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Dissertation

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By

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## Abstract

In recent decades, the field of autism has embraced family-centered care (FCC) as one tool for decreasing parental stress, with several studies demonstrating the positive impact of FCC on families (Dunst et al., 2007). However, parents of children with autism spectrum disorder (ASD) are less likely to report receiving FCC than parents of children with other health care needs (Brachlow et al., 2007; Gabovitch & Curtin, 2009). Applied Behavior Analysis (ABA) is a highly utilized category of treatment for ASD (Hyman et al., 2020), allowing providers of ABA the opportunity to have a particularly significant impact on families. No known studies have examined the state of FCC in ABA in the United States, and FCC is not a required component of training for Board Certified Behavior Analysts (BCBAs) (Behavior Analyst Certification Board, 2020). The aims of this study were: 1) Explore the current implementation of FCC in ABA and 2) Develop, implement, and evaluate a series of trainings for BCBAs focused on family-centered topics.

In Phase One of this study, 16 parents of children aged 2-18 receiving ABA intervention for ASD and 10 BCBAs providing ABA intervention to children with ASD participated in focus groups. Transcripts were analyzed using grounded theory to identify the extent to which parents receive and BCBAs practice the four core components of FCC (respect and dignity, information sharing, participation, and collaboration). Several identified themes were common to both groups, with some themes unique to either the parent or BCBA groups. Overall, areas of strength and weakness related to the provision of FCC were shared by parents and BCBAs. Parents and BCBAs identified several

barriers that prevent the provision of high-quality FCC, and BCBAs identified areas in which they would like to receive additional training.

In Phase Two of this study, a series of 8 training sessions utilizing the Extension of Community Healthcare Outcomes (ECHO™) model were provided to BCBAs based on the training needs identified in Phase One, with 40 BCBAs attending at least 5 sessions. A quasi-experimental design with pre- and post- measures was conducted. BCBAs completed a questionnaire at pre- and post-test including a measure of self-efficacy and a measure of FCC provision. A measure of satisfaction was also completed at posttest. Paired samples t-tests were conducted to test for mean differences between pretest and posttest self-efficacy and FCC provision. Differences between BCBAs with a degree in behavior analysis and a degree in other areas as well as differences based on years of experience in the field of ABA were examined. Additionally, a total of 22 parents of children aged 3-18 receiving ABA intervention completed a questionnaire including demographics, a measure of perception of FCC received, and a measure of parental stress. Correlations were conducted to examine the relationship between FCC and parental stress.

Results indicate that BCBAs improved significantly in self-efficacy and specific aspects of FCC from pretest to posttest. BCBAs with degrees in behavior analysis demonstrated significantly greater improvement in self-efficacy and the specific FCC component of *providing general information* than BCBAs with degrees in other areas. There were no significant differences between these two groups of BCBAs on pretest measures. Additionally, there was no significant relationship between years in the field of ABA and change in self-efficacy and FCC provision from pretest to posttest or self-

efficacy and FCC provision at pretest. Overall, BCBAs reported high levels of satisfaction with the ECHO trainings. Additionally, results indicate that there is a significant relationship between parental stress and FCC, with parents who report receiving higher levels of FCC in the area of information sharing reporting lower levels of stress. Overall, findings suggest that there is significant room for improvement in FCC in the field of ABA, and the ECHO model is a potential avenue for effecting change among BCBAs.

## Dedication

For Edward, Genevieve, and Josie.

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### Publications

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Witwer, A. N., Rosencrans, M. E., **Held, M. K.,** Cobranchi, C., Crane, J., Chapman, R., Havercamp, S. M., & The Ohio State University Nisonger RRTC on Health and Function (2022). Psychotherapy treatment outcome research in adults with ID: Where do we go from here? *Clinical Psychology: Science and Practice*. DOI: 10.1037/cps0000053.

## Fields of Study

Major Field: Psychology

Specializations: Intellectual and Developmental Disabilities, Quantitative Psychology Concentration

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# Chapter 1. Introduction

Autism spectrum disorder (ASD) is a highly heterogenous disorder that involves complex and often intensive treatment. Parents of children with ASD report higher levels of stress than parents of children with other developmental disabilities, and parental stress has been found to play a moderating role in the relationship between treatment and outcomes, with higher levels of parental stress weakening this relationship (Hauser-Cram et al., 2001.; Osborne et al., 2008; Strauss et al., 2012). In recent decades, the field of autism has embraced family-centered care (FCC) as one tool for decreasing parental stress, with several studies demonstrating the positive impact of FCC on families. FCC involves offering care to families that is aligned with their needs, wishes, and values (King et al., 1996). However, parents of children with ASD are less likely to report receiving FCC than parents of children with other health care needs (Brachlow et al., 2007; Gabovitch & Curtin, 2009). Treatment providers often spend significant amounts of time with parents and children with ASD and as such have ample opportunities to implement FCC. Applied Behavior Analysis (ABA) is the most commonly utilized category of treatment for ASD (Hyman et al., 2020), giving providers of ABA the opportunity to have a particularly significant impact on families. No known studies have examined the state of FCC in ABA in the United States, and FCC is not a required component of training for Board Certified Behavior Analysts (BCBAs) (Behavior Analyst Certification Board, 2020). In order to improve FCC in ABA, it is necessary to first explore the current implementation of FCC in ABA and subsequently provide training to BCBAs to fill identified gaps in knowledge.

## ASD

ASD is a neurodevelopmental disorder characterized by deficits in social communication and social interactions combined with restrictive, repetitive behaviors and interests (American Psychiatric Association, 2013). The results of studies of the prevalence of ASD indicate steadily increasing rates, from one in 150 in the year 2000 to one in 44 in the year 2018 (Maenner et al., 2021). ASD is highly heterogenous and is often associated with accompanying behavior problems, intellectual disability, language impairment, feeding issues and food selectivity, and sleep issues that vary among individuals (Gadow et al., 2004; Tonge & Einfeld, 2003; Lecavalier, 2006; Dominick et al., 2007). Individuals with ASD may also present with co-occurring psychiatric problems such as mood disorders and disruptive behavior disorders (Leyfer et al., 2006; Simonoff et al., 2008). A study conducted by Simonoff and colleagues estimated that 70% of individuals with ASD have at least one comorbid psychiatric disorder, and 41% of individuals have two or more disorders. The most commonly reported psychiatric disorders were anxiety disorders (41.9%), oppositional or conduct disorder (30%), and Attention-Deficit/Hyperactivity Disorder (ADHD; 28.2%).

### *Impact of ASD on the Family*

Because of the complex nature of ASD, parenting a child with ASD can be a stressful experience that impacts the functioning of the family. Parents of children with ASD experience higher levels of stress than parents of typically developing children or children with other developmental disabilities such as cerebral palsy and Down syndrome (Baker-Ericzen et al., 2005; Hauser-Cram et al., 2001; Neece et al., 2012). This high level of stress is associated with an increased risk of depression, diabetes and lower general

health in parents (Hedov et al., 2000; Neece et al., 2012). Parental stress is also associated with higher levels of marital conflict, divorce and overall decreased family quality of life (Hastings, 2003; Lecavalier et al., 2006; Neece et al., 2012). Parental stress has also been found to moderate the efficacy of treatment for ASD by reducing efficacy (Strauss et al., 2012; Osborne et al., 2008). Given the significant impact of having a child with ASD on the well-being of the family, the field of ASD has begun to embrace FCC.

**Family-Centered Care.** Over the last century, the perception of the role of parents of children with disabilities has changed dramatically. During the first half of the 1900s, parents were generally viewed as incapable of caring for a child with a disability, and these children were often institutionalized. Professionals were generally considered to be in control of these children, and the preferences of the family were not a priority. This began to change in the 1950s as parents began to organize groups to advocate for themselves and their children. Since the 1950s, there has been an ideological shift toward FCC and an emphasis on the importance of parents in caring for children with disabilities (Rosenbaum et al., 1998).

Family-centered care (FCC) (also known as patient- and family-centered care, family-centered services, family-centered practice, and family-centered helpgiving) is an approach to clinical practice based on the philosophy that the care offered to families should be aligned with their needs, wishes, and values (King et al., 1996). FCC requires incorporating general quality clinical practices (e.g. active listening, empathy, respect, clear communication, cultural competence) with individualized practices that are responsive to each family's needs (Dunst et al., 2007).

The Institute for Patient- and Family-Centered Care identifies four core concepts of FCC: 1) respect and dignity; 2) information sharing; 3) participation; and 4) collaboration. Respect and dignity includes honoring the decisions made by families and incorporating the values and culture of each family into treatment. Information sharing focuses on communicating information in a complete, unbiased, and timely manner in order to promote family decision-making. Participation means involving family members in treatment and decision-making. Collaboration refers to collaboration amongst family members, patients, and all members of that patient's treatment team (Institute for Patient- and Family-Centered Care, 2022).

FCC has been found to be directly and indirectly related to family and child outcomes. A meta-analysis conducted by Dunst and colleagues (2007) found a significant relationship between FCC and six categories of outcomes (satisfaction, self-efficacy, social support, child behavior, well-being, and parenting), with families receiving higher-quality FCC reporting better outcomes. Parents of children with developmental disabilities who receive FCC report lower levels of stress, better family quality of life, and higher satisfaction with services (King et al., 1996; Burke & Hodapp, 2014; Hsiao et al., 2017; Casagrande & Ingersoll, 2017; Dunst et al., 2007). Casagrande and Ingersoll (2017) found that parent-professional partnership, a key component of FCC, is related to increased access to services and satisfaction with services in parents of children with ASD.

Despite the robust evidence base to support the use of FCC for children with disabilities (including developmental disabilities and ASD), parents of children with ASD are less likely to report receiving FCC than children with other health care needs

(Brachlow et al., 2007; Gabovitch & Curtin, 2009). They are also more likely to rate their service providers as lacking in skills related to FCC (Liptak et al., 2006). Additionally, one study found that primary service providers rated their own ability to deliver FCC related to ASD significantly higher than did parents of children with ASD (Carbone et al., 2012). Gabovitch and Curtin (2009) identified several barriers to the implementation of FCC for children with ASD, including lack of provider knowledge, lack of organizational support for FCC, and lack of communication among providers.

Lack of FCC in the field of ASD highlights the need for improved training for providers. It is important to consider commonly utilized treatments for ASD, as providers implementing these treatments have frequent interactions with families and thus opportunity to provide FCC.

### *Treatment for ASD*

Because of the heterogenous nature of ASD, treatment is often complex and can include a variety of components. Behavioral intervention, medication, allied therapies, and psychotherapy are frequently utilized to treat ASD and co-occurring behavioral and mental health issues. The most commonly utilized evidence-based treatments for ASD are based on the principles of Applied Behavior Analysis (ABA) (Hyman et al., 2020). As such, providers of ABA have an opportunity to significantly impact families of children with ASD.

**Applied Behavior Analysis.** ABA is a form of behavioral intervention with a large evidence base of effectiveness for children with ASD. It focuses on how changes in the environment impact human behavior. ABA is largely based in the principles and research of Ivar Lovaas, although many variations of these principles exist. Lovaas

developed a treatment that focuses on simplifying the environment and instruction and providing highly rewarding reinforcement (Lovaas, 1987). Modern ABA programs may be comprehensive (i.e. address all developmental areas of need) or skills-based (i.e. targeting specific skills) (Vismara & Rogers, 2010). In general, ABA programs include some components of skill building and behavior reduction. It is important that generalization techniques are incorporated in ABA programs to ensure that participating children learn to incorporate their learned skills in the environment in which they are expected to be used (Koegel et al., 2003; Schreibman et al., 2015). Since the 1960s, numerous studies have demonstrated the effectiveness of ABA in improving the intellectual functioning, communication, and play and social skills of children with ASD (e.g. Baer at al., 1968, Lovaas et al., 1966; Cohen et al., 2006; Lovaas, 1987; Sallows & Graupner, 2005; Smith et al., 2000). Overall, ABA is considered to be an effective method for treatment of ASD (Hyman et al., 2020; Vismara & Rogers, 2010).

ABA can be provided by a variety professionals, including Board Certified Behavior Analysts (BCBAs; hold at least a master's degree), Board Certified Assistant Behavior Analysts (BCaBAs; hold at least a bachelor's degree), and Registered Behavior Technicians (RBTs; hold at least a high school diploma) (*BACB*, n.d.). Requirements for providers of ABA vary by state and insurance company; although most ABA services are provided by Behavior Analysts and RBTs, individuals with education in psychology, education, behavior analysis, and related fields also may provide ABA.

Parents are frequently included in the implementation of ABA, and some ABA programs are specifically designed to be parent-mediated (Hyman et al., 2020; Strauss et al., 2012; Vismara & Rogers, 2010). Because parents can be a critical component of the

treatment process, it is important to consider how the increased levels of stress experienced by parents of children with ASD may impact treatment.

