other interventions has been proposed to empower parents to help their children with ASD acquire and develop the necessary functional skills to succeed at home and school (Raches et al., 2018). However, previous researchers have primarily focused on the psychological functioning of parents who have children with ASD (Corti et al., 2018; Jahangiri, 2019). While this information provides the baseline for this study, the lack of focus on integrating various methods for helping parents of children with ASD is a knowledge gap. As Corti et al. (2018) indicated, there is a gap in the professional literature regarding the effectiveness of ACT in enhancing the perceived involvement of parents in assisting their children with ASD when used with ABA. To examine the effectiveness of ABA as an intervention for children with ASD, Grigorenko et al. (2018) examined the impact of ABA on enhancing children's skills and developmental processes, noting how ABA is useful in helping children with ASD acquire and develop functional skills (Grigorenko et al., 2018). However, many parents continue to be

inexperienced with their application (Grigorenko et al., 2018; Raches et al., 2018). This is vital to address, given that ABA could lead to increased engagement among parents of children with ASD in helping their children acquire and develop functional skills (Raches et al., 2018).

Previous researchers have not focused on integrating specific interventions to meet the needs of parents of children with ASD in coping with parental stress, psychological difficulties, and marital struggles and dissatisfaction (Feldman, 2016; Raches et al., 2018). Most of the current literature on integrated approaches linked to ASD is geared towards children with autism rather than the parents themselves (Feldman, 2016; Klein & Kemper, 2016). This is vital since parents' well-being is crucial to their children's optimal development (Pennefather et al., 2018; Rutherford et al., 2019). As a result, Hayes' (1993) RFT of ACT remains mostly unexplored among this population, creating a significant knowledge gap, given that Hayes' (1993) RFT of ACT relates to the connection of functional contextualism, communication through their interaction with the environment, and behaviors and communication patterns in line ACT as a therapeutic approach (Lamar et al., 2014). Empirical knowledge is not prevalent regarding integrating intervention methods relevant to the population of parents of children with ASD (Bell & Harris, 2017; Vahey et al., 2017).

This quantitative research study addresses this gap in the literature by examining if exposure to both ABA and ACT demonstrated higher perceived parental involvement among parents of children with ASD than ABA alone. Howell (2019) examined the effectiveness of ACT-based exercises on positive interactions and responses to

challenging behaviors among therapists serving children with ASD, as it is consistent with RFT principles. Raftery-Helmer et al. (2016) further noted that the RFT of ACT holds substantial promise as a treatment intervention model that improves problematic parent-child interactions and parenting behavior in the development and maintenance of children with ASD. However, a more in-depth understanding is needed regarding the impact of both ABA and ACT among parents of children with ASD (Howell, 2019; Raftery-Helmer et al., 2016). A better understanding of how to meet the needs of parents of children with ASD is vital, given that parents of children with ASD have reported increased levels of stress and low levels of support and information (Antill, 2019; Grigorenko et al., 2018; Shepherd et al., 2018c). Leaving these issues unaddressed could lead to poor development outcomes for children with ASD. This calls out the need for more engagement, support, and participation (Antill, 2019; Grigorenko et al., 2018). It is essential to develop and implement integrated intervention programs that aim to enhance parent knowledge and guidance in the field of ASD (Stanislaw et al., 2019). Leaving parents' needs unaddressed leads to inconsistent engagement in the interventions intended for children with ASD (Antill, 2019; Shepherd et al., 2018c).

The integration of various interventions and approaches could lead to better outcomes for parents of children with ASD. Researchers have called out the need for more exploration regarding types of approaches that would best complement one another (Raches et al., 2018). Feldman (2016) noted how parents integrate complementary and alternative medical methods with traditional care approaches, leading to better outcomes than traditional methods alone. Similarly, Klein and Kemper (2016) indicated that more

efforts are needed to develop and innovate treatment and interventions for parents of children with ASD, improving overall well-being outcomes. The reassessment of such interventions is crucial for both the parents of children with ASD and the children with ASD themselves (Feldman, 2016; Klein & Kemper, 2016; Pennefather et al., 2018; Raches et al., 2018).

Hajhashemi et al. (2016) examined parental stress, affective symptoms, and marital satisfaction in parents of children with ASD. The authors found that higher ABA interventions could significantly decrease parental stress. Therefore, intervention programs such as ABA can increase parental knowledge in line with ASD care, improving parents' ABA therapeutic skills (Deene et al., 2017; Kohli & Kohli, 2016). This study pool provides literature on the strategies and interventions to support parents and develop the required skills in caring for their children with ASD (Blackman, 2017; Deene et al., 2017; Duffney, 2019; Kohli & Kohli, 2016).

Fung et al. (2018) underscored the role of ACT interventions or therapeutic processes and their impact on helping parents of children with ASD manage their stress, while Lunskey et al. (2018) noted significant decreases in the mothers' levels of stress and depression, as well as significant improvements in physical health after ACT intervention programs. According to several authors, the positive impact of ACT can be sustained for more than six months after exposure to ACT training (Gould et al., 2018; Lunskey et al., 2018). These findings could provide practical information regarding the use of ACT as a strategy to decrease parental stress and psychological difficulties linked to caring for

children with ASD (Gould et al., 2018; Hahs et al., 2019; Lunskey et al., 2018; Raches et al., 2018).

Research centered on integrated interventions to meet the needs of parents of children with ASD is extremely limited (Raches et al., 2018; Vivanti, 2017). There are limited existing empirical studies in which researchers examined the combination of ACT and ABA as strategies to aid parents of children with ASD. In general, previous researchers examining ASD interventions have focused on interventions for the children with ASD, rather than focusing on the parents of the children with ASD (Robles et al., 2019; Vivanti, 2017). This is vital to address given that the developmental process of children with autism is highly dependent on their parents' well-being and coping abilities (Cachia et al., 2016; Factor et al., 2019; Vivanti, 2017).

The gap in the literature is the lack of research about the challenges faced by parents of children with ASD and the intricacies and specific challenges involved in addressing the need of parents of children with ASD and alternative methods to aid this population (Alves & Maich, 2019; Walz, Wang, & Bianchini, 2019). Past researchers have primarily focused on helping the children with ASD instead of the parents who are instrumental in their development growth (Booth et al., 2018; Colebourn et al., 2017; Marleau et al., 2019).

Existing empirical studies are also lacking regarding the use of integrated methods of ACT and ABA in supporting parents of children with ASD and addressing their needs (Colebourn et al., 2017; Marleau et al., 2019). Pennefather et al. (2018) and Raches et al. (2018) suggested the need for more rigorous examination of

ways/mechanisms to support and address the needs of parents of children with ASD, especially in terms of increasing involvement and engagement in the care of their children with ASD. Furthermore, Stanislaw et al. (2019) and Antill (2019) found only limited literature exploring integrated ASD interventions to enhance parents' participation and engagement and their role in impacting their children's developmental outcomes. Future researchers should delve further into this phenomenon and examine it according to the needs and challenges explicitly faced by parents of children with ASD (Antill, 2019; Corti et al., 2018; Jahangiri, 2019).

Past researchers imply that parents of children with ASD, psychologists, psychiatrists, and therapists should strive to develop innovative strategies where the effective management of ASD and knowledge regarding ASD are promoted (Cachia et al., 2016; Robles et al., 2019). Robles et al. (2019) added that effective management of ASD requires complex and integrated interventions, especially for those caring for individuals diagnosed with ASD. Traditional methods integrated with other approaches such as ACT could result in optimal outcomes in mindfulness, stress, and well-being of parents of children with ASD (Cachia et al., 2016).

More examination and development of integrated, alternative methods and interventions for parents of children with ASD could lower parental stress levels and better psychological well-being (Cachia et al., 2016; Vivanti, 2017; Robles et al., 2019; Vivanti, 2017). This study's findings could provide empirical evidence about the benefit of integrating ACT with ABA to enhance parental involvement with children diagnosed

with ASD and are undergoing interventions from behavior therapists (Antill, 2019; Bell & Harris, 2017).

Chapter 3 includes a discussion of this quantitative research study and systematic steps to address the research question on the ACT and its effectiveness in enhancing the perceived parental involvement of parents in assisting their children with ASD when used in combination with ABA. The next chapter also outlines the research design, which coincides with the study's purpose, the research population, and the sampling method. Chapter 3 includes an in-depth discussion of the methodology for collecting the data and setting.

Chapter 3: Research Method

The purpose of this quantitative causal-comparative research study was to examine if there is a significant difference in parents' involvement in handling their children with ASD between those exposed to ABA and ACT interventions compared to those exposed only to ABA training. The following subsections include research design, participants, data collection, instrumentation, planned statistical analysis, threats to validity, and ethical procedures.

Research Design and Rationale

A quantitative casual-comparative design was chosen because the design allowed me to compare parents' involvement in handling their children with ASD between those exposed to both ABA and ACT interventions to those exposed to ABA training. A casual-comparative design is a research design that seeks to find relationships between independent and dependent variables after an action or event has already occurred (McCusker & Gunaydin, 2015). Other comparisons may reveal significant differences in the parent's perception of involvement in handling their children with ASD based on demographic characteristics of the parent's age, the gender of the child, and attendance records for sessions. This study's independent variable was intervention type, a nominal dichotomous variable consisting of "ABA training" or "Both ABA and ACT" interventions. The study's dependent variable was the parents' involvement in handling their children with ASD as measured by the PIQ-therapist version. Covariates used include parent's age, the gender of the child, and attendance records for sessions.

When research questions are phrased to identify differences between two variables, a quantitative methodology is ideal for statistical analysis (McCusker & Gunaydin, 2015). The quantitative methodology also provides precise, quantitative, numerical data. Quantitative research aims to classify features, count them, and construct statistical models to explain observations (McCusker & Gunaydin, 2015). I aimed to assess the relationships between the variables treatment type (ABA training” or “Both ABA and ACT” interventions) and parents' involvement in the handling of their children with ASD. In quantitative research the results are relatively independent of the researcher (e.g., statistical significance) due to the hypotheses already constructed before the data is collected (Park & Park, 2016). Quantitative research involves the interplay among variables after being operationalized, allowing a researcher to measure study outcomes using essential statistical methods (Martin & Bridgmon, 2012).

Quantitative research can generalize a research finding when replicated on many different populations and is useful for obtaining data that allow quantitative predictions to be made (Park & Park, 2016). Statistical information by numerical data can provide information that a qualitative study may not. Quantitative research strives to control biases to understand instances, facts, and phenomena objectively (Park & Park, 2016).

Quantitative research uses measurements, experiments, and statistical analysis to answer questions. A qualitative approach was not appropriate for my study, as qualitative research focuses on establishing a theory, a model, a definition, or understanding a phenomenon (Trochim, 2006). Because statistical data was used in this study, qualitative method was not suitable. One-way analysis of variance (ANOVA), and one-way analysis

of covariance (ANCOVA) were the appropriate statistical tests for my research goal. ANOVA is used to test for statistically meaningful differences in a continuous dependent variable (Creswell & Poth, 2017), in this case, parental involvement, based on different levels of a nominal variable, in this case, treatment type, “ABA training” or “Both ABA and ACT” interventions. ANCOVA is similar to ANOVA. However, ANCOVA allows for the control of other variables (Creswell & Poth, 2017)), in this case, parents' age, the gender of the child, and attendance records for sessions.

Sampling and Sampling Procedures

A convenience sample of adults was recruited from the target population of parents of children with ASD. The study included a nonrandom convenient sample of parents. The generalizability of findings is limited because of the narrowed scope and a nonrandomized sample. Update to include information on the actual recruitment, not just what was proposed.

To determine the minimum number of participants required to conduct this research, I conducted an a priori power analysis using G*Power (see Faul et al., 2014). Four factors were considered in the power analysis: significance level, effect size, the test's power, and statistical technique. The significance level, also known as Type I error, refers to the chance of rejecting a null hypothesis given that it is true (Haas, 2012). Most quantitative studies use a 95% confidence level because it adequately provides enough statistical evidence of a test (Creswell & Poth, 2017). The effect size refers to the estimated measurement of the relationship between the variables being considered (Cohen, 1988). Cohen (1988) categorized effect size into small, medium, and large.

Berger et al. (2013) purported that a medium effect size is better as it strikes a balance between being too strict (small) and too lenient (extensive). The test's power refers to the probability of correctly rejecting a null hypothesis (Sullivan & Feinn, 2012). In most quantitative studies, 80% of power is usually used (Sullivan, & Feinn, 2012). The statistical tests used for this study were ANOVA and ANCOVA. To conduct ANOVA to detect a medium effect size at the 5% level of significance, with 80% power, a sample size of at least 128 participants was required. The sample size for ANCOVA as also 128 for a medium effect size, 5% significance level, and 80% power.

Procedures for Recruitment, Participation, and Data Collection

Permission to conduct research was first obtained from Walden University's Institutional Review Board (IRB) before the data collection began). Once I received IRB approval, I sent a letter to the executive director of the institution at which the participants were treated, requesting written permission for research to be conducted. I used the online survey tool SurveyMonkey to facilitate data collection. Prospective participants will participate in the study using an email invitation (Appendix XX). Participants were asked to click the SurveyMonkey link to access the informed consent form and the survey instruments. The SurveyMonkey survey begins with a page describing the research, the ethical concerns or risks to participants, any potential risks to anonymity, and how to contact me with questions. Consent was sought a second time before participants continued to the rest of the survey. A demographics questionnaire was used to determine participants' age, child's gender, parents' attendance records for sessions, and intervention type. These items were answered on the survey before

answering the other assessment tools. The following page of the survey contained both survey instruments' questions. The final page of the survey thanked the participants for their time. After 2 days , a follow-up email was sent to participants as a reminder to complete the survey if they had not already, to try and encourage all subjects to participate. After the online survey was completed, data were retrieved from Survey Monkey for analysis.

Instrumentation

Parent Involvement Questionnaire (PIQ)

In the PIQ developed by Solish et al., (2015)., the concept of parent involvement comprises 24 items. Involvement questions are answered on a 5-point Likert scale, with higher scores reflecting greater parental involvement. The PIQ has been validated and the reliability tested in other studies. Solish and Perry (2008) conducted a study where 105 parents of children with ASD completed questionnaires. The questionnaire used in that study proved to be a reliable measure. The overall involvement scale demonstrated good reliability with a Cronbach's alpha of .82 with all items included. Cai (2003) examined the relationship between parental involvement and students' mathematical problem-solving performance. In the study, 232 the United States sixth-grade students and 310 Chinese sixth-grade students and their parents were surveyed. For that study, the Cronbach alpha coefficients were 0.82 for the Chinese sample and 0.89 for the U.S. sample, which is considered reliable. Solish and Perry (2008) also measured the validity of the PIQ. Forty-eight parents and 34 therapists completed questionnaires about parents' involvement. Both similarities and discrepancies were noted between parent and therapist

reports. Parents' self-efficacy, knowledge, and belief were significantly correlated with their involvement, thus demonstrating the validity of the PIQ.