***Applied Behavior Analysis, Parental Stress, and FCC.*** Strauss et al. (2012) found that parental stress moderated the impact of ABA on autism severity as measured by the ADOS, with higher levels of stress being associated with smaller decreases in autism severity. Additionally, Osborne et al., (2008) found that parental stress moderated the impact of ABA intervention on intellectual, educational, and adaptive behavior skills, with higher levels of stress being associated with smaller gains in these areas.

As discussed above, parents who report higher-quality FCC report lower levels of parental stress. Despite the clear connection between FCC and parental stress and the high demand for ABA intervention, there is a dearth of research available on the current state of FCC in ABA. Researchers have highlighted the importance of FCC in the process of diagnosis and treatment for ASD (Carbone et al., 2013; Christon & Myers, 2015; Gabovitch & Curtin, 2009), but only one known study has examined FCC in ABA specifically. Williams and colleagues evaluated the perception of FCC in parents receiving services from provincially-funded ABA programs in Ontario, Canada. Results of this study indicate that the provision of FCC in ABA is similar to that of children receiving a variety of services for other neurodevelopmental disorders, indicating room for improvement (King et al., 1996; Williams et al., 2021). No known studies have examined FCC in ABA in the United States.

Given the relationship between FCC and parental stress and the moderating role of parental stress on ABA treatment outcomes, providers of ABA are an appropriate target for additional training in FCC. Additionally, ABA is one of the most commonly

implemented treatments for ASD, providing further rationale for targeting ABA providers such as BCBAs.

## Board Certified Behavior Analysts

As described in the Board Certified Behavior Analyst Handbook (2020), the BCBA "is a graduate-level certification in behavior analysis. Professionals certified at the BCBA level are independent practitioners who provide behavior-analytic services." In addition to providing direct clinical care, BCBAs may also supervise BCaBAs, RBTs, other professionals who provide ABA services, and individuals gaining fieldwork hours for the purpose of becoming a BCBA. BCBAs are certified by the Behavior Analyst Certification Board (BACB), which provides certification for the United States, Canada, and the United Kingdom (Behavior Analyst Certification Board, 2022).

As of July 1, 2022, there are 56,961 individuals holding BCBA certification from the BACB. This number has grown exponentially over the previous decade (from 8,582 individuals in 2011) and has more than doubled in the last six years (from 22,891 individuals in 2016). The majority of BCBAs are white (70.1%) and female (86.4%), and 71.4% of all BCBAs report ASD as their primary area of professional emphasis ("BACB Certificant Data," n.d.).

### *BCBA Training*

The quality of services provided to individuals with developmental disabilities such as ASD is influenced by the quality of training provided to those who perform the services (DiGennaro Reed & Henley, 2015; DiGennaro Reed et al., 2013). Additionally, poor training for providers of treatment can result in negative outcomes, such as poor

interactions between providers and clients and decreased treatment integrity (Catania et al., 2009; DiGennaro Reed et al., 2013). As such, it is important to consider the training requirements for BCBA certification. The following requirements are applicable to all applicants requesting BCBA certification prior to July 1, 2022.

**Education and Initial Eligibility.** Prior to applying for BCBA certification, all applicants must earn a master's degree in behavior analysis, education, psychology, or a related area. They must also demonstrate specialization in behavior analytic content by completing one of three options: Option 1) behavior analytic coursework; Option 2) faculty teaching and research, or Option 3) postdoctoral experience in ABA (Behavior Analyst Certification Board, 2020). Since 2013, 94% of all BCBAs achieving certification have completed this education requirement through behavior analytic coursework ("BACB Certificant Data," n.d.); as such, the remaining requirements described will focus on Option One and do not apply to Options Two and Three.

A total of 315 coursework hours with behavior analytic content is required. These hours must cover the following content areas: (a) BACB Ethics Code and Code-Enforcement System; Professionalism; (b) Philosophical Underpinnings; Concepts and Principles; (c) Measurement, Data Display, and Interpretation; Experimental Design; (d) Behavior Assessment; (e) Behavior-Change Procedures; Selecting and Implementing Intervention; and (f) Personnel Supervision and Management (Behavior Analyst Certification Board, 2022).

**Supervised Experience.** In addition to completing behavior analytic coursework, BCBAs-in-training must complete 1,500 hours of fieldwork. These hours must be

supervised by a BCBA or licensed psychologist certified in Behavioral and Cognitive Psychology (Behavior Analyst Certification Board, 2022).

**Exam.** After completing the required coursework and fieldwork, applicants must pass a BCBA certification examination consisting of 160 multiple-choice questions. The BCBA Task List, 5th Edition provides an overview of the content areas covered by the exam. Each content area falls under one of two categories: Basic Behavior-Analytic Skills and Client-Centered Responsibilities (Behavior Analyst Certification Board, 2012).

### *Training Areas of Need*

The BCBA Handbook describes the rigorous training that BCBAs receive related to the field of behavior analysis. However, it is important to consider that all BCBAs must complete the same certification requirements, regardless of the population whom they intend to treat. As such, there are not specific requirements related to ASD, despite the fact that the majority of BCBAs specialize in this population. The behavior analytic course requirements and exam content areas do not include ASD symptoms and diagnosis, psychopathology, or treatments that individuals may be receiving concurrently with ABA. Additionally, there is a lack of emphasis on broad clinical skills critical for treating individuals with ASD, such as FCC, cultural competency, and interdisciplinary collaboration (Blydenburg & Diller, 2016; Conners et al., 2019; Drahota et al., 2014; Li & Poling, 2018). The lack of training related to FCC is particularly concerning due to the mediating role of FCC on treatment outcomes for children with ASD and other DDs, as discussed above (Casagrande & Ingersoll, 2017; Dunst et al., 2007; Gabovitch & Curtin, 2009; Hsiao et al., 2017).

Although it is possible that BCBAs are receiving ASD-specific and specialized clinical training from their employer when beginning a job with this population, a survey of BCBAs conducted by DiGennaro-Reed and Henley (2015) revealed that only 55% received initial training from their employer. Additionally, 39% of BCBAs that did receive initial training reported that they did not feel fully prepared for their job responsibilities after completing training.

**Professional Development**

Given the complex nature of ASD, importance of FCC, and lack of specified training provided to BCBAs in these areas, it is clear that BCBAs would benefit from opportunities for professional development (PD) to help them develop new skills and improve their practice. PD is implemented with a wide variety of methods across different professional fields and agencies, but not all PD programs lead to measurable change. Lack of consistency and follow-up in PD have been demonstrated to limit its effectiveness (Corcoran, 1995). For example, PD in the educational setting often consists of single-session formal workshops provided by an expert that speaks about a "hot" topic, and there is no continuity across these sessions or opportunities for participants to make connections between topics (Corcoran, 1995; Desimone & Garet, 2015). Additionally, PD that lacks clear goals and relevance to the learner has limited effectiveness (Corcoran, 1995). Content of PD across professions is often presented without a clear connection to the learner's current struggles or skills that the learner should be gaining (Desimone & Garet, 2015).

Desimone & Garet (2015) have identified five key elements of PD that contribute to affecting change in the learner's behavior: 1) content focus; 2) active learning; 3)

coherence (i.e. content and activities are consistent with learners' needs); 4) sustained duration; and 5) collective participation (i.e. creating an "interactive learning community"). Several cross-sectional, longitudinal, quasi-experimental, and randomized controlled trial studies have provided evidence supporting this framework for effective PD (Garet et al., 2001; Desimone et al., 2002; Gersten et al., 2010; Penuel et al., 2011).

As discussed above, lack of high-quality training provided to BCBAs can result in compromised family-professional relationships and poor treatment integrity (DiGennaro Reed et al., 2013). It is important to consider the quality of the PD that BCBAs currently receive to bolster their initial training.

### *Continuing Education for BCBAs*

Once certified, BCBAs are responsible for completing 32 hours of Continuing Education Units (CEUs) every two years in order to maintain certification. These hours can be earned through learning (e.g. attending a workshop), teaching, or scholarship (e.g. publishing research) (Behavior Analyst Certification Board, 2022). The Professional and Ethical Compliance Code for Behavior Analysts (Behavior Analyst Certification Board, 2014) mandates that BCBAs maintain knowledge in their areas of practice; however, the BACB does not provide any further guidance or recommendations on the content or structure of continuing education (Bailey & Burch, 2016).

In a survey of 382 BCBAs, 71% reported that their place of employment offered ongoing opportunities for training and CEUs; however, 44% of these respondents indicated that the topics of training were not relevant to their practice. Additionally, the majority of opportunities provided were in a lecture or didactic format (DiGennaro Reed & Henley, 2015). PD offered in a lecture format without clear relevance to the learner

does not follow the framework for effective PD described above (Desimone & Garet, 2015).

There is a clear need for training for BCBAs that is provided in a way that adheres to the principles of effective PD. Because ASD is such a complex diagnosis with an ever-growing body of research, a training model that allows for ongoing training and collaboration is ideal.

**The Extension of Community Healthcare Outcomes (ECHO™) Model**

The ECHO model is a distance-based model for PD that utilizes multipoint video conferencing to create a learning community. The ECHO model was originally developed to link healthcare professionals in rural New Mexico with specialist care teams at the University of New Mexico to improve treatment for hepatitis C. Through participating in Project ECHO, primary care physicians (PCPs) were better able to manage patients with complex conditions (Arora et al., 2011). The University of Wyoming successfully adapted the ECHO model for use in education settings, demonstrating increased participant knowledge and overall participant satisfaction among early education and preK-12 educators (Root-Elledge et al., 2018).

The ECHO model consists of four key components: 1) the use of technology to leverage knowledge and resources; 2) didactic training; 3) case-based learning and co-management; and 4) rigorous outcome evaluation (Arora et al, 2014; Arora et al., 2011; Root-Elledge et al., 2018). Typically, individual sessions of an ECHO model include a brief didactic presented by a specialist or expert, followed by case presentations and discussion. This structure is consistent with the five key components for effective PD described above (Desimone & Garet, 2015) as well as established adult learning theories,

such social cognitive theory, that maximize application and retention of concepts (Taylor & Hamdy, 2013). The ECHO model goes beyond traditional lecture-based formats to provide opportunities for active learning that facilitate a "community of learning" (Arora et al., 2011).

### *Application to Other Fields*

Since its development in 2003 and subsequent adaption to the educational setting, the ECHO model has been extended to PD for the treatment of a variety of health conditions and behavioral and mental health diagnoses. (Arora et al., 2011, 2014; Mazurek et al., 2017; P. Nowell et al., 2020; Salvador et al., 2020). For example, the ECHO model was used to provide training to PCPs on best practices for treating substance abuse disorders including opioid abuse. These trainings focused on increasing the use of evidence-based medications as well as psychosocial supports as the standard treatment for substance abuse (Komaromy et al., 2016; Salvador et al., 2020). The Wyoming Institute for Disabilities, the Nisonger Center at The Ohio State University, and the University of Cincinnati Center for Excellence in Developmental Disabilities currently partner to provide ECHO model trainings with the purpose of increasing the skills and self-efficacy of providers of children and families who have been impacted by opioid use (*Project SCOPE*, n.d.).

The ECHO model has also been applied to the field of ASD. The University of Missouri developed ECHO Autism in 2015 in order to train health professionals in best-practice care for children with ASD (*ECHO Autism*, n.d.). Initially, ECHO Autism focused on providing training to PCPs on screening and identification of ASD and was successful in improving provider self-efficacy and appropriate screening practices

(Bellesheim et al., 2020; Mazurek et al., 2017, Mazurek et al., 2019). ECHO Autism has since expanded its scope beyond topics of screening to include diagnosis, treatment, and mental health comorbidity and has provided training for community-based psychologists, mental health clinicians, speech language pathologists, and occupational therapists (Buranova et al., 2022; Dreiling et al., 2022; Nowell et al., 2020). Over the last five years, ECHO Autism has demonstrated that the ECHO model can be an effective model for use in the field of ASD. As such, the ECHO model presents an opportunity to provide high-quality PD to BCBAs.

## Current Study

The current study examined the state of FCC in ABA and piloted an ECHO model training series for BCBAs working with individuals with ASD. This study was completed in two phases. In Phase One, focus groups were conducted with BCBAs and parents of children with ASD receiving ABA services to determine the current training needs of BCBAs. In Phase Two, ECHO model sessions were designed around the topics elucidated by the focus groups and delivered to BCBAs. BCBA self-efficacy, satisfaction, and self-evaluated delivery of family-centered care was evaluated. Additionally, parental stress and parental perception of family-centered care was evaluated. The following research questions were examined:

### *Phase One: Focus Groups*

#### Primary Question:

1. What are the current training needs of BCBAs?

### *Phase Two: ECHO for BCBAs*

**Primary Question:**

1. Do ECHO model trainings improve BCBA ratings of self-efficacy and delivery of family-centered care?

**Secondary Questions:**

2. To what extent do BCBAs perceive that they deliver family-centered care?
3. To what extent do parents perceive that they receive family-centered care from their BCBA?

**Exploratory Questions:**

4. What are the characteristics of BCBAs that benefit most from ECHO model trainings?
5. What are the characteristics of BCBAs that implement family-centered care prior to training?
6. What is the relationship between family-centered care and caregiver stress?

## Chapter 2. Phase One Methods

In Phase One of this study, focus groups were conducted in order to determine the current training needs of BCBAs, particularly needs related to the delivery of FCC, and to finalize the ECHO model training topics. Focus groups were completed with two groups of participants: 1) parents of children receiving ABA for ASD (parent groups); and 2) BCBAs providing ABA intervention to children with ASD (BCBA groups). The parent and BCBA groups were conducted concurrently with corresponding format, interview guide, and coding methods for the purpose of promoting comparison between the two participant groups.

### Participants

#### *Recruitment*

Parent and BCBA participants were recruited through home-based, school-based, and center-based ABA companies across the country. Participants were contacted through email by Kadiant, Breakthrough Behavior, and the May Institute. Each of these companies has several locations across the country, and families in the following states are served by one or more of these companies: California, Florida, Georgia, Maryland, Massachusetts, Ohio, Oregon, Ohio, Pennsylvania, Virginia, and Washington D.C. Each company sent a recruitment flyer created by the study team to their email distribution lists for parents and BCBAs. The flyer instructed those interested in participating to contact the research team for additional information and to complete a recruitment screening questionnaire if appropriate.

Content saturation typically occurs after two-three focus groups of six-ten participants each (Millward, 2000). As such, this study aimed to conduct six focus groups (three parent groups and three BCBA groups) of six to ten participants each, for a total of 36-60 participants. Three parent groups and three BCBA groups were initially scheduled with the option to recruit additional participants for additional groups if saturation was not reached (see explanation of content saturation below).

### *Inclusion Criteria*

**Parents.** Participants qualified for this study if they had a child between the ages of two and eighteen with a diagnosis of ASD receiving ABA intervention. The child's intervention team was required to include at least one BCBA. Confirmation of diagnosis and intervention relied on parental report. Participants needed to be fluent in English, as the focus groups were conducted in English. Participants were required to have access to technology needed to participate in focus groups (i.e. phone, tablet, laptop) and the Internet.

**BCBAs.** Participants qualified for this study if they were BCBAs providing ABA intervention to children with ASD. Participants were required to have at least one client on their caseload between the ages of two and eighteen. Confirmation of certification relied on BCBA report. Participants needed to be fluent in English, as the focus groups were conducted in English. Participants were required to have access to technology needed to participate in focus groups (i.e. phone, tablet, laptop) and the Internet.

## Procedures

The Institutional Review Board at The Ohio State University approved the procedures implemented for this study.

### *Recruitment Screening and Scheduling*

Interested potential study participants contacted this author directly via phone or email. A telephone recruitment screening was scheduled with all interested participants in order to determine eligibility for participation based on inclusion criteria. If participants completed the screening process and were determined to be eligible for participation, they were provided with an overview of the focus group process including informed consent. Those eligible and interested in participating were asked to provide their availability for each of three scheduled focus groups (three each for parents and BCBAs). Once all potential participants had been screened and provided their availability, participants were assigned to one of the scheduled focus groups based on their availability with the goal of having approximately equal group sizes. Additionally, stratified sampling was used for the parent groups in order to represent parents of the full age range of children in each group. At least one parent from each of the following strata was scheduled in each parent group: 1) parents of children aged 2-6; 2) parents of children aged 7-12; and 3) parents of children aged 13-18.

### *Consent*

All potential participants who completed the screening questionnaire and scheduled participation in a focus group were contacted one week prior to their scheduled focus group to complete the informed consent process. Participants received an email containing a link to an informed consent form on Qualtrics, an electronic capture system approved by The Ohio State University. Participants were instructed to review the informed consent form and contact the research team with any questions or concerns. Participants agreed to participate in the study by clicking "I agree" in Qualtrics.

### *Demographics Form*

Once participants consented, they were automatically directed to a brief demographics form on Qualtrics. The parent demographics form requested information regarding the parent's age, race, sex, state, and relationship to the child with ASD as well as their child's age, race, sex, and comorbid mental health diagnoses. The BCBA demographics form requested information regarding the BCBA's age, race, sex, state, and employer. The parent and BCBA demographics forms can be found in Appendices A and B respectively.

### *Interview Guide*

A semi-structured interview guide was utilized in order to lead focus group discussions. A semi-structured format allows the moderator to improvise questions, probe vague or unclear responses, and follow up on interesting topics (Millward, 2000). The theoretical framework for the parent and BCBA interview guide was based on the four core components of FCC (respect and dignity, information sharing, participation, and collaboration) as well as a review of the current training requirements for BCBAs, comparison of these training requirements to the pillars of FCC, and a literature review of identified training needs for BCBAs, as described above (Behavior Analyst Certification Board, 2020; Drahota et al., 2014; McClure et al., 2010; Nicholas et al., 2016). After this review, the following themes were identified as topics of questions to be included in the interview guides: communication, building relationships, collaboration, cultural sensitivity, parental stress, comorbid mental health diagnoses, and trauma-informed care. The interview guides for the parent and BCBA groups were complementary, addressing the same topics with questions tailored to the parent or BCBA experience. Additionally,

broad questions related to training needs were included for both groups, and questions related to overall satisfaction with care were included for parent groups. These questions were included for the purpose of capturing ideas and themes not addressed by the interview guides or identified by the literature review.

A parent group was held as the first focus group in order to allow for further refinement of the interview guide. Topics that emerged during this focus group that were not included in the interview guides were added to the guides for subsequent parent and BCBA groups. These topics included the diagnostic process, school transitions, and transition to adulthood. Finalized interview guides for parent and BCBA groups can be found in Appendices C and D, respectively.

***Implementation of Focus Groups***

Three parent focus groups consisting of a total of 16 participants (group sizes of five, eight, and three) and three BCBA focus groups consisting of a total of 10 participants (group sizes of four, four, and two) were conducted on CarmenZoom™ using a semi-structured focus group design. This format allowed the moderator to guide the discussion, facilitate interactions between group members, and elicit a variety of responses (Krueger & Casey, 2008; Millward, 2000). The moderator was a member of the research team with expertise in the areas of FCC and ABA (this author). Three additional members of the research team attended each focus group as facilitators and engaged in taking notes, moderating the chat feature included in CarmenZoom™ , providing technical assistance, and asking follow-up questions as needed. Expectations for participation were clearly described during the informed consent process and reviewed at the beginning of each focus group, with an emphasis on mutual respect and

confidentiality. Participants were encouraged but not required to have their cameras on for the duration of the focus groups. Participants had the option to add comments using the chat feature. Comments written in the chat were read aloud by a facilitator to ensure their inclusion in the audio transcript. Each participant received a $25 Amazon gift card in the mail following their attendance at a focus group.

Focus groups were audio recorded using CarmenZoom™ . A transcript of each audio recording was generated by CarmenZoom™ , and each transcript was reviewed and validated against audio from the recordings by a member of the research team to ensure accuracy prior to data analysis.

### *Saturation*

Content saturation occurs in focus groups when no new themes are identified in a group. Constant comparative methods were used to determine when saturation was reached for the parent and BCBA groups. Following the implementation of each focus group, the transcript was reviewed by this author and compared to previous transcripts, and a discussion was held with all focus group implementors. Implementors looked for the following as signs of saturation: (a) absence of contradictions (new data that contradicts previous data); (b) absence of expansions (new data that expands upon previous data), and (c) presence of support (new data that supports previous data). It was determined that saturation for the parent groups and BCBA groups was reached after three focus groups each.

## Data Analysis

Themes of the focus groups were determined using a two-step qualitative analysis as described by Joffe and Yardley (2004) and based on the Ground Theory of qualitative

data analysis first presented by Corbin and Strass (1990). Independent analyses using the same methods were completed for the parent and BCBA groups. Two independent coders completed all coding procedures with a third coder making decisions in the case of disagreement between the two primary coders. Coders were trained by a member of the research team with ample experience with this method of qualitative analysis (committee member/advisor). An expert in qualitative data analysis was consulted as needed.

### *Open Coding*

The first step of the qualitative analysis consisted of open coding, or categorizing the data. The two coders first reviewed one parent transcript to identify dominant themes and create corresponding definitions. Upon agreement by the two primary coders and with input from the third coder and committee member, these dominant themes were labeled as "codes," and their definitions were included in a codebook. Each transcript was subsequently imported into a spreadsheet for coding. The coders reviewed each transcript in succession and assigned one or more codes to each segment of text based on the definitions in the codebook. The coders discussed any emerging themes not previously identified and defined in the codebook, defining these new codes, revising the codebook, and reviewing prior transcripts to assign new codes as needed. Codes from the two primary coders were evaluated for agreement for each focus group. Disagreements were settled by the third coder. The process of open coding was subsequently repeated for the BCBA focus groups.

**Interrater Agreement.** Interrater agreement was calculated by dividing the number of agreements between the two primary independent coders by the total number of agreements and disagreements. This method of simple agreement was determined to

be more appropriate than more stringent reliability statistics (e.g. Krippendorff's alpha) for the following reasons: 1) Due to the large number of codes, the probability of agreement happening by chance is small; 2) The method of coding utilized in this study allowed for one text segment to have multiple codes, which is not compatible with complex methods of reliability calculation; 3) In order to calculate a statistic such as Krippendorff's alpha, it must be assumed that each code has an equal chance of being selected, which is not an accurate assumption for the current study; and 4) This study was exploratory in that there are no known studies examining the same topic in the same population, allowing for more amenable methods (Campbell et al., 2013; Gisev et al., 2013).

Interrater agreement was assessed for the two independent coders on all 476 parent text segments and all 576 BCBA text segments. For the three parent focus groups, simple agreement ranged from 65% to 71%, with an overall simple agreement of 66%. For the three BCBA focus groups, simple agreement ranged from 65% to 75%, with an overall simple agreement of 69%. A more detailed breakdown of agreements can be found in Table 1.

***Axial Coding and Selective Coding***

Axial coding was used to further analyze each code. The independent coders reviewed each code and corresponding text to identify subthemes for the parent groups. A discussion between the primary coders moderated by the third coder was used to determine agreement and finalize subthemes. This process was subsequently repeated for the BCBA focus groups.

Selective coding was completed as the final stage of analysis through discussion amongst all coders and the committee chair. The goal of selective coding is to assess the relationships amongst the various themes and subthemes. For the purposes of this study, selective coding focused on relating codes to the core components of FCC and will be described within the discussion.

Table 1. Interrater agreement for focus groups

| | **Parent Groups** | **BCBA Groups** |
|---|---|---|
| Group 1 | 65% | 70% |
| Group 2 | 75% | 65% |
| Group 3 | 71% | 75% |
| Overall Agreement | 66% | 69% |

# Chapter 3. Phase One Results

## Study Sample

A total of 27 parents responded to the recruitment flyer and completed the screening questionnaire. One parent was excluded because they did not have a BCBA on their intervention team. One parent chose not to move forward with participation due to the associated time commitment. A total of 25 parents were scheduled to participate in a focus group and completed the informed consent process. Two parents subsequently withdrew from the study due to scheduling conflicts, and seven parents did not attend their scheduled focus group without providing prior notice. A total of 16 parents therefore participated in focus groups.

A total of 15 BCBAs responded to the recruitment flyer and completed the screening questionnaire. One potential participant was excluded because they had not yet passed their certification exam. A total of 14 BCBAs were scheduled to participate in a focus group and completed the informed consent process. One BCBA subsequently withdrew from the study due to scheduling conflicts, and three BCBAs did not attend their scheduled focus group without providing prior notice. A total of 10 BCBAs therefore participated in focus groups.

## Participant Characteristics

Of the 16 parents that participated in focus groups, the majority were mothers (n=13) and white (n=10). Visual inspection of the parent age variable revealed one outlier. Further inspection provided evidence that the parent had erroneously entered the child's age, as the child and parent ages were identical for this case. Accordingly, this

case was excluded for analysis of parent age. The average age of the included parents was 39.6 (*SD*=6.9) and ranged from 26 to 53 years. The majority of parents had only one child receiving ABA intervention (n=14), although two participants reported having two children in intervention. The majority of children were male (n=11) and white (n=10). The majority of children did not have a comorbid mental health diagnosis (n=13). Amongst the three children with a comorbid mental health diagnosis, ADHD was reported twice, anxiety disorder was reported twice, and reactive attachment disorder was reported once. The following states were represented in the parent focus groups: California, Florida, Georgia, Ohio, and Oregon, with the largest number of parents living in California (n=7). Additional parent demographic information can be found in Table 2.