Operationalization of Study Variables

Table 1 below depicts the study variables, measurement type, operationalization, and research question used. This study's independent variable is intervention type, a nominal dichotomous variable consisting of "ABA training" or "Both ABA and ACT" interventions coded as 1 and 2, respectively. The study's dependent variable is the parents' perception of parental involvement in handling their children with ASD. This will be measured at the interval level using the PIQ. Possible covariates considered in this study were the parent's age (measured at the interval level of measurement), the gender of the child (coded as 0 for male or 1 for female), and attendance records for sessions (measured at the interval level of measurement).

Table 1

Operationalization of Study Variables

Variable (measurement level)	Type	Operationalization	Research question
Intervention (nominal)	Independent variable	Will be dichotomized as "1" for "ABA training" or "2" for "Both ABA and ACT."	RQ1 and RQ 2

Parental involvement (interval)	Dependent variable	Measured by the Parent Involvement Questionnaire (PIQ) (Solish et al., 2015). Consists of 24 items measured on a 5-point Likert scale with higher scores reflecting greater parental involvement. The mean of the responses will serve as an overall measure of parental involvement.	RQ1 and RQ 2
Parents' age (interval)	Covariate	Measured with the demographic survey	RQ 2
Child's gender (nominal)	Covariate	The demographic survey was measured as "0" for males and "1" for females.	RQ 2
Parents' attendance records for sessions (interval)	Covariate	Measured with the demographic survey.	RQ 2

Data Collection and Analysis

The resulting quantitative data was analyzed using the statistical software suite Statistical Package for the Social Sciences (SPSS) version 23. The data was cleaned by examining the dataset for missing data (see Field, 2013). If a value was missing, the entire case was removed from the analysis (listwise deletion). A case is dropped from the analysis in listwise deletion because it has a missing value in at least one of the specified variables (citation). The analysis is only run on cases with a complete set of data.

Descriptive statistics of the predictor and dependent variables were reported, and a frequency and percentages summary were obtained for categorical variables. Simultaneously, the measure of central tendencies of means and standard deviations and minimum and maximum values were conducted for continuous demographic variables,

such as age. Both one-way ANOVA and one-way ANCOVA were used with SPSS version 23 to answer and test the research questions and hypotheses:

To address the research questions, I conducted ANOVA and ANCOVA tests. ANOVA addressed the first research question to determine significant differences in parental involvement between the interventions. ANCOVA was used for the second research question to determine significant differences in parental involvement between the interventions while controlling for covariates. Before conducting the analysis, parametric assumptions for the tests were conducted. For ANOVA, these assumptions included equality of variances, absence of outliers, and normality (see Field, 2013). The equality of variances was tested by Levene's test of equality of variances. A nonsignificant ($p > .05$) test would indicate that the assumption is not violated. Outlier detection was assessed by examination of standardized scores. Standardized scores outside $-3/+3$ were considered an outlier (Field, 2013). Normality was assessed by examination of skewness and kurtosis statistics. Skewness and kurtosis values should be below 3 and 10, respectively, to establish approximate normality (Kline, 2011).

ANCOVA has three more assumptions than the ones for ANOVA previously stated. First, the continuous covariate, in this case, age and attendance of sessions, should be linearly related to the dependent variable at each independent variable level (see Field, 2013). This was tested by inspecting scatter plots of age versus parental involvement. Second, there should be homogeneity of regression slopes (see Field, 2013). This assumption checks that there is no interaction between the covariate, age, and the dependent variable. The interaction terms age*parental involvement and attendance*

parental involvement were tested for statistical significance (see Field, 2013). If not significant ($p > .05$), there was no violation of the assumption. Third, there should be homoscedasticity. This refers to the spacing of the standardized residuals (errors of prediction) across the predicted values (see Field, 2013). A scatter plot of the standardized residuals versus predicted values were visually inspected to test this. If the scatterplots exhibited no pattern and are approximately frequently spread, this assumption was not violated (see Field, 2013).

Restatement of Research Questions and Hypotheses

RQ1: Is there a statistically significant difference in parents' involvement, as measured by the PIQ, in handling their children with ASD between those who were exposed to both ABA and ACT interventions from a behavioral therapist compared to those who were only exposed to ABA?

Ho1: There is no statistically significant difference in parents' involvement, as measured by the PIQ, in handling their children with ASD between those who were exposed to both ABA and ACT interventions from a behavioral therapist compared to those who were only exposed to ABA.

Ha1: There is a statistically significant difference in parents' involvement, as measured by the PIQ, in handling their children with ASD between those exposed to ABA and ACT interventions from a behavioral therapist compared to those exposed to ABA.

RQ2: Is there a statistically significant difference in parents' involvement, as measured by the PIQ, who were exposed to both ABA and ACT compared to parents

who were only exposed to ABA in terms of their involvement in handling their children with ASD after controlling for initial differences in parent's age, the gender of the child, and attendance records for sessions?

Ho1: No statistically significant difference in parents' involvement, as measured by the PIQ, was exposed to both ABA and ACT compared to parents who were only exposed to ABA in terms of their involvement in handling their children with ASD after controlling for initial differences in parent's age, the gender of the child, and attendance records for sessions.

Ha2: There is a statistically significant difference in parents' involvement, as measured by the PIQ, who were exposed to both ABA and ACT compared to parents who were only exposed to ABA in terms of their involvement in handling their children with ASD after controlling for initial differences in parent's age, the gender of the child, and attendance records for sessions. Table 2 below summarizes the data analysis procedures.

Table 2

Summary of Data Analyses Procedures

RQ #	Statistical Test	Criterion Variable	Predictor Variable
RQ 1	ANOVA	Parents' involvement	Intervention type: Both ABA and ACT interventions/ only ABA.
RQ2	ANCOVA	Parents' involvement	Intervention type: Both ABA and ACT interventions/only ABA Covariates: Parent's age, the gender of the child, and attendance records for sessions

Threats to Validity

External Validity

External validity refers to the degree to which the study results can be generalized to the population. This study will utilize non-random convenience sampling. Studies that involve purposive samples may have issues with the generalizability of the study findings to broader populations of interest (Etikan, 2016).

Internal Validity

Internal validity refers to the validity of the findings within the research study. Testing hypotheses can involve threats to the validity of interpretation for quantitative researchers, and quantitative research may involve rejecting null hypotheses or failing to reject null hypotheses (Martin & Bridgmon, 2012). Consequently, threats to conclusive findings occur when quantitative researchers encounter a Type I error involving rejecting a valid null hypothesis (Ibrahim, Ghani, & Embat, 2013).

Construct Validity

Construct validity is the degree to which a test measures what it claims, or purports, to be measuring. The construct validity of the instruments has been well established, and the PIQ has been validated in other studies (Solish & Perry, 2008; Cai, 2003).

Ethical Procedures

Working with human subjects requires applying to Walden University's Institutional Review Board (IRB) before collecting data. Walden University must approve the application before any human subjects testing can commence. Researchers

must protect vulnerable participants and adhere to respect for persons, autonomy, justice, and beneficence. The study employs purposive, nonprobability sampling, and the data collected will not include any personally identifying information. The data collected will not include any names or IP addresses of the participants. The data will be downloaded to a secure, password-protected personal computer. The ethical considerations identified in the Belmont Report (U.S. Department of Health and Human Services, 1979) are essential for the current study.