All of the 10 BCBA participants were white females. The average age of the BCBAs was 33.1 (*SD*=6.8), ranging from 26 to 44. Of the three agencies targeted during recruitment, Breakthrough Behavior had the largest representation in the focus groups (n=6), with Kadiant and the May Institute having three participants and one participant respectively. The following states were represented in the BCBA focus groups: California, Florida, Georgia, North Carolina, and Ohio, with the largest number of BCBAs living in Florida (n=4). Additional BCBA demographic information can be found in Table 3.

Table 2. Demographic characteristics of parent focus groups

| **Variables** | **Mean (*SD*)/n (percentage)** |
|---|---|
| Parent Age | 39.6 (6.9) |
| Parent Race | |
| White | 10 (62.5%) |
| Asian | 3 (18.8%) |

| | |
|---|---|
| Black | 1 (6.3%) |
| Hispanic/Latino | 1 (6.3%) |
| Other | 2 (12.5%) |
| Parent Sex | |
| Female | 13 (81.3%) |
| Male | 3 (18.8%) |
| Child Age | 6.0 (4.0) |
| Child Sex | 45.8% |
| Female | 5 (31.3%) |
| Male | 11 (68.8%) |
| Child Comorbid Mental Health Diagnosis | |
| None | 13 (81.3%) |
| ADHD | 2 (12.5% |
| Anxiety disorder | 2 (12.5%) |
| Other | 1 (6.3%) |
| State | |
| California | 7 (43.8%) |
| Georgia | 4 (25.0%) |
| Ohio | 2 (12.5%) |
| Oregon | 2 (12.5%) |
| Florida | 1 (6.3%) |

Table 3. Demographic characteristics of BCBA focus groups

| **Variables** | **Mean (*SD*)/n (percentage)** |
|---|---|
| Age | 33.1 (6.8) |
| Race | |
| White | 10 (100%) |
| Sex | |
| Female | 10 (100%) |
| ABA Agency | 6.0 (4.0) |
| Breakthrough Behavior | 6 (60%) |
| Kadiant | 3 (30%) |
| May Institute | 1 (10%) |
| State | |
| Florida | 4 (40%) |
| California | 2 (20%) |
| Georgia | 2 (20%) |
| North Carolina | 1 (10%) |
| Ohio | 1 (10%) |

**Themes**

Twelve code words were identified during open coding of the parent focus groups, and fourteen code words were identified for the BCBA groups. Each code word is briefly defined in Table 4, and the complete parent and BCBA codebooks can be found in Appendices E and F respectively. These codes are presented below as themes and were further broken down into subthemes during axial coding. Although qualitative analyses were conducted independently for the parent and BCBA groups, several themes were common to both groups. These overlapping themes will be described first, followed by the themes unique to the parent and BCBA groups respectively.

Table 4. Parent and BCBA codes

| Code | Brief Description |
|---|---|
| Identified barriers | Systemic or organizational barriers to treatment |
| Rapport/relationship building | Describes the relationship between the BCBA and parent or child and the process of building rapport |
| Communication | Bidirectional communication between the BCBA and parent |
| Family considerations | Structure, dynamic, or unique needs of the family |
| Parental stress/mental health | Stress or mental health issues/events experienced by parents |
| Transitions/future planning | Planning for major transitions or the future in general |
| Treatment goals | The process of creating treatment goals |
| Interdisciplinary collaboration | Collaboration between the BCBA and other professionals |
| Comorbidity | Comorbid medical or mental health diagnoses or symptoms in the child |
| Stigma | Stigma related to ASD or ABA |
| Child-centered actions | Examples of the BCBA acting in the best interest of the child |
| Incorporating others | Incorporating others (e.g. family) into intervention |
| Diagnosis | Diagnosis of ASD and the diagnostic process |
| Trauma | BCBA experience treating children with trauma history or experience with trauma-informed care |
| Training/education | Content of training or education received by BCBAs |
| Supervisor/superior influence | Influence of supervisors, mentors, agencies, teachers, or leadership on BCBAs |
| Training needs | Areas of training needs specifically identified by BCBAs |

### *Identified Barriers*

Both parents and BCBAs identified several systemic or organizational barriers that impacted access to or quality of ABA intervention received. Although there was some overlap amongst these barriers, there were several identified barriers that were unique to each group. Parents discussed barriers related to staffing, agencies. billing and insurance, accessing initial treatment, and Covid-19. BCBAs discussed barriers related to family characteristics, insurance, work-life balance, misperception of ABA, the attitude of the field, and Covid-19. Systemic barriers were intrinsically related to many of the other identified themes and will therefore be interwoven into later themes in addition to being presented comprehensively here. Interpersonal barriers will be discussed in other themes.

**Parents.** In terms of staffing barriers, many parents described experiencing high rates of staff turnover (including turnover of both BCBAs and behavior techs/RBTs), decreases in scheduled sessions due to lack of staff, and frequent cancellations. Parents identified that staff turnover impacted not only the number of hours of intervention, but also the quality of the intervention received by their child. One parent shared, "Every two months, we have changed one therapist or the other. The BCBA needs to train that therapist, and then the therapist needs to [get started] with that kid. So that causes a lot of disturbance to our kids." In addition to high turnover and a lack of staff, parents also identified a time-related barrier preventing BCBAs from properly supervising teams. One parent described a lack of a unified vision on the child's treatment team, while another directly identified that the BCBA did not have enough available hours to supervise all of the behavior techs on the child's intervention team. Parents often acknowledged how

these barriers place additional pressure on the BCBA, with many parents reporting that their BCBA would step in to cover sessions when there were cancellations, further reducing their availability to supervise other staff.

Parents also discussed agency or company-related barriers, such as varying rules, expectations, and "red tape." Several parents reported that their provider agency placed restrictions on contact between BCBAs and parents in ways such as prohibiting parents from acquiring their BCBA's phone number or limiting the amount of time a BCBA is allotted for parent communication. One parent explained how these forms of restrictions ultimately impact treatment:

> [The agency] limits her on how much she can communicate with me, and that makes it really a lot. It's basically like a business relationship. I get it. But it's a business relationship where this is my child, and because of his feelings and his behaviors and his mental well-being that we're working with, there needs to be a little bit of a gray area, not just black and white.

Other parents described encountering varying expectations among different agencies from which they had received services, creating confusion from parents as to what is expected of them and what they can expect from each agency.

Several parents described billing or insurance barriers that impacted their child's intervention. Multiple parents shared that they were unable to target preferred goals for their children due to restrictions placed by insurance companies on the type of goals that can be addressed in ABA intervention. Other parents described encountering service interruption due to logistical issues involving insurance or billing documentation. One parent shared that their child had lost services for over a month due to an error in

insurance filing by the billing department of the child's ABA agency. Other parents described insurance limiting the ability of their BCBAs to collaborate with school providers or provide services in schools.

A subset of parents discussed encountering barriers to initiating services. These parents discussed the time elapsed between receiving a diagnosis and beginning treatment as well as difficulty finding in-home providers.

In terms of Covid-19, parents described several direct and indirect effects that impacted intervention. The most commonly reported effect of Covid-19 was decreased hours due to staff and family illness. Parents also described how staff illness led to sessions with substitutes (staff members not typically on their child's treatment team) that were not familiar with their child's treatment and behavior plans. Some parents shared that their children experienced difficulty attending to virtual sessions, and others described difficulty accessing supplies used for intervention (e.g. program materials, toys, edible reinforcement).

**BCBAs.** Some BCBAs discussed that the families they served had needs that made it challenging to provide services or impeded services altogether. This included families being in crisis, families needing resources outside of ABA, or parents or client's themselves needing mental health support. Other families had needs related to processing an initial diagnosis of ASD. BCBAs described encountering families overwhelmed with the diagnosis and the many steps required following such a diagnosis. One BCBA described the challenges of serving a family new to the diagnosis: "I've had to not start with parent training, but almost start with coping with the diagnosis, getting them to reframe it… Rather than jumping right in to ABA, pump the brakes, go back to 'let's talk

about this diagnosis.'" BCBAs explained that this barrier could be further complicated by the insurance issues described below, as this type of interaction with parents is often not considered reimbursable.

BCBAs discussed many examples of insurance serving as a barrier to providing family-centered care. In addition to preventing BCBAs from being able to bill for helping parents to process and understand an initial ASD diagnosis, BCBAs reported that they felt like their services were limited by "billable time" or "reimbursable time." This directly impacted BCBAs' ability to complete family-centered actions. One BCBA described the pressure to meet billable hours guidelines: "You feel like your time is so precious, and if you're not billing, there's this pressure to be billing." Another BCBA described discussing the concept of rapport building with a Medicaid reviewer, who ultimately determined that this is not a reimbursable service. BCBAs also discussed how children with mental health needs were further limited by insurance. Goals that could be seen as associated with mental health as opposed to ASD were not approved, and hours were limited if a child's needs could be attributed to mental health.

BCBAs also identified the desire to achieve a work-life balance as an indirect barrier to intervention. BCBAs described struggling to answer emails or phone calls only at appropriate times, with many ultimately engaging in these activities outside of typical working hours. Others described the challenge of finding times for sessions or communication that fit with parents' schedules but were also within typical working hours. One BCBA described the struggle to achieve work-life balance while still providing family-centered care:

> Am I going to work after six or seven after I've been working since seven AM? And then there are parents calling after six or seven PM in crisis – do I answer the phone? It could be an emergency. I really find it difficult not to grab the phone at eight or nine PM.

Many BCBAs mentioned finding it difficult to set appropriate boundaries, and some BCBAs made the connection between lack of boundaries and eventual burnout.

Several BCBAs discussed how misperception of ABA serves as a barrier to intervention. Some BCBAs described experiences with parents who did not understand ABA or the role of parents in home-based ABA. One BCBA described encountering parents who perceived in-home sessions as a chance for the parent to get a "break," whereas the BCBA expected collaboration. Other BCBAs had similar experiences with teachers. Additionally, some BCBAs discussed how the field of ABA has earned a bad reputation, creating barriers to collaboration with parents, teachers, and other providers. One BCBA explained, "One of the big barriers to collaboration is looking past the learning history. If a provider has this negative history working with other BCBAs, it is going to impact our collaboration and we're going to have to undo some of that fear."

Some BCBAs identified ways in which the attitude of the ABA field as a whole can indirectly impact intervention received by families. One BCBA discussed their perception that the male dominance of the field serves as a barrier to progress in the field of ABA, thereby impacting treatment provided to families. A different BCBA described a reluctance to take issues that could be seen as "soft" to male supervisors. Other BCBAs described the field's "tunnel vision" for behavior at the exclusion of mental health components.

In terms of Covid-19, a barrier also described by parents, BCBAs discussed the ways in which Covid-19 impacted treatment. Families that were unable to afford technology were unable to access treatment during the initial stage of Covid-19. Several BCBAs described the difficulty of trying to problem-solve providing intervention for families that could not access technology or children for whom virtual sessions were inappropriate or ineffective.

### *Rapport/Relationship Building*

Both parents and BCBAs discussed the importance of the relationship between the parent and BCBA and the process of building rapport. As one parent explained, "The initial development of your professional relationship with the parents is crucial and will set the tone for the rest of therapy, so if you mess it up in the beginning… it's going to take a long time to bring them back around." Parent subthemes consisted of essential characteristics of a positive relationship, the importance of BCBAs' experience, the relationship between the BCBA and the child, and barriers to building rapport. BCBA subthemes consisted of establishing rapport early, the role of the intake process, partnership, demonstrating empathy, and billing.

**Parents.** Parents described several components necessary to develop and maintain a relationship between the parent and BCBA. One parent described these components as the "keys" to a positive relationship. They consisted of comfort, professionalism, respect, empathy, and support. Many parents described their desire to feel comfortable sharing personal family details and for these details to be received with professionalism from the BCBA. One parent explained, "It's nice to be able to be candid and not feel like you need to be guarded or careful about how to phrase things or what you put forward."

Parents also described their desire to have a BCBA with experience, both professional and personal. Some parents discussed the preference for BCBAs with more experience in the field with the "ability to make suggestions" and "try new things." This experience increased parents level of comfort with and trust in their BCBA. Other parents described connecting with their BCBAs over personal experience with ASD or other developmental disabilities. One parent explained feeling more empathy from a BCBA that had neurodivergent family members than other BCBAs. A second parent described feeling increased trust and comfort with a BCBA who had a child with ASD: "Her son was also on the spectrum, so it seemed like she kind of understood a lot more and was able to guide and share things with me. So it made me feel a lot more comfortable trusting her with my child."

Several parents discussed the relationship between their child and BCBA. Parents emphasized the importance of "fit" or compatibility of personalities, with some identifying that their child made more progress when they had good rapport with their BCBA. Many parents described examples of BCBAs demonstrating genuine care for their child. One parent explained, "She truly cares about our son plain and simple. He has had lots and lots of people in his life give up on him, and she will not and has not given up on him."

Finally, parents discussed barriers that prevent the development of a positive relationship. One parent described feeling that the BCBA focused on the negative aspects of the child and placed blame for lack of progress on the child. Other parents described a lack of understanding of what the relationship between parent and BCBA should be, finding it difficult to balance the need for professionalism with the personal nature of in-

home treatment. Some parents provided examples of lack of communication or responsiveness from their BCBA that negatively impacted their overall relationship. One parent explained, "The lack of meaningful response to my questions and emails just kind of left me questioning the whole relationship with [my BCBA]." Other parents described previously identified agency-related barriers as directly impacting the relationship, identifying limits on communication as a specific barrier to rapport.

**BCBAs.** BCBAs emphasized the importance of building rapport from the very beginning of treatment. When asked when they begin trying to establish rapport, many BCBAs answered that rapport starts from the first interaction with the family. Others discussed the importance of explaining the nature of the relationship between team members and parents from the beginning of treatment, a process identified as lacking by parents. One BCBA described the content and importance of this process:

> What is the role of the parent? What is the role of the BCBA? What is the role of the RBT in this relationship that we have? Because really it's a relationship... Making sure that they understand that and reinforcing that throughout is incredibly important, because that misunderstanding can cause a lot of problems.

A related subtheme was the role of the intake process in establishing rapport. BCBAs reported that building rapport is better facilitated when they are responsible for completing the intake process with the families themselves. Conversely, when a designated person or group of people at the agency complete intakes, BCBAs felt they had missed an opportunity to begin building the relationship.

BCBAs discussed the role that parenthood plays in building rapport. In general, BCBCAs agreed that relationships with parents were enhanced when the BCBA was a

parent themselves. One parent described the ability to connect with parents based on personally having a child with autism, aligning with discussions held by the parent group. Other BCBAs described that having a neurotypical child also helped to facilitate rapport. Some BCBAs who were not parents found that this could serve as a barrier to establishing connections with parents, while others felt that the commonality of parenthood was not a requirement for building a relationship.

Several BCBAs described a shared philosophy of treating parents as collaborators or partners in the relationship. One BCBA explained that they had gained this philosophy over time and experience in the field. Another BCBA described this as "collaboration building" rather than "relationship building."

Some BCBAs discussed intentionally demonstrating empathy as a way to bolster relationships with parents. Several BCBAs mentioned taking the perspective of the parent or acknowledging their lives outside of the world of intervention. When discussing the importance of empathy, many BCBAs mentioned parental stress, a concept further described in a later theme.

BCBAs expanded upon the discussion of barriers to intervention to explain how billing barriers directly impact their ability to build rapport. One BCBA explained the challenge of balancing billable time with rapport building:

> A barrier that I have been struggling with is the billable time versus rapport building… Just like any company, we have a billable minimum. We need to make money to survive, but I struggle with trying to split my time and do [billable work] and then also giving parents that time.

This sentiment was echoed by many BCBAs who acknowledged the importance of rapport and relationship building but felt pressured to omit or accelerate this step for billing purposes.

### *Communication*

Communication emerged as a theme related to but distinct from rapport/relationship building for both parent and BCBA groups. Participants discussed many aspects of bidirectional communication between the BCBA and parent. Parent subthemes consisted of frequency of communication, responsiveness of the BCBA, in-home communication, interpersonal communication, team communication, and barriers. BCBA subthemes consisted of having difficult conversations, initiating communication, and barriers.

**Parents.** For the majority of subthemes, parent experiences were often disparate, with some parents reporting positive experiences communicating with their BCBA and others reporting significant challenges to communication.

In terms of frequency of communication initiated by the BCBA, parents repeatedly reported having difficulty maintaining contact with their BCBA. One parent described being "shocked" at how infrequently they received communication from their BCBA. Another parent explained, "Unless I reach out to [the BCBA], I don't hear from her." However, some parents described feeling satisfied with their frequency of communication.

In terms of responsiveness, some parents reported feeling frustrated by an overall lack of responsiveness from BCBAs. Multiple parents used the term "squeaky wheel" to describe themselves, illustrating the need to reach out to their BCBA repeatedly in order

to get the response they wanted or needed. However, other parents reported experiencing an acceptable or excellent level of responsivity from their BCBA. Some parents described scenarios in which they held high expectations of responsiveness. One parent described calling her BCBA during dinnertime with the expectation that they would answer. Another parent explained that they expected same-day responses to phone or email communications.

Parents also discussed how having in-home intervention impacted communication with BCBAs. Some parents described that having their BCBA present in the home facilitated communication by providing built-in time for the parent to ask questions, get feedback, and discuss progress and goals. Other parents reported that their BCBA opted for monitoring sessions virtually rather than being physically present in the home, decreasing opportunities for direct communication. One parent described feeling that the BCBA "wasn't responsive or engaged" when monitoring sessions remotely.

Some parents discussed the interpersonal aspects of communication with BCBAs. While some parents described feeling comfortable communicating concerns to their BCBA, others felt that communication from their BCBA was lacking in interpersonal quality altogether. For example, one parent explained feeling that their BCBA only communicated about "business" and did not check in on the overall wellbeing of the family or child.

Many parents expressed concern that inadequate communication amongst the intervention team as a whole was leading to a lack of cohesion in treatment. One parent shared how an increase in the size of the treatment team led to poor communication: "We were a smaller team [previously], and the regular communication with the BCBA led to

really clear working on our vision. But now, with so many behavior techs on different days, I'm seeing a lot less communication and a lot less working toward the same goals."

Finally, parents again discussed barriers as they impact communication with BCBAs. The "red tape" mentioned in the Identified Barriers theme specifically impacted parents' impression communication. One parent described how agency rules negatively affected their ability to communicate with the BCBA about their child:

> The rules make it hard… You can't have their phone number, you can't contact them. How am I going to know what's going on with my child if I don't contact you? It's not like I'm trying to abuse my relationship with you, I just need your number to know if my son's okay.

This sentiment was echoed by several other parents.

**BCBAs.** Many BCBAs described having difficult conversations with parents and their desire to have more training to prepare for these conversations. BCBAs discussed feeling uncomfortable discussing certain topics, such as parental stress, the future, and trauma, all themes discussed in more detail elsewhere. They often described feeling like they were outside of their scope of practice when engaging in these types of conversations. One BCBA explained "I was taught in school that we just kind of try to avoid those conversations as much as possible and when we're not able to avoid them, you redirect and stay within your competence." Some BCBAs described role playing with supervisors or other BCBAs as a strategy for preparing for difficult conversations. Overall, BCBAs described a lack of training related to interpersonal communication skills and expressed a desire to receive more training on communicating effectively with parents on difficult topics.

Many BCBAs discussed strategies for having initial conversations with parents and expressed that these initial conversations set the tone for future conversations. Some BCBAs discussed initiating communication with parents prior to the first meeting. One BCBA described using an email template to introduce themself to parents. Other BCBAs described the importance of asking for parental preferences regarding communication during their first interaction with the parent. One BCBA shared that they routinely ask parents their preferred form of communication, communication style, and the best way to contact them during their first meeting.

Like parents, BCBAs discussed barriers to positive and effective communication. Some BCBAs described finding it difficult to communicate effectively with parents due to language barriers and reliance on translators. Other BCBAs described the risk of miscommunication when using written modes of communication such as email. Many BCBAs discussed their struggle to set appropriate boundaries for communication, aligning with the description of some parents of their high expectations for communication. One BCBA shared:

> I've had parents text me at eight o'clock at night, 10 o'clock at night, five AM. Setting those boundaries and making sure that communication is a time that works for both of us… Then it's not impeding on our own personal lives because we're always responding to emails or answering their phone calls.

BCBAs also acknowledged that finding time to communicate can be difficult for parents as well, with parents often balancing several time commitments.

### *Family Considerations*

Within both parent and BCBA groups, the theme of family considerations emerged and consisted of the various ways in which the structure, dynamic, and specific needs of the family impacts and shapes intervention. There was significant alignment between the parent and BCBA subthemes, with the two groups identifying similar considerations. Parents discussed the various factors that make their family unique. While some parents expressed that their BCBA appropriately recognizes and addresses these factors, others indicated that their family characteristics were not adequately considered. BCBAs focused on the ways in which the unique structure and needs of each family impact treatment. Both groups discussed the importance of considering these needs when planning and implementing intervention. Parent subthemes consisted of the ASD diagnosis, sibling considerations, family support, family culture, and stressful family events. BCBA subthemes consisted of assessing for family needs, factors to consider when treatment planning, family structure, the ASD journey, and flexibility.

**Parents.** Many parents discussed factors related to their child's diagnosis of ASD. They shared how the timing of their child's diagnosis (e.g., a young child beginning early intervention versus an older child) impacted their readiness and preparation for ABA. Some parents shared that their BCBA helped them to understand and process the diagnosis, with one parent explaining, "I'm still learning as we go how to be the type of parent he needs me to be, and the BCBA has helped me with that." Other parents expressed a desire for more information from their BCBA about what a diagnosis of ASD means and what to expect from ABA. Some parents discussed their willingness to share their child's diagnosis with others, such as extended family members, teachers, and peers.

One parent shared that their BCBA was careful to protect the child's privacy when providing services in the classroom. A subset of parents shared that their partner did not initially accept their child's diagnosis or need for intervention. One parent described how the BCBA helped them to navigate the initiation of ABA when the child's father did not feel that treatment was necessary by incorporating the father into sessions and emphasizing the child's progress.

Some parents described how having multiple children impacts intervention. For some parents, it was important that their other children were incorporated into intervention. For example, one parent described how their BCBA developed a goal for their child focused on acclimating to a new baby sister. Other parents described siblings being incorporated into play programs or breaks. Some parents shared that they had multiple children receiving treatment for ASD or other developmental or mental health diagnoses. One parent described having a different BCBA for each of their two children with ASD. This parent appreciated collaboration and open communication between the two BCBAs.

Parents discussed their support systems, describing variations in the size and scope of this support. While some parents described having extensive network of support people that assist with their child's needs, others shared that they did not have any support outside of the intervention team. One parent explained that their BCBA understands their family's unique structure: "We do not have any support in the area. Our family is out of state or estranged, we have one child, and we're older parents. I think she gets our challenges. I think she understands our dynamic pretty well."

Many parents described ways in which their family's culture was relevant to their child's intervention. One parent shared that speaking Russian was extremely important to their family, and the BCBA supported this cultural preference by incorporating Russian elements into sessions. Another parent described feeling that each of the BCBAs they have worked with have shown "grace" related to their partner's diagnosis of ASD. One parent addressed how standardized assessments utilized by BCBAs can fail to account for cultural differences, explaining that because of their culture's practice of feeding children long into childhood, their child often scores low on self-help assessments given by the BCBA that are not culturally sensitive.

Finally, parents discussed how the stresses of daily life or significant family events can impact treatment. One parent shared that their child's chronic sleep issues impact the family's overall functioning. A small number of parents shared that the loss of a family member had temporarily impacted their family and their child's participation in intervention. One parent described how the loss of a family member was not taken into consideration by the BCBA: "My father passed away unexpectedly. There hasn't really been any sort of conversation about how that's going, how that's affected [my son] even. I'm assuming that they've just assumed that he's fine, but there's no real addressing the situation."

**BCBAs.** BCBAs emphasized the importance of assessing for unique family qualities and needs from the initiation of treatment. Many BCBAs described incorporating questions related to culture, preferences, family dynamic into the intake process. Some parents described the need to "meet parents where they are" before beginning ABA.

BCBAs identified several factors that they have encountered that have impacted their approach to implementing services. Some BCBAs had experience with children in foster care and acknowledged the unique stress that these families experience. One BCBA shared that their approach was individualized to the mental health needs of the parent: "I worked with parents who had autism themselves or other mental health issues that would make how I trained a little bit different depending on the special needs of the caregiver." Other BCBAs discussed how socioeconomic status can impact a family's ability to fully access treatment. One BCBA described how their company made efforts to provide funding to families to purchase computers during the Covid-19 pandemic to access virtual sessions.

BCBAs discussed how the structure and dynamic of each family shaped their decision to involve others in treatment. Some BCBAs had experience working with families in which the grandparents spent a significant amount of time caring for the children and therefore incorporated grandparents into sessions. Many BCBAs described incorporating siblings into sessions, aligning with descriptions from the parent groups. One BCBA described their philosophy on FCC and how it should impact the involvement of family in treatment:

> It's really involving the family in every aspect of therapy, involving them in our day-to-day sessions, involving them in the goals that are selected. But also ensuring that they're the center. Of course the child is the center of the care, but they're the people who provide the service, provide the assistance. And they implement our strategies, so I think it really just surrounds the entire family as a whole, because the child is one unit that is a part of their entire family.