The researcher will ensure that participants' private information is not compromised as their names will not be collected. Instead, each respondent will be identified using an anonymous identification number. Additionally, Internet Protocol (IP) addresses for the participants will not be collected. The collected data will be stored and encrypted on a password-protected computer where only the researcher will have access to the data for five years. After five years, the data will be permanently destroyed by deleting the computer files and shredding any paper copies of the raw data.

Summary

This chapter provided a comprehensive description of this study's quantitative correlational research design. The proposed quantitative causal-comparative research study aims to examine if there is a significant difference in parents' involvement in handling their children with ASD between those who were exposed to both applied behavior analysis (ABA) and commitment therapy (ACT) interventions compared to those who were only exposed to solely ABA. The results and findings from the data analysis will be presented in Chapter 4. The tables and graphics provide the descriptive

results and inferences regarding the study variables' underlying connection. The findings' interpretations are provided in Chapter 5, along with the study's limitations, recommendations for future studies, and implications for positive social change.

Chapter 4: Results

The purpose of this quantitative causal-comparative research study was to examine if there was a significant difference in parents' involvement in handling their children with ASD between those who were exposed to both ABA and ACT interventions compared to those who were only exposed to ABA. The following two research questions were addressed:

RQ1: Is there a statistically significant difference in parents' involvement, as measured by the PIQ, in handling their children with ASD between those who were exposed to both ABA and ACT interventions from a behavioral therapist compared to those who were only exposed to ABA?

H₀1: There is no statistically significant difference in parents' involvement, as measured by the PIQ, in handling their children with ASD between those who were exposed to both ABA and ACT interventions from a behavioral therapist compared to those who were only exposed to ABA.

H_a1: There is a statistically significant difference in parents' involvement, as measured by the PIQ, in handling their children with ASD between those exposed to ABA and ACT interventions from a behavioral therapist compared to those exposed to ABA.

RQ2: Is there a statistically significant difference in parents' involvement, as measured by the PIQ, who were exposed to both ABA and ACT compared to parents who were only exposed to ABA in terms of their involvement in handling their children

with ASD after controlling for initial differences in parent's age, the gender of the child, and attendance records for sessions?

H₀₂: No statistically significant difference in parents' involvement, as measured by the PIQ, was exposed to both ABA and ACT compared to parents who were only exposed to ABA in terms of their involvement in handling their children with ASD after controlling for initial differences in parent's age, the gender of the child, and attendance records for sessions.

H_{a2}: There is a statistically significant difference in parents' involvement, as measured by the PIQ, who were exposed to both ABA and ACT compared to parents who were only exposed to ABA in terms of their involvement in handling their children with ASD after controlling for initial differences in parent's age, the gender of the child, and attendance records for sessions.

This chapter presents the research method used to collect the data and the statistical procedures used to analyze the data to address the hypotheses and research questions. This chapter includes descriptions of the screening of the data, the response rate, demographic information, and an explanation of the descriptive statistics of the sample surveyed. Additionally, the study's primary findings are discussed and the chapter ends with a summary of the significant impact of the research

Data Collection

A convenience sample of adults was recruited from the target population of parents of children with ASD. The study included a nonrandom convenient sample of parents. I sent a letter to the executive director on the institution at which the

participants were treated, requesting written permission for research to be conducted.

Participants participated in the study using an email invitation that contained a link to the online survey hosted on Survey Monkey.

Participants were asked to click the link to SurveyMonkey to access the informed consent form as well as the survey instruments. The Survey Monkey survey began with a page describing the research, any ethical concerns or risks to participants, any risks to anonymity, and how to contact me with questions. Consent was sought a second time before continuing to the rest of the survey. The second page of the survey contained the questions of both survey instruments. The final page of the survey thanked the participants for their time.

After 2 days, a follow-up email was sent to participants as a reminder to complete the survey and encourage all subjects to participate. After the online survey was completed, data was retrieved from Survey Monkey for analysis.

Results

The online survey contained a demographics questionnaire as well as the PIQ. The demographics questionnaire was used to determine participants' age, child's gender, and parents' attendance records for sessions and intervention. The PIQ was answered on a 5-point Likert scale with higher scores reflecting greater parental involvement.

There was a total of $N = 57$ parents that participated in the study. Most of the participants were 35 years of age or older (57.9%). The majority (recorded their ethnicity as White 64.9%. In terms of gender, 91.2% of the participants had female children and 8.8% had male children. Regarding the attendance of the female parent, most spent less

than 3 hours per week involved in the Intensive Behavior Intervention (IBI) agency, 26.3%. Most male parents spent less than 3 hours per week involved in the IBI agency, 50.9%. Table 3 provides this information.

Table 3

Demographic Variables

Variable	Frequency	Percentage
<i>Age</i>		
25-30	11	19.3
30-35	13	22.8
35 or older	33	57.9
Total	57	100
<i>Ethnicity</i>		
White	37	64.9
Hispanic	10	17.5
Asian	5	8.8
Other	4	7.0
No response	1	1.8
Total	57	100
<i>Gender</i>		
Female	52	91.2
Male	5	8.8
Total	57	100
<i>Hours per week the child's mother/female guardian is involved with the IBI agency</i>		
<3 hrs	15	26.3
3-5	12	21.1
5-7	4	7.0
Over 7	3	5.3
No response	23	40.4
Total	57	100.0
<i>Hours per week the child's father/male guardian is involved in the IBI agency</i>		
<3 hrs	29	50.9

3-5	3	5.3
5-7	1	1.8
Over 7	1	1.8
Total	34	59.6
No response	23	40.4
Total	57	100.0

The independent variable of this study was the type of training sessions, and this included either ABA only or both ABA and ACT therapy. There were 34 participants that received only ABA therapy, and 23 received both ABA and ACT therapy (Table 4).

Table 4

Training Type

	Frequency	Percent
ABA only	34	59.6
Both ABA and ACT	23	40.4
Total	57	100.0

The dependent variable of this study was parental involvement measured by the PIQ. Parental involvement was measured as agency involvement and child program involvement (social play, academic skills, communication, self-help skills, and problem behavior). The measure was calculated by taking the mean response to the PIQ items, measured on a 5-point Likert scale with increasing values indicating more involvement. The reliability of the scale was assessed by calculating Cronbach's alpha. A generally accepted rule is that α of 0.6-0.7 indicates an acceptable level of reliability, and 0.8 or greater is an outstanding level (Serbetar et al., 2016). The scale showed good reliability with a Cronbach's alpha of .912. Child program involvement (social play, academic

skills, communication, self-help skills, and problem behavior) was measured by taking the mean responses items that ranged from 1 to 5 (got worse to extremely improved). The scale showed good reliability with a Cronbach's alpha of .884.

Descriptive statistics by training type are provided in Table 5. The mean child program involvement was greater in the behavior therapy only and acceptance commitment therapy group ($M = 3.89$, $SD = 0.74$) than in the behavior therapy only group ($M = 3.74$, $SD = 0.75$). However, mean agency involvement was greater in the behavior therapy ($M = 2.68$, $SD = 0.77$) than in both the behavior therapy and the acceptance commitment therapy group ($M = 2.64$, $SD = 0.58$).