Similar to parents, BCBAs acknowledged how the family's diagnostic journey impacts intervention. BCBAs discussed the timing of the diagnosis, the family's knowledge of ABA and ASD, and the acceptance of other family members as factors to consider, aligning with descriptions provided by parent groups. BCBA discussions related to diagnosis will be discussed in more detail within the "Diagnosis" theme.

BCBAs discussed the importance of being flexible as a strategy necessitated by variations in family characteristics and needs. Some BCBAs identified scheduling as an area in which flexibility can be crucial, describing offering options for session or meeting times, length of meetings, and modes of communication (e.g. virtual, in person, phone calls). Other BCBAs discussed the importance of making treatment goals or setting expectations that are "manageable" for parents and making adjustments when necessary. One BCBA shared, "I'm always trying to gauge, 'How do you feel about this, is this something you could manage with everything else that you know going on?' And then if not, what modifications can we make?"

***Parental Stress/Mental Health***

The theme of parental stress and mental health was prominent throughout both parent and BCBA groups, consistently commanding a substantial portion of each focus group. Parents discussed their sources of stress and reflected on their BCBA's ability to address stress, while BCBAs discussed their level of comfort addressing parental stress. Parent themes consisted of child-related stressors, stressors unrelated to the child, ABA-related stress, diagnosis, empathy, checking in with the BCBA, and lack of support. BCBA themes consisted of checking in with the parent, ABA-related stress, the impact of

parental stress on treatment, barriers to addressing parental stress, and strategies for addressing parental stress.

**Parents.** Many parents identified stressors related to the child with ASD. For example, one parent shared anxiety related to the future of the child once they and their partner passed away. They said, "If he goes to family when we die, they might not welcome him the way we have. It's stressful, it's scary, and it makes us sad." Parents also identified sleep issues and problem behaviors as child-related sources of stress.

In addition to identifying child-related stressors, parents also discussed sources of stress that were unrelated to their child with ASD. Examples included having a newborn child, experiencing deaths in the family, sleep issues present in other family members, and parent work schedules.

Parents also described ABA intervention itself as a source of stress. Parents frequently discussed the impact of having therapists in their home and the associated pressure. One parent explained,

> I feel like I'm basically naked all the time. Everybody is seeing all the ugly pieces. There's no escaping the fact that this place is not being run very well... I can't keep up with the laundry, I can't keep up with the cleaning. It is an embarrassing terrible awful mess all the time.

Other parents shared this sentiment, describing the pressure to be "on" or "together" when the BCBA was in the home.

Many parents mentioned the stress related to the diagnostic process. Parents described difficulty obtaining the initial diagnosis, the experience of "grief" associated with the diagnosis, and challenges navigating services and therapies following the

diagnosis. Multiple parents described struggling to access behavioral intervention following an initial diagnosis. Parents also described a desire for their BCBA to provide more support at the beginning of treatment in terms of knowing what to expect from the diagnosis and from ABA intervention. One parent explained:

> For new parents when things get started, I think there's a lot more hand holding needed. I would have appreciated if our BCBA would have done it at that point in time. There's a lot of information on the internet. If you don't get the right guidance, you start reading all of those and then the mind goes in circles.

Many parents described the importance of feeling a sense of empathy from their BCBA. Some parents provided examples of their BCBA demonstrating empathy. However, many parents reported a lack of empathy and described a desire to experience more empathy. Many parents described feeling "judged" by their BCBA. One parent described:

> I don't get a lot of empathy from her. As great as she is - she's really smart and she knows the answer to anything - but she is not empathetic. I feel like she holds us to a standard, and sometimes I feel like I'm not reaching that standard. I feel like sometimes I'm being judged more than supported.

Other parents reiterated the sense that the expectations being placed by the BCBA were too high.

Parents described the extent to which their BCBA "checked in" on their stress. Some parents described that their BCBA routinely asked about their stress levels at the beginning of sessions or through email or phone communication. Other parents reported that their BCBA did not check in on their stress levels on a regular basis, with a small

number of parents reporting that their BCBA had never checked in about stress. One parent shared,

> I've kind of gotten to a point where I become a little bit unhinged in my stress and I just kind of explode, vent to her, and that's the only time we've really touched on my stress levels. It's not really like a check in, like 'How are you doing.' There's none of that unless I address it. And then I always feel kind of awkward in that moment too. Because I feel like oh, she doesn't want to hear that. And then I just kind of quickly scoop it back in and glaze it over.

Parents who did not experience check-ins consistently reported a desire for check-ins.

Some parents described lacking external support to effectively manage stress. One parent shared that they had no one outside of their partner to help carry the burden of stress. Other parents mentioned family members being unaware of the diagnosis of their child or not accepting the diagnosis. Multiple parents shared that their BCBA is the only ASD-related support they have. One parent suggested that ABA agencies should facilitate more support for parents to manage stress, for example by organizing group outings or get togethers for parents.

**BCBAs.** BCBAs discussed the importance of checking in with parents on stress levels. Many BCBAs described using the beginning of sessions with the child or parent training sessions to ask about the parent's well-being. One BCBA described always asking parents "How are you?" and "What do you need from me?" at the beginning of sessions.

Many BCBAs acknowledged the stress that ABA intervention can add for a parent, mirroring the sentiments of the parent groups. BCBAs acknowledged that finding

time to meet or devoting time to an intensive program or intervention can be stressful for parents. One BCBA felt that interacting with BCBAs can be "aversive" for parents when they have many other priorities. Other BCBAs described feeling empathy for parents related to having clinicians in their homes during times of vulnerability.

BCBAs discussed barriers they encountered to addressing parental stress. Some BCBAs did not feel comfortable having conversations related to stress or felt that topics related to parental stress were out of their scope of practice. One BCBA shared,

> My comfort does not lie in checking in with a parent and getting on that personal level when it comes to their stressors and what's going on. There are parents who I can tell that they're kind of stressed out or very anxious about something, and it's not my first nature to just try and talk about that with them or check in with them. There's times when I want to initiate that [conversation], but we've been taught to make sure that we're within our scope of practice.

Other BCBAs returned to the discussion of productivity requirements or reimbursable time as a barrier to addressing parental stress.

BCBAs also discussed the ways in which parental stress impacted their implementation of treatment. This involved changing the intensity of behavior plans or programs, decreasing hours, or postponing treatment. One BCBA discussed an extreme example of ending services due to the significant mental health needs of the parent.

Many BCBAs shared strategies they have developed for positively responding to parental stress. Some BCBAs described validating the emotions and frustrations, while others have tried helping parents focus on progress their child is making. Often BCBAs mentioned being flexible with parents regarding scheduling or interventions as a strategy

for reducing stress. One BCBA described taking the perspective of the parent when making scheduling decisions: “Because the parent is so stressed out, meeting for an hour a week might not be realistic. I have to put myself in their shoes, and if the meeting has to be 15 or 30 minutes to start, that’s the route we’ll take.” One BCBA described using the Parenting Stress Index (PSI) to asses if their strategies for reducing parent stress are effective.

### *Transitions/Future Planning*

Parent groups discussed school transitions and the transition to adulthood and the ways in which their BCBA facilitated these transitions, while BCBAs discussed the importance of discussing the future throughout intervention. Both parents and BCBAs discussed the issue of finding the balance between focusing on the present and planning for the future. Parent subthemes consisted of school transitions and transition to adulthood. BCBA subthemes consisted of planning for adulthood, future considerations, determining if a parent is ready to discuss the future, and working with parents who want predictions about the future of their child.

**Parents.** Parents discussed their children transitioning to pre-school, kindergarten, and high school. Some parents described ways in which their BCBA supported them during school transitions, such as providing input on school-related decisions or collaborating with schools to facilitate the transition. Other parents described a lack of support during school transitions and a desire for more from their BCBA. One parent felt that their BCBA did not recognize her role in supporting the transition.

Parents discussed future transitions, such as to adult services and transition of guardianship. Some parents reported that they had not yet begun to plan for the future and preferred to focus on the present. One parent shared,

> My kid is nonverbal… they don't understand emotions, they are not able to communicate. They are not progressing every day, so it really becomes a moot point to discuss long term or will they graduate or will they make a career. I cannot think of having a long-term goal when I look at current progress.

Others expressed experiencing anxiety related to future transitions and the desire to begin planning early. In terms of discussing the future with BCBAs, parents were largely divided between those who wanted to have discussions about the future and those who wanted to avoid these discussion in favor of focusing on the present. Some parents experienced conversations with their BCBA about the future in which they did not wish to participate, while other parents described a desire for their BCBAs to initiate these conversations. One parent explained:

> I would expect more conversations to be had about [my child's future], but… the theme is still very much the present. I know they're not fortune tellers, they're not going to be able to predict the future of my child. I get that. But I don't really feel like conversations [about the future] are being addressed. Like what does graduating ABA look like?

Overall, opinions and experiences related to future-planning varied greatly from parent to parent.

**BCBAs.** BCBAs discussed the importance of planning for adulthood early on in the treatment process. One BCBA shared that they begin talking about the future from

"day one.," and others emphasized the importance of ensuring that the goals of the parents align with the goals of the BCBAs or treatment goals.

BCBAs discussed the challenge of identifying if parents are willing or capable of thinking about or planning for the future, reflecting the inconsistency among the parent groups on preferences for these discussions. One BCBA explained that they make decisions regarding holding future discussions based on what they believe the parents can handle at the time:

> That depends on where the family is right now. Did they just get the diagnosis? Do we want to talk about kindergarten or do we want to just work on making sure that we can ask for what we want and we can go in the car without a tantrum? If that's all they need right now, let's just sit with that.

Finally, some BCBAs discussed struggling to have discussions with parents who ask them to "predict the future." They shared examples of facing difficult questions such as "Will my child ever talk?" or "Is my child going to go to college?" and feeling unprepared to offer appropriate answers.

### *Treatment Goals*

Parents and BCBAs both discussed the process of treatment planning and setting goals. Parent subthemes consisted of the goal creation process, content of goals, monitoring progress, and barriers to treatment goals. BCBA subthemes consisted of incorporating others, assessment, time frame for goals, disagreement related to goals, and medical necessity.

**Parents.** When asked about treatment goals, many parents shared the extent to which their BCBA involved parents in the process. The majority of parents described at

least some collaboration during this process. Some parents were highly involved in goal setting, sitting down with the BCBA to discuss their preferences. Other parents were asked to add input or approve goals already developed by the BCBA. Parents described the importance of this collaboration for increasing their comfort with their BCBA and providing agency. After describing how the BCBA includes the family in decisions surrounding treatment goals, one parent explained, "That makes me feel like I'm part of it, and it makes me feel confident that I have a good agency." Some parents provided examples of BCBAs involving their child in the process of creating goals. These were often parents of children approaching the transition to adulthood, and they consistently expressed positive sentiments related to this involvement. Although parents communicated overwhelmingly positive examples of being involved in treatment planning, a small subset of parents expressed a desire for more guidance from their BCBA with regards to appropriate goals to target. As one parent explained,

> I really was more looking for her to advise… developmentally. 'CDC guidelines say your child should be here… these are the milestones.' Instead of making me come up with the list… I was looking for more of a perspective from her, so that would have been a lot more helpful.

Parents discussed the content of goals in terms of the length of goals (long-term versus short-term) and the focus of goals. Some parents shared that their child's treatment was focused more on the short-term, while others described the inclusion of at least one long-term goal in their child's treatment plan. Parents expressed a variety of preferences related to this topic as described in more detail in the "Transition/Future Planning" theme. Parents also shared examples of goals and if they felt that the focus of these goals

was satisfactory or appropriate. Some parents were satisfied with the relevance of their goals to everyday life. For example, parents mentioned goals related to potty training, communication, adaptive skills, and career-oriented skills. Other parents felt that the focus of treatment goals was not aligned with their own preferences or functional for their child's life. One parent provided the example of labeling furniture: "One of the goals he's working on right now is labeling pieces of furniture… I guess it's relevant information, but it's not something that I asked for or care about."

Parents also discussed how frequently BCBAs involve them in discussions related to progress made toward goals. Some parents described engaging in these types of conversations at set intervals, such as once a month, and others described ongoing conversations evaluating progress. One parent described the ability to monitor progress at their discretion using technology. However, some parents reported that they were not involved in consistent conversations related to progress, and one parent reported feeling that goals were not being updated appropriately according to their child's progress.