Table 5

Child Program and Agency Involvement by Training Type

Training Type		<i>N</i>	Min	Max	<i>M</i>	<i>SD</i>
ABA Therapy only	Child Program Involvement	21	1.40	4.60	3.74	.75
	Agency Involvement	24	1.17	3.94	2.68	.77
Both ABA and ACT	Child Program Involvement	9	2.80	5.00	3.89	.74
	Agency Involvement	14	1.67	3.38	2.64	.58

Analysis of variance (ANOVA) was conducted to address this first research question and hypotheses:

RQ1: Is there a statistically significant difference in parents' involvement, as measured by the PIQ, in handling their children with ASD between those who were exposed to both ABA and ACT interventions from a behavioral therapist compared to those who were only exposed to ABA?

H01: There is no statistically significant difference in parents' involvement, as measured by the PIQ, in handling their children with ASD between those who were exposed to both ABA and ACT interventions from a behavioral therapist compared to those who were only exposed to ABA.

H_a1: There is a statistically significant difference in parents' involvement, as measured by the PIQ, in handling their children with ASD between those exposed to ABA and ACT interventions from a behavioral therapist compared to those exposed to ABA.

A one-way ANOVA was conducted to determine if mean parents' involvement (agency involvement), as measured by the PIQ, in handling their children with ASD was statistically significantly different between those who were exposed to both ABA and ACT interventions from a behavioral therapist compared to those who were only exposed to ABA. There were no outliers, as assessed by standardized values within -3 to +3 (Table 6)

Table 6*Standardized Scores for Agency Involvement by Training Type*

Training Type	Minimum	Maximum
ABA only	-2.15	1.83
Both ABA and ACT	-1.44	1.02

Data were normally distributed for each group, as assessed by skewness and kurtosis statistics within acceptable ranges. Hair et al. (2010) and Bryne (2010) argued that data is normal if skewness is between -2 to +2 and kurtosis is between -7 to +7 (Table 7).

Table 7*Skewness and Kurtosis of Agency Involvement*

Training Type		Skewness	Kurtosis
ABA only	<i>Agency Involvement</i>	-.381	-.248
Both ABA and ACT	<i>Agency Involvement</i>	-.437	-.913

There was homogeneity of variances, as assessed by Levene's test of homogeneity of variances ($p = .311$). Mean agency involvement was greater in the behavior therapy only group ($M = 2.68$, $SD = 0.77$) than both behavior therapy and acceptance commitment therapy ($M = 2.67$, $SD = 0.70$). However, this difference was not significant, $F(1, 38) = 0.025$, $p = .874$ (Table 8 and 9).

Table 8*Agency Involvement*

Training Type	<i>M</i>	<i>SD</i>
ABA only	2.68	.77
Both ABA and ACT	2.64	.57

Table 9*Tests of Between-Subjects Effects for Agency Involvement (ANOVA)*

Source	Type III Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>	η^2
Corrected Model	.013	1	.013	.025	.874	.001
Intercept	250.608	1	250.608	502.763	.000	.933
Training Type	.013	1	.013	.025	.874	.001
Error	17.945	36	.498			
Total	288.220	38				
Corrected Total	17.957	37				

A one-way ANOVA was conducted to determine if the mean child's involvement as measured by the PIQ was statistically significantly different between those exposed to both ABA and ACT interventions from a behavioral therapist compared to those who were only exposed to ABA. There were no outliers, as assessed by standardized values within -3 to +3. Data were normally distributed for each group, as assessed by skewness and kurtosis statistics within acceptable ranges. As assessed by Levene's test of homogeneity of variances ($p = .761$). The mean child's involvement was greater in both behavior therapy and acceptance commitment therapy group ($M = 3.89$, $SD = 0.74$) than the only behavioral therapy group ($M = 3.74$, $SD = 0.75$). However, this difference was not significant, $F(1, 28) = 0.241$, $p = .627$ (Table 10 and 11).

Table 10*Child's involvement*

Training Type	<i>M</i>	<i>SD</i>
Behavior Therapy only	3.74	.75
Both Behavior Therapy only and Acceptance Commitment Therapy	3.89	.73

Table 11*Tests of Between-Subjects Effects for Child's Involvement (ANOVA)*

Source	Type III Sum of Squares	df	Mean Square	<i>F</i>	<i>p</i>	η^2
Corrected Model	.134 ^a	1	.134	.241	.627	.009
Intercept	366.934	1	366.934	657.743	.000	.959
TrainingType_Recode_IV	.134	1	.134	.241	.627	.009
Error	15.620	28	.558			
Total	445.920	30				
Corrected Total	15.755	29				

a. R Squared = .009 (Adjusted R Squared = -.027)

Analysis of Covariance (ANCOVA) was conducted in order to address this second research question and hypotheses:

RQ2: Is there a statistically significant difference in parents' involvement, as measured by the PIQ, who were exposed to both ABA and ACT compared to parents who were only exposed to ABA in terms of their involvement in handling their children with ASD after controlling for initial differences in parent's age, the gender of the child, and attendance records for sessions?

Ho1: No statistically significant difference in parents' involvement, as measured by the PIQ, was exposed to both ABA and ACT compared to parents who were only exposed to ABA in terms of their involvement in handling their children with ASD after controlling for initial differences in parent's age, the gender of the child, and attendance records for sessions.

Ha2: There is a statistically significant difference in parents' involvement, as measured by the PIQ, who were exposed to both ABA and ACT compared to parents who were only exposed to ABA in terms of their involvement in handling their children with ASD after controlling for initial differences in parent's age, the gender of the child, and attendance records for sessions.

ANCOVA was conducted to determine if mean parental involvement (agency involvement) as measured by the PIQ was statistically significantly different between those who were exposed to both ABA and ACT interventions from a behavioral therapist compared to those who were only exposed to ABA, while controlling for parent's age, the gender of the child, and attendance records for sessions. There were no outliers, as assessed by standardized values within -3 to +3. Data were normally distributed for each group, as assessed by skewness and kurtosis statistics within acceptable ranges. Variances were homogeneous, as assessed by Levene's test of homogeneity of variances ($p = .919$). After controlling for age, gender, and attendance, the mean parental involvement (agency involvement) was greater in both behavior therapy and acceptance commitment therapy ($M = 2.46$, $SE = 0.189$) than in the behavior therapy only group (M

= 2.63, $SD = 0.130$). However, these differences were not significant, $F(1, 28) = 0.252$, $p = .619$. Tables 12 and 13 provide these results.

Table 12

Mean Agency Involvement Adjusting for Covariates

Training Type	<i>M</i>	<i>SE</i>	95% Confidence Interval	
			Lower Bound	Upper Bound
Behavior Therapy only	2.63	.13	2.37	2.90
Both Behavior Therapy only and Acceptance Commitment Therapy	2.75	.18	2.36	3.14

Table 13

Tests of Between-Subjects Effects for Agency Involvement (ANCOVA)

Source	Type III Sum of Squares	df	Mean Square	<i>F</i>	<i>p</i>	η^2
Corrected Model	6.149 ^a	5	1.230	3.180	.021	.362
Intercept	.003	1	.003	.007	.933	.000
Age	1.352	1	1.352	3.496	.072	.111
Gender	1.906	1	1.906	4.929	.035	.150
Hrs Per Week Mother Involved	1.153	1	1.153	2.982	.095	.096
Hrs Per Week Father Involved	.616	1	.616	1.592	.217	.054
Training	.098	1	.098	.252	.619	.009
Error	10.828	28	.387			
Total	259.418	34				
Corrected Total	16.977	33				

a. R Squared = .362 (Adjusted R Squared = .248)

ANCOVA was conducted to determine if mean child's involvement as measured by the PIQ was statistically significantly different between those who were exposed to both ABA and ACT interventions from a behavioral therapist compared to those who were only exposed to ABA, while controlling for parent's age, the gender of the child, and attendance records for sessions. There were no outliers, as assessed by standardized values within -3 to +3. Data were normally distributed for each group, as assessed by skewness and kurtosis statistics within acceptable ranges. As assessed by Levene's test of homogeneity of variances ($p = .919$). After controlling for age, gender, and attendance, the mean child involvement was greater in both behavior therapy and acceptance commitment therapy ($M = 3.86, SE = 0.161$) than in the behavior therapy only group ($M = 3.76, SE = 0.161$). However, these differences were not significant, $F(1, 24) = 0.130, p = .721$. Tables 14 and 15 depict this information.

Table 14

Mean Child's Program Involvement Adjusting for Covariates

Training Type	<i>M</i>	<i>SE</i>	95% Confidence Interval	
			Lower Bound	Upper Bound
Behavior Therapy only	3.76	.16	3.42	4.09
Both Behavior Therapy only and Acceptance Commitment Therapy	3.86	.25	3.35	4.37

Table 15

Tests of Between-Subjects Effects for Child's Program Involvement (ANCOVA)

Source	Type III Sum of Squares	df	Mean Square	<i>F</i>	<i>p</i>	η^2
Corrected Model	2.830 ^a	5	.566	1.051	.411	.180
Intercept	8.838	1	8.838	16.410	.000	.406
Age	.164	1	.164	.304	.586	.013
Gender	.001	1	.001	.002	.966	.000
Hrs Per Week Mother Involved	.052	1	.052	.096	.759	.004
Hrs Per Week Father Involved	2.212	1	2.212	4.108	.054	.146
Training Type	.070	1	.070	.130	.721	.005
Error	12.925	24	.539			
Total	445.920	30				
Corrected Total	15.755	29				

a. R Squared = .180 (Adjusted R Squared = .009)

Summary

The purpose of this quantitative causal-comparative research study was to examine if there was a significant difference in parents' involvement in handling their children with Autism Spectrum Disorder between those who were exposed to both applied behavior analysis (ABA) and Acceptance and Commitment Therapy (ACT) interventions compared to those who were only exposed to ABA. The following two research questions were addressed:

RQ1: Is there a statistically significant difference in parents' involvement, as measured by the PIQ, in handling their children with ASD between those who were

exposed to both ABA and ACT interventions from a behavioral therapist compared to those who were only exposed to ABA?

RQ2: Is there a statistically significant difference in parents' involvement, as measured by the PIQ, who were exposed to both ABA and ACT compared to parents who were only exposed to ABA in terms of their involvement in handling their children with ASD after controlling for initial differences in parent's age, the gender of the child, and attendance records for sessions?

Regarding the first research question, mean agency involvement was greater in the behavior therapy only group than the both behavior therapy and acceptance commitment therapy. However, this difference was not significant. Regarding mean child's involvement, the mean was greater in the both behavior therapy and acceptance commitment therapy group than the only behavioral therapy group. However, this difference was not significant.

Regarding the second research question, after controlling for age, gender, and attendance, the mean parental involvement (agency involvement) was greater in both behavior therapy and acceptance commitment therapy than in the behavior therapy only group. However, these differences were not significant. Regarding mean child's involvement, after controlling for age, gender, and attendance, the mean child involvement was greater in both behavior therapy and acceptance commitment therapy than in the behavior therapy only group. However, these differences were not significant.

What follows in Chapter 5 is a discussion as to how the results of this study are interpreted in the context of the theoretical framework. Any limitations of the results of

the study will be provided. Additionally, recommendations for future research will be discussed.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this quantitative causal-comparative study was to investigate if there is a significant difference in parent's involvement in handling their children with ASD between those who were exposed to both ABA) and ACT interventions compared to those who were only exposed to ABA. ASD is a developmental disorder that affects communication and behavior (NIMH, 2020). Although it can be diagnosed at any age, it is a developmental disorder because symptoms generally appear in the first 2 years of life (NIMH, 2020). Most focus usually goes to ASD children, yet parents of ASD children have reported increased stress levels and low support information levels (Buzhardt et al., 2016). In addition, parents of children with ASD have been overlooked when society considers the challenges faced by the family as a whole (Buzhardt et al., 2016). Current literature reveals that exposure to ABA and ACT with ASD interventions could improve parental involvement with their children, but research was lacking (Corti et al., 2018).

The one-way ANOVA was used for data analysis for the study. The dependent variable of the study was parental involvement measured by the PIQ. Parental involvement was measured both as agency involvement and child program involvement (social play, academic skills, communication, self-help skills, and problem behavior). The measure was calculated by taking the mean response to the PIQ items which were measured on a 5-point likert scale with increasing values indicating more involvement. The independent variable of this study was the type of training sessions. This included either ABA only or both ABA and ACT.

After conducting the study analysis, my found results indicated that parents exposed to the ABA and ACT experienced less stress and distress with ASD with children's involvement. The findings revealed that the difference between parents' exposure to both ABA and ACT was not significant. The results suggested that parents with ASD children had fewer stress levels from involvement after exposure to ABA and ACT. Therefore, it was concluded that parental involvement with ASD children was significantly impacted by parents' exposure to ABA and ACT, in particular to those exposed to both ABA and ACT at the same time.

This chapter presents the interpretation of study findings, which is subdivided into literature review of the findings, and research findings. The next subtopics are limitations of the study, recommendations for future studies, implications of the research study and conclusion of the study.

Interpretation of the Findings

The current research findings on RQ1 corroborates the previous literature in identifying a significant difference in parent involvement regarding handling their children with ASD between those exposed to both ABA and ACT and those. Through a quantitative study, Duffney (2019) examined the impact of online ABA training on parents' stress levels with a child with ASD. First, the study examined the effects of an online ABA training program. Likewise, it evaluated parenting stress levels through the parenting stress inventory short form and self-report scores, measured before and after the training. The research result revealed that parents reported significantly decreased stress levels from baseline to posttest in both measures. Similarly, Blackman (2017)

conducted a study to compare the impact of online and in-vivo parent training on the parental acquisition of skills in promoting appropriate behaviors in children diagnosed with ASD. The study reported that the most common method of parent training is thorough in person training, which is costly and time consuming. Parents of children with ASD need more support and training. Add summary/synthesis to fully conclude the paragraph.

The findings of the current study showed that participants reported significant decreases in parental knowledge regarding ASD after the online ABA training and increased parent-child interaction. Therefore, these findings could provide empirical conclusions regarding the effectiveness of ABA training programs for parents with children with ASD, even when delivered in an online setting. According to Blackman (2017) and Duffney (2019), the online training program could be a valuable tool for decreasing parenting stress and general stress levels while being more efficient. Furthermore, Ingersoll et al. (2019) underscored this in their study findings, examining ABA's use for parent training with children with ASD. The researchers provided online questionnaires online to 1,089 ABA providers. The study findings showed that only 15% used manual parent training programs, resulting in lower levels of training extensiveness, impacting, and predicting providers' parenting training use. As suggested by the findings of the current study, through manual training, the cost of training parents to handle autistic children is reduced. Connect back to your study.