As with many other themes, parents discussed barriers that specifically impact treatment goals. Some parents mentioned that they did not feel that their treatment team was working cohesively toward the same treatment goals. One parent explained, "I'm seeing a lot less structure and a lot less working towards the same goals. It doesn't feel like a unified plan, and certainly not one that matches our priorities." Parents again mentioned the impact of insurance barriers. Many parents communicated that the timing of evaluations and setting of goals were dictated by insurance rather than the preferences of the family, and a small number of parents expressed the notion that insurance companies "interfere" with treatment goals.

**BCBAs.** BCBAs discussed the various people they may choose to include in the process of treatment planning. Many BCBAs described incorporating parents in a collaborative way, for example by asking for their input on priorities or the feasibility of potential goals. Some BCBAs described including other family members who have a large role in the child's life, such as grandparents or siblings. A subset of BCBAs also provided examples of including their clients themselves in goal setting. One BCBA described the strategy of asking older children "What is something that you want to do better?"

They also described ways in which they use assessments to help guide treatment planning and goal setting. Some BCBAs shared that they used standardized skills assessments, while others had developed their own, less formal skills assessment. Many BCBAs described using the information obtained during the initial intake to shape goals moving forward.

BCBAs discussed balancing long-term and short-term goals. Some BCBAs described encountering parents that wanted to focus on long-term goals. In these instances, BCBAs helped parents to understand why short-term goals are necessary and important for their child's progress. Other BCBAs explained that they will help break down the longer-term goals of parents into more attainable short-term goals.

They also discussed instances in which their ideas for goals did not match with ideas held by parents. In some cases, this was due to the parent's desire for their child to appear "normal" or expectations that the BCBA felt were unrealistic. BCBAs described varying levels of comfort in discussing these disagreements related to goals with parents. They also discussed some strategies for settling disagreement. One BCBA described

falling back on social significance when encountering differing opinions from parents, explaining to parents, “Let’s discuss the social significance… [If] the child’s not toilet trained but [parents] want to target scripting, I’m always going to pick toileting over scripting.”

Finally, many BCBAs mentioned that insurance plays a role in treatment planning, echoing discussions held by parents. They discussed the medical necessity requirements held by insurance companies, causing BCBAs to ensure that goals are directly related to the autism diagnosis and cannot be interpreted as pertaining to other diagnoses.

### *Interdisciplinary Collaboration*

Parents and BCBAs discussed their perception of interdisciplinary collaboration in ABA, describing the collaboration between BCBAs and other professionals, including teachers, speech language pathologists, occupational therapists, medical providers, and psychologists. Parent subthemes consisted of the benefits of interdisciplinary collaboration, school collaboration, and barriers to collaboration. BCBA subthemes consisted of the importance of collaboration, types of collaboration, mental health, boundaries of competence, and the reputation of ABA.

**Parents.** Many parents emphasized the value of the role of interdisciplinary collaboration and the importance of the BCBA actively pursuing this collaboration. They identified several benefits of collaboration, most frequently describing the alignment of goals for their child. They also identified that collaboration between providers takes the burden of sharing information off of the parents. One parent explained, “There's a lot of exchange of information. It's helpful, especially for the parents. You get tired of kind of

repeating the same things over and over again, and it's easier when you can share information without having to explain it." Many parents also described feeling that their BCBA advocated for the needs of their child to other providers.

The type of collaboration most frequently discussed by parents was that between BCBAs and teachers or other school staff. Parents described BCBAs collaborating with schools in a variety of ways, including attending IEP meetings, developing goals for school, and training teachers on behavior plans.

Parents also described barriers that prevent collaboration altogether. Some parents reported that their state does not allow home- or clinic-based BCBAs to provide services in school. Other parents shared examples of insurance companies refusing to cover overlapping services, such as a speech therapy session joined by the BCBA for behavior support.

**BCBAs.** BCBAs discussed their experiences collaborating with a variety of other disciplines, including occupational therapy, speech therapy, mental health counseling, and schools. They discussed the importance of interdisciplinary collaboration and the emphasis on collaboration in their training. Many described learning the importance of collaboration in their training programs, and some shared the perspective that the field of ABA values collaboration. One BCBA shared:

> This is something that's been ingrained for me from the start. ABA is one discipline, there's so many other areas that need to be involved in the client care. In my program specifically, we were taught [that] a collaborative approach is the best approach.

BCBAs also shared the ways in which they engage in interdisciplinary collaboration, including selecting goals and incorporating strategies from other disciplines. One BCBA described asking for input from all disciplines involved in their clients' care when creating goals. A second BCBA provided examples of integrating coping skills taught by a mental health provider into ABA sessions.

Mental health counseling or treatment was the discipline most frequently discussed by BCBAs. They consistently reported their desire to collaborate with mental health professionals for clients with comorbid mental health diagnoses or trauma histories. Multiple BCBAs described relying on the input of a licensed professionals in the mental health field and provided positive examples of gaining valuable insight into the needs of their clients.

BCBAs also discussed the concept of professional boundaries. Some described the importance of recognizing their own boundaries and identifying when they are outside of their scope of practice. Others discussed the difficulty of defining boundaries when two disciplines are closely related. One BCBA explained, "Often it's hard when we're both working on similar things. I want to collaborate but also stay in my own lane. You [the speech language pathologist] are the professional with the speech knowledge and devices." Some BCBAs shared experiences in which they felt that they were being asked to overstep their boundaries by other disciplines, for example being asked to direct skill-building during speech or occupational therapy rather than focusing on providing behavioral support.

BCBAs discussed challenges they face when collaborating with other disciplines due to the reputation of behavior analysis or negative experiences that professionals have

previously had with BCBAs. Many BCBAs described having to overcome this reputation when beginning a collaborative relationship. One BCBA explained,

> Some professionals, based on their past experiences with ABA, just wrote me off completely from the very beginning. You see written than we're cold and we don't show a lot of compassion. I think that's kind of a general perspective across the board for our science unfortunately.

They also discussed strategies they have developed for overcoming the negative connotation of ABA and fostering positive collaboration, including focusing on rapport-building, being respectful, and sharing data as a way to demonstrate the desire for collaboration. One BCBA described the strategy of being honest about the reputation of ABA, sharing,

> I call the elephant out initially, if I sense that someone has had a negative experience with ABA. I'll say, 'Yeah, behavior analysts can be a real piece of work.' That tends to help people align more closely with me and my viewpoints.

***Comorbidity***

Parents and BCBAs discussed a variety of comorbid mental health and medical diagnoses and how they impact intervention. Parents in our focus groups had children with medical, mental health, trauma-related, and language disorders. BCBAs had experience working with children with a variety of mental health diagnoses (anxiety, ADHD, post-traumatic stress disorder, and schizophrenia), and multiple BCBAs shared experiences with clients who had frequent seizures. Parent subthemes consisted of the benefits of ABA for other diagnoses and how their BCBA addresses diagnoses. BCBA

subthemes consisted of level of comfort, importance of collaboration, misconceptions of ASD and mental health, and how they address diagnoses in treatment.

**Parents.** Parents of children with comorbid diagnoses described a positive impact of ABA on their child's diagnoses outside of ASD. Some identified the potential for ABA to effectively treat other disorders. One parent explained the impact of ABA on a child with complex needs:

> Call [the diagnosis] anything you want to call it if it gives me a way to help her. I think that BCBAs have been really affirming of that and making us feel good that despite how much anxiety might play into this or despite how much sensory processing disorder may play into that, or any number of other diagnoses… that ABA will be helpful and meaningful and get her results that are going to aid her in life with whatever issues she has.

Parents also described how their BCBA did or did not address their child's diagnoses. Some parents described their BCBA creating goals specifically targeting mental health needs. One parent reported that their child's intervention team attended mental health counseling sessions with their child. Some parents did not perceive that their child's comorbid diagnoses were being incorporated or accounted for in their ABA intervention. A small subset of parents experienced challenges specifically related to comorbid diagnoses. One parent shared that their BCBA failed to take their child's medical conditions, including blindness and fine motor deficits, into consideration.

**BCBAs.** BCBAs discussed their level of comfort in providing intervention for children with comorbid mental health or medical diagnoses. BCBAs with a background in mental health (e.g. experience in a psychiatric hospital, education from a counseling

program) reported feeling comfortable providing intervention, while those without such a background frequently shared a lack of confidence. In general, BCBAs reported being more comfortable providing intervention to children with more common diagnoses or symptoms, such as ADHD or anxiety.

They discussed the importance of seeking out guidance when encountering unfamiliar diagnoses or feeling uncomfortable with their level of experience. They described seeking guidance from other disciplines as well as more experienced BCBAs, with one BCBA referring to treatment of a child with multiple diagnoses as a "team effort." Many BCBAs emphasized the benefits of mental health counseling, with some describing the importance of ultimately knowing when to refer clients to other providers. One BCBA explained, "It's okay to refer out, it's okay to find a mental health counselor… In the beginning, I was also scared to, because that makes me a bad analyst. But it doesn't. I think it actually makes you a better analyst."

BCBAs also discussed existing misconceptions about ASD and mental health. Some had experienced the perspective from providers or insurance companies that ABA is not effective for diagnoses outside of ASD. Multiple BCBAs shared facing pushback from insurance companies when trying to incorporate goals related to mental health needs. Some BCBAs specifically mentioned the relatively recent embracement of Acceptance and Commitment Therapy (ACT) in the ABA field and shared examples of insurance companies failing to approve goals using ACT terminology. They also discussed the perception that individuals diagnosed with ASD cannot have additional mental health diagnoses. One BCBA shared an encounter with a primary care physician

who dismissed parent and BCBA concerns related to anxiety, stating "That's just the autism."

Finally, BCBAs discussed the ways in which they address mental health diagnoses in ABA intervention. Participants were generally split between two methods: 1) focus on only the symptoms of ASD and actively separate out other symptoms; and 2) focus on behavioral needs in general and treat the behavior regardless of the diagnostic label. One BCBA summarized the second method, stating, "I was taught that for behavior analysis, it doesn't matter if you have autism or not. My principles are going to work either way."

### *Themes Unique to Parent Groups*

**Stigma.** Parents discussed the stigma surrounding the diagnosis of ASD and the reputation associated with ABA. Subthemes consisted of societal stigma, sharing the diagnosis, and ABA-related stigma.

In terms of societal stigma, parents discussed the existence of a negative and/or inaccurate perception of ASD. Many described feeling that their child or their family was misunderstood, and some shared feeling that society placed blame on the parents of children with autism. One parent shared,

> There's a very negative stigma with autism. Where do you get that from? Which one of [the parents] did he get that from? What happened? What did you do? What did you eat? What kind of medication did you take when you were pregnant with him? Oh, you have hypothyroidism, maybe that caused it. Oh, you had an epidural, maybe that did it. I mean, I've heard it all.

Parents also discussed stigma-related factors that influenced their decision to share their child's diagnosis with others. While some caregivers were open about their diagnosis, others preferred to keep the diagnosis private. Some parents shared that they chose to keep the diagnosis private not only from the community in general but also from family, citing a lack of education or the role of culture in stigmatizing "mental illness."

Many parents mentioned the controversy surrounding ABA intervention. Some parents had encountered a lack of awareness related to ABA, while others described common criticisms of ABA. One parent expressed a desire for their BCBA to openly address the criticisms of ABA and provide reassurance that their child would not be receiving the "cold" or "abusive" ABA they have read about. In general, parents wanted BCBAs to help provide themselves and their children with the ability to adequately explain ABA to those who are not familiar with this intervention or who have formed a negative opinion. One parent explained,

> There's no good elevator pitch about ABA… If our BCBAs could help us communicate to the broader community about… what our children are doing in ABA and how that works… It's just very difficult to have the words to really explain what ABA is for just the lay person to understand.

**Child-Centered Actions.** Child-centered actions emerged as a relatively small code consisting of the subthemes of individualizing treatment, advocating for the child, and demonstrating genuine care. Some parents shared examples of their BCBA taking care to tailor intervention to the specific needs of their child, for example by recommending behavior techs that they felt would be a good fit for the child. Others described examples of their BCBA advocating for their child. One parent shared that their

BCBA advocated for their child in the school, and another parent described their BCBA advocating to the ABA agency for her child to receive more hours. Several parents described feeling that their BCBA genuinely liked or cared for their child. One parent shared, "Our new BCBA has been embracing [my child], and it feels much more personal, like they're invested in her progress and her as a person." Many parents expressed appreciation for the care demonstrated by BCBAs.

**Incorporating Others Into Intervention.** Parents discussed the ways in which BCBAs incorporate others into their child's treatment apart from simply setting goals, including siblings, teachers, peers, and parents themselves. Subthemes consisted of parent training, incorporating siblings, and incorporating peers.

In terms of parent training, many parents reported receiving some form of training outside of the child's sessions. Examples of training methods included parent education, modeling, and in vivo coaching. Multiple parents expressed appreciation for the parent training components of their child's treatment, with one parent describing it as "invaluable."