Fung et al. (2018) examined ACT interventions or therapeutic processes and their impact on helping children with ASD manage stress. The study focused on the population

of mothers. The research was conducted among 33 mothers of children with ASD; the researchers assessed changes in ACT process measures (psychological flexibility, cognitive fusion, values). The authors evaluated these factors in 3 months and found that mothers reported positive and significant improvement postintervention in all ACT process measures. Furthermore, positive results were seen across various life domains of the mothers, including parenting, relationships, and self-care. As such, this knowledge could provide valuable information regarding the effectiveness of ACT as an intervention to support parents of children with ASD. In line with the findings of the current study, positive relationships and self-care plays a key role in ensuring parents provide quality care to children with autism.

My findings related to RQ2 are consistent with the previous literature in investigating if there is a significant difference in parental involvement in handling their children with ASD for those exposed to both ABA and ACT as compared to those exposed to only ABA after controlling for initial differences in parent's age, gender, and attendance record sessions. For example, Joekar et al. (2016) explored the impact of children with functioning autism. The study's authors noted how the ACT psychotherapy method aids parents' processing difficult thoughts and feelings. The study examined 24 mothers of children with high functioning autism and ACT experiences throughout an 8-week ACT intervention. The study results revealed that mothers who received ACT had significantly lower depression, stress, and anxiety irrespective of the age or gender of the child. This is consistent with the results of this study that parents who receives ACT provide quality care for their children.

Hahs et al. (2019) conducted a randomized controlled trial of a brief ACT intervention for parents of individuals diagnosed with ASD. The study analysis revealed that parents of children with ASD benefitted from an ACT intervention and that the brief version of ACT required fewer resources to be effective. Finally, Hahs et al. (2019) conducted a study on the impact of two-session ACT training for parents of adolescents and young adults with ASD. Specifically, Lamb evaluated a brief ACT training compared to a traditional parent support group, consisting of two 2-hour sessions. This knowledge could offer practical information regarding the use of ACT as a strategy to decrease parental stress and psychological difficulties linked to caring for children with ASD (Gould et al., 2018; Hahs et al., 2019; Lunskey et al., 2018; Raches et al., 2018). The current study also established that ACT presents an effective way to reduce parental stress.

Cachia et al. (2016) examined mindfulness, stress, and well-being of parents of children with ASD, underscoring how parents of children with ASD often face lowered quality of life, heightened stress levels, depression, and anxiety due to the ongoing nature of care. The authors of the study conducted a mindfulness-based intervention among parents of children with ASD, wherein the findings demonstrated positive results after the intervention. Cachia et al. revealed that these findings could present alternative methods and interventions for children with ASD, such as mindfulness-based interventions that integrate intervention methods within the ASD field. Furthermore, besides child-focused interventions, parent-focused interventions are crucial within the ASD field. In this regard, Rutherford et al. (2019) conducted a systematic review with meta-analysis, which

revealed that interventions for ASD were, in most cases, parent education and training, mindfulness or relaxation training, parent support groups, and multicomponent interventions. Positive well-being outcomes were also found, including increases in the quality of life of these parents, parent stress, self-efficacy, parenting style, and satisfaction (Rutherford et al., (2019). Besides child-focused interventions, parent-focused interventions are also crucial within the ASD field. Rutherford et al. (2019) explored this topic by conducting a systematic review with meta-analysis, which revealed that interventions for ASD were mostly parent education and training, mindfulness or relaxation training, parent support groups, and multicomponent interventions. Positive well-being outcomes were also found, including increased quality of life, parent stress, self-efficacy, parenting style, and satisfaction (Rutherford et al., 2019). Similarly, the researchers found significant results for reducing parent stress via a mindfulness training approach. Likewise, the mindfulness-based training was substantial in the improvement of parent style and satisfaction and parent education (Rutherford et al., 2019). The current study found that parental style determines satisfaction levels and type of education that children receive.

Research Findings

After conducting the research study, the following research findings were reported per the study research questions. RQ1: Is there a statistically significant difference in parents' involvement, as measured by PIQ, in handling their children with ASD between those who were exposed to both ABA and ACT interventions from a behavioral therapist compared to those who were only exposed to ABA?

ANOVA was used to analyze data collected for this first research question and hypothesis. The research findings revealed a significant association between parent involvement and exposure to ABA, ACT, and behavioral therapy for parents with ASD children based on the analysis conducted. Data were normally distributed for each group, as assessed by skewness and kurtosis statistics within accepted ranges. Hair et al. (2010) and Bryne (2010) urged that data is considered normal if skewness is between -2 to +2 and kurtosis is between -7 to +7. As such, the null hypothesis was accepted because there was no statistically significant difference between those exposed to ABA and ACT interventions from a behavioral therapist compared to those exposed to ABA. Given that variances were homogeneous, as assessed by Levene's test of homogeneity of variances ($p=.311$), mean agency involvement was more significant in the behavior therapy only group ($M=2.68$, $SD=0.77$) than both in behavior therapy and acceptance commitment therapy ($M=2.67$, $SD=.070$).

However, this difference was not statistically significant, $F(1,38)=0.025$, $P=.874$. Similarly, a one-way ANOVA was conducted to establish if mean parents' involvement in handling their children with ASD was statistically significant between those exposed to both ABA and ACT interventions from behavioral therapists compared to those who were only exposed to ABA. Variances were homogeneous. The analysis revealed that a child's involvement was more significant in both behavior therapy and acceptance therapy groups ($M=3.89$, $SD=0.74$) than in the only behavior therapy group ($M=3.74$, $SD=.075$). However, this difference was not statistically significant $F(1, 28)=0.241$, $P=.627$. Thus, the findings reveal no significant difference in the relationship between the

effects of exposure to ABA, ACT, and behavioral and parents' involvement with their ASD children.

RQ2: Is there a statistically significant difference in parent's involvement, as measured by the PIQ, who were exposed to both ABA and ACT compared to parents who were only exposed to ABA in terms of their involvement in handling their children with ASD after controlling for initial differences in parents' age, the gender of the child, and attendance record for sessions?

Data collected on this question were analyzed using ANCOVA. After conducting analysis, the null hypothesis to this question was accepted. The study findings revealed that there was no statistically significant difference in parent's involvement, as measured by PIQ, for parents who were exposed to both ABA and ACT compared to those who were exposed to only ABA in terms of their involvement in handling their children with ASD after controlling for initial differences in parent's age, the gender of the child, and attendance records for sessions. Each group customarily distributed research data, as assessed by skewness and kurtosis statistics ranges within accepted ranges. Variances were homogeneous, as assessed by Levene's test of homogeneity of variances ($p=.919$). After controlling for age, gender and attendance, the mean parental involvement was more remarkable in both behavioral therapy and acceptance commitment therapy ($M=2.46$, $SE=0.189$) than in the behavioral therapy only group ($M=2.63$, $SD=0.130$). However, these differences were not statistically significant $F(1,28)=0.252$, $P=.619$.

Regarding the mean child's involvement, after controlling for age, gender and attendance, the mean child involvement was greater in both behavior therapy and

acceptance commitment ($M=3.86$, $SE=0.161$) than in the behavior therapy only group ($M=3.76$, $SE=0.161$). However, these differences were not significant $F(1,24)=0.130, p=.721$. This implies that there is no significant effect of controlling factors on parents' exposure to ABA, ACT, and behavior therapy regarding the involvement with their ASD children.

Limitation of the Study

Several limitations arose while the study was being conducted. The first limitation of this study was related to the generalizability of the study results. Precisely, the researcher used a limited sample size of 105 participants, narrow scope, and non-randomized sample, and researched only one facility. Therefore, the study's limited sample size may have been less representative of the whole population.

In such scenarios, the study findings may face generalizability problems when transferred to a different study setting. Likewise, the generalizability of the study findings may be limited by geographical location. The essence of this is that only participants of these geographical locations were recruited in this research. In particular, this automatically discriminated against the potential participants from other geographical regions. In such instances, the study results may be generalized, having been limited to the study's current study settings and the entire population used.

Another limitation of the current research study relates to the trustworthiness of the participants. The research used questionnaires to obtain responses from respondents. The implication is that the research may not fully control the participant's responses to the questions. In this case, the study findings are likely to be compromised.

ACT utilization among ABA service providers is another limitation of this research study. There may not be enough behavior analysts utilizing ACT as part of their behavioral parent training program. Therefore, the researcher should modify or expand the recruitment criteria if not enough participants can participate in the study.

Another limitation of the current study is the methodology selected or the current. The researcher selected a quantitative research method to conduct the study. Investigating the current topic, especially the participants' perceptions, may be inadequate through quantitative analysis. There could be a possibility that participants may find it difficult to express their perceptions of a topic using the study instrument since it limits them from describing and detailing their perceptions and views on the topic

Recommendations for Future Research

Several recommendations for future research can be made based on the findings of the study. First, the study was limited by the sample size and the geographical location used for the study, and the researcher used a sample size of 57 participants. The sample size used by the researcher was homogenous because the participants were from one geographical location. This homogenous small sample size has negative impacts on the generalizability of the study results. Therefore, in view of this limitation, the researcher recommends further studies to examine and replicate the current study using a large sample size. The study was limited to the participation of parents with ASD children who have been exposed to behavioral therapist interventions. No children with ASD directly took part in this study. The implication is that all data came from parents' recollections

and perceptions of children with ASD. In this case, further, another is needed on the same topic to include the entire scope of both parents and children with ASD,

Another limitation of the study was the issue of trustworthiness among the participants. The current study used questionnaires to collect data, and participants are likely to provide dishonest responses. Therefore, future studies on similar subjects should be conducted to use observation and direct interviews for genuine responses from the respondents.

A different limitation was the methodology used for the study. The researcher used a causal quantitative survey, which may not provide adequate responses from participants' perceptions and views. Therefore, the recommendation is advanced to use alternative methodology such as mixed-method to conduct similar future studies to provide sufficient responses by the respondents. Lastly, there may not be enough behavior analysts utilizing ACT as part of their behavioral parent training program regarding ACT utilization among ABA service providers. Therefore, the recommendation is advanced for the researcher to modify or expand the recruitment criteria if not enough participants are eligible to participate in the study.

The study was also limited to parents of children with ASD who have been exposed to behavioral therapist intervention. No children with ASD directly took part in the study. All the data in this study came from parents' recollections and perceptions of children with ASD. Therefore, the researcher recommends that future studies be conducted, and that both parents of children with ASD and children with ASD ought to take part in the research as respondents.

Implications of the Study

The current study findings have several social change implications. These implications may be addressed in terms of implications on positive social change and implications on clinical practice.

Implications on Positive Social Change

For the individual implications, individual parents of children with ASD may use the study findings to identify the correct ways or combination of mechanisms to cope with life challenges with their children having ASD. In addition, study results may inform those parents on the importance of ABA training in combating stress levels of children with ASD and enhance the impact of ABA interventions on parents with ASD children. At the organization level, the study implies the healthcare organizations with ABA service provision.

The results may enable organizations to create awareness of the importance of training in handling children with ASD. The study findings also have implications at the family level. Parents may use the study findings in managing and handling children with ASD in the family. Parental involvement may be improved in the family such that parents can address the emotional challenges of taking care of children with ASD. At the society level, the study findings may inform policymakers on developing policies of ensuring children with ASD receive equal treatment in society. Both government and non-governmental organizations may use these study findings to create community awareness on the importance of receiving training on ABA and ACT programs to manage children who have ASD in society.

The study has a theoretical contribution. The study used Relational Frame Theory (RFT) (Hayes, 1993). RFT posits that humans learn communication through interaction with the environment. Therefore, the concept that behaviors and communication patterns can be changed or enhanced by engaging in purposive interaction may aid the researchers in understanding if exposure to both ABA and ACT demonstrates higher perceived parental involvement among parents of children with ASD problems being exposed to ABA. The RFT theory implies that parents of children with ASD who received ABA training and ACT from behavior analysts would have perceived parent involvement in ABA than parents of children who only received ABA training behaviors analysts.

Implications on Clinical Practice

The research findings may be used by healthcare facilities in the development of innovative strategies for effective management of ASD and implementation of those strategies in. Study results may also be used by health practitioners in provision of health services to victims of ASD. Psychologists and psychiatrists may find these findings useful in the diagnosis of the ASD in children. Similarly, healthcare aides' providers may use the research findings to develop training programs for parents and creating awareness on the importance of these trainings.

Conclusions

The current study demonstrated an association between parent involvement and exposure to ABA, ACT, and behavioral therapy interventions for parents with ASD children. The study findings outlined that parents who are exposed to ABA, ACT, and behavioral therapy get involved in managing their children with ASD problems than

those not exposed. Effective management of ASD requires complex and integrated interventions, especially for those caring for individuals diagnosed with ASD. Given the study's findings, policymakers may need to initiate appropriate ways or mechanisms that may be used to sensitize the public about the management of people living with ASD in society. In addition, there also needs for both social and psychological support to parents with ASD children and the ASD children themselves.

Among the study implications of previous researchers are the parents of children with ASD, psychologists, psychiatrists, and therapists should strive to develop innovative mechanisms where the effective management of ASD and knowledge regarding ASD are promoted (Cachia et al., 2016, Robles et al., 2019) In his study, Roble et al., (2019) added that effective management of ASD requires complex and integrated interventions, especially or those caring for individuals diagnosed with ASD.

More examination and development of integrated, alternative methods and interventions for the parents of children with ASD could lower parental stress and better psychological well-being (Cachia et al., 2016; Vivanti et al., 2017; Robles et al., 2019). These study findings could prove empirical evidence about the benefit of integrating ACT and ABA to improve parental involvement with children diagnosed with ASD and are undergoing interventions from behavior therapists (Antill, 2019; Bell & Harris, 2017)

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Appendix A: SPSS Input and Output

F tests - ANOVA: Fixed effects, omnibus, one-way

Analysis: A priori: Compute required sample size

Input:

Effect size f	=	0.25
α err prob	=	0.05
Power (1- β err prob)	=	.80
Number of groups	=	2

Output:

Noncentrality parameter λ	=	8.0000000
Critical F	=	3.9163246
Numerator df	=	1
Denominator df	=	126
Total sample size	=	128
Actual power	=	0.8014596

G*Power minimum sample size estimate for ANOVA

F tests - ANCOVA: Fixed effects, main effects, and interactions

Analysis: A priori: Compute required sample size

Input:

Effect size f	=	0.25
α err prob	=	0.05
Power (1- β err prob)	=	.80

Numerator df	=	1
Number of groups	=	2
Number of covariates	=	3
Output: Noncentrality parameter λ	=	8.0000000
Critical F	=	3.9181775
Denominator df	=	123
Total sample size	=	128
Actual power	=	0.8013121