Many parents reported that their other children were also directly incorporated into treatment, particularly for the purpose of practicing social skills. One parent shared, "They very intentionally utilize my older son for social opportunities that [my child with ASD] was no longer getting from being in preschool [due to Covid-19]." However, a small number of parents reported that their BCBA did not include siblings and expressed a desire for siblings to be included or considered.

Finally, parents discussed ways in which BCBAs involved peers in treatment. Some parents discussed the incorporation of classmates when BCBAs attended school

with their child. They also provided examples of BCBA facilitating peer plays in the home to target social skills, play, or communication.

### *Themes Unique To BCBA Groups*

**ASD Diagnosis.** Although aspects of the diagnostic process are interwoven into various other parent and BCBA themes, BCBA groups discussed diagnosis of ASD in great detail. Subthemes consisted of processing the diagnosis and gauging family knowledge.

BCBAs discussed encountering parents whose children have recently received the initial diagnosis of ASD. When working with such families, BCBAs described the need to help parents to process the diagnosis. Some BCBAs shared that they did not feel prepared or qualified to provide this type of support to parents, while others felt that it is an essential part of working with young children. BCBAs shared examples of working with families in which one parent did not accept the diagnosis Some BCBAs felt pressured by the parent seeking treatment to help the non-accepting parent process the diagnosis.

BCBAs also discussed the importance of gauging family knowledge of ASD and ABA prior to beginning intervention. They acknowledged that family knowledge varies widely, with some parents knowing very little about ASD and treatment options. One BCBA explained this variation:

> I've realized that there's parents who have a really foundational knowledge of ABA, and the conversations can be a little bit more discussion-based. And then there's parents who have absolutely no idea, and they're just looking for someone who's going to give them answers. And I think being able to differentiate that in

parents from the beginning and kind of knowing what their background is so that way you know where to stand as a practitioner is important.

Other BCBAs emphasized the importance of explaining to parents what to expect from ABA rather than assuming that they were given an explanation during the referral process.

**Trauma-Informed Care.** BCBAs discussed their experience treating children with trauma histories as well as their knowledge related to trauma-informed care. Trauma related to foster care/adoption and abuse and neglect were the most common forms of trauma encountered by BCBAs. Subthemes consisted of collaboration, impact of trauma on intervention, and assessing for trauma.

BCBAs emphasized the role of collaboration in treating clients with a history of trauma. Most BCBAs expressed that they would not feel comfortable treating a child with clear trauma-related needs without the input from others. One BCBA shared, "I have that background in trauma and still wouldn't feel fully comfortable because I'm not the licensed professional. So I would prefer to have someone who's licensed and guiding me and of course collaborating in every aspect." Some BCBAs described reaching out to professionals from other disciplines for guidance, while others collaborated with BCBAs with more experience.

BCBAs discussed the importance of taking trauma history into account when planning treatment for that child. One BCBA likened the process of setting goals for a child with a trauma history to "triage," explaining that they try to identify the most important needs for children with complex histories. Another BCBA explained the importance of considering potential triggers when choosing prompting strategies and

provided the example of avoiding physical prompts for clients who have experienced trauma.

BCBAs also discussed the extent to which they asses for a history of trauma during the initial intake with a family or throughout subsequent interactions with families. Some BCBAs considered assessing for trauma to be best practice, while others did not incorporate trauma-related questions. Some of the BCBAs who did not assess for trauma explained that they did not feel comfortable broaching this topic with parents. One BCBA shared that they had never previously considered the value of screening for trauma but would be including trauma-relating questions during intakes moving forward.

**Training/Education.** BCBAs discussed the formal education they received on their path to becoming certified behavior analysts and how it did or did not incorporate principles of FCC. Subthemes consisted of undergraduate and master's programs, behavior analysis training, training provided by employers, and continuing education.

Some BCBAs had educational experiences outside of behavior analysis that contributed to their overall skillset. Some BCBAs referenced their undergraduate education in psychology or child development. Others described their education in master's programs outside of behavior analysis. Many BCBAs received master's degrees in the areas of mental health counseling or education. One BCBA described how their master's of fine arts degree contributed to their ability to communicate with parents, and others referenced general psychology programs. When asked if they received training on topics related to mental health, trauma, parental stress, or the diagnosis of ASD, most BCBAs reported that their relevant training came from these master's programs rather than their behavior analysis training.

When discussing their education in behavior analysis, BCBAs agreed that this coursework emphasized behaviors and often discouraged consideration of mental health needs. Many BCBAs shared that they were instructed to avoid any topics outside of observable behaviors, with one BCBA sharing "I was always told in my training that if the parent gets off topic, you've got to bring them back to behaviors. You're only there for the child's behaviors."

Some BCBAs described opportunities afforded to them by their agencies or employers to learn about various topics. One BCBAs described learning about the Parenting Stress Index. Another reported that a speech language pathologist within their agency provides trainings on communication-related topics.

Finally, some BCBAs described seeking out continuing education opportunities in order to learn about topics of interest. For example, one BCBA described seeking education on topics relevant to their caseload: "Once I started working with foster kids, I had to educate myself on trauma and take CEs and join trauma educator networks."

**Supervisor/Superior Influence.** BCBAs discussed the various ways in which they had been influenced by supervisors, agencies, leadership, and the field of behavior analysis as a whole. Subthemes consisted of supervisors, mentors, attitudes of agencies, and attitudes of the field of ABA.

BCBAs discussed learning several skills from their supervisors. Some BCBAs discussed learning through role play or discussions, while others provided examples of learning through observation. BCBAs described seeking help from supervisors with regards to having difficult conversations, insurance, mental health, and trauma.

BCBAs distinguished between the role of a supervisor and the role of a mentor, and many emphasized the importance of finding a mentor. One BCBA explained,

> I think there's a separation between supervisors and mentors. Mentors are not as encouraged in this field as they are in other fields. Mentors are people you're not assigned to. [With] a mentor, you're in a relationship and it's much more difficult to create and nurture.

Some BCBAs expressed the view that the requirements to become a supervisor are not rigorous enough, with most BCBAs encountering supervisors with a wide variety of skill levels. Because of these discrepancies among supervisors, BCBAs valued learning from "mentors" with expertise in areas that appealed to each individual BCBA. For example, some BCBAs described relying on mentors with more experience treating clients with mental health needs. One BCBA described finding a mentor they considered to be a "parent guru." Some BCBAs felt it was beneficial to have a mentor outside of the field of behavior analysis, such as psychologists or educators.

Some BCBAs had experience working for multiple agencies or companies and described philosophical differences among agencies. For example, one BCBA described working for two agencies that had different priorities related to FCC: "I came from a company in South Florida, and they didn't do family-centered care. I had no idea what true family-centered care was until I came to the company I'm at right now. That's a problem in our field." Another BCBA was discouraged with the varying level of ethics among agencies. One BCBA described "shopping" for an employer by learning about the philosophies and attitudes of different agencies before accepting a position. BCBAs also discussed the role that leadership has on shaping the attitudes of an agency. In particular,

BCBAs felt that including behavior analysts in positions of leadership was essential to the success of agency.

BCBAs identified many attitudes of the field of behavior analysis that they viewed as possible weaknesses or barriers to treatment. Several BCBAs mentioned the historical tunnel vision for behavior and lack of consideration for the role of the mind or emotions, with multiple BCBAs using the word "isolated" to describe the field. One BCBA explained,

> I learned from behavior analysts who are strict behavior analysts and do not support or believe in other therapies, including mental health counseling. So I think that is a weakness, as far as the exclusivity. I think we come out looking incredibly weak as far as being able to play in the sandbox and ultimately help people.

BCBAs also discussed how the male dominance of the field has impacted their experiences and learning opportunities. Some discussed the disproportionate ratio of female BCBAs to female supervisors or females in positions of leadership. One BCBA experiencing discrimination in the field of ABA:

> The field is mostly women, but I would say a big barrier for me is being a woman. When I came in, it was much more male dominant. The teachers and the presenters and the bigwigs of the field were male. Often – and this still happens today despite my age and experience level – I feel discriminated against as a woman in a field that is dominated by, created by, and run by men.

Some BCBAs also described a reluctance to take issues that could be seen as "soft" to male supervisors, such as lack of comfort addressing disagreement with parents.

**Training Needs.** Throughout all of the topics discussed by BCBAs, they identified clinical areas in which they would like to receive additional training. These topics included interpersonal skills, making referrals and connecting to resources, diagnosis of ASD and typical development, comorbid mental health and trauma, the transition age, and self-care.

Many BCBAs discussed a lack of emphasis on interpersonal or "soft" skills in their formal education and informal training at their respective agencies. They expressed that they would like to receive training related to communicating with parents and professionals, particularly having difficult conversations. They also discussed a lack of emphasis on compassion, tying this into the behavioral lens of the field. One BCBA explained,

> I don't think it was encouraged to talk to people as humans, but rather to talk to them as scientists. It's not something that's taught, how hard parenting is. I had to personally experience that in order to have the compassion and grace that I think we need in order to work with our families.

Many BCBAs described a desire to learn more about fostering collaboration with other disciplines, citing a lack of related training in formal behavior analysis education.

Although BCBAs discussed the importance of referring out and acknowledged the necessity of providing families with needed resources, they often identified that they did not have the training necessary to adequately provide these resources. More recently certified BCBAs in particular identified that they would like more assistance from their agencies or employers in setting up a bank of resources. As one BCBA explained, "I was

taught to refer them out. But I was never taught how to refer them out or the fact that I would have to build a community network."

BCBAs reported that they did not receive formal training related to the diagnosis of ASD. They identified that they would like more training on what the diagnostic process entails and how to assist families with processing a diagnosis. One BCBA described relying on her own experience as a mother of a child with ASD to communicate effectively with parents but acknowledged that not all BCBAs have that experience. Another BCBA shared, "Since we are the next step after diagnosis, I would really love to get more of an insight into how that diagnosis piece is presented." BCBAs also identified a desire to learn about typical development in order to help guide goal setting.

Some participants came from a mental health background prior to pursuing their BCBA and therefore received training related to mental health and trauma. However, they identified that their training related to behavior analysis did not address mental health diagnoses in children with ASD. BCBAs without a background in mental health reported relying on supervisors or other BCBAs for training in this area. One BCBA described relying on support from other BCBAs due to lack of training:

> Other BCBAs would kind of coach me, that's how I learned. I haven't had any formal training. I want a good network of people that have more experience than me in dealing with someone that had a more trauma experience or more complicated diagnosis. I don't feel that the primary training I had included that area, so I still need to learn more.

In general, BCBAs reported feeling uncomfortable encountering these topics in their own clients without receiving formal training.

Some BCBAs discussed a desire to learn more about supporting clients through the transition age. This included choosing appropriate goals, fading themselves out, transitioning clients to adult services, and supporting families who may be losing funding and services due to the age of their child.

Finally, BCBAs discussed the lack of emphasis on self-care in the field of ABA. Many BCBAs expressed a desire for agencies to include education related to self-care and clinician mental health. One BCBA shared,

> Looking at our field and the high burnout rate and the high turnover rate, I think right now the field isn't sustainable. If we could have more tools to support not only other people, but ourselves, I think that could definitely be beneficial. We need that self-care, mental health piece, so that what we're doing can be sustainable over time.

Many BCBAs echoed the sentiment that education and emphasis on self-care would help to offset burnout in the field of ABA and indirectly improve care provided to families.

# Chapter 4. Phase One Discussion

Despite the growing evidence base supporting the positive impacts of FCC for children with ASD, the relationship between FCC and parental stress, and the role of parental stress on ABA intervention, no known studies have examined the state of FCC in ABA intervention in the United States. The primary goal of Phase One of this study was to explore the current state of FCC in ABA and identify FCC-related training needs based on the experiences of parents and BCBAs. Focus groups revealed a total of 17 unique codes. Several of these codes were overlapping between parents and BCBAs: identified barriers, rapport/relationship building, communication, family considerations, parental stress/mental health, transitions/future planning, treatment goals, interdisciplinary collaboration, and comorbid mental health diagnoses. Parents additionally discussed the themes of stigma, child-centered actions, and incorporating others into treatment, while BCBAs uniquely discussed diagnosis of ASD, trauma-informed care, training/education, supervisor/superior influence, and training needs.

## Themes in Relation to Family-Centered Care

Each of the 17 identified themes is directly or indirectly related to one or more of the four pillars of FCC: respect and dignity, information sharing, participation, and collaboration (Institute for Patient- and Family-Centered Care, 2022).

### *Respect and Dignity*

Several of the themes discussed by parents and BCBAs relate to the core concept of respect and dignity. The Institute for Patient- and Family-Centered Care says that respect and dignity involves "health care practitioners listen[ing] to and honor[ing] patient and family perspectives and choices," including consideration of family

knowledge, values, beliefs, and cultural backgrounds (2022). Given this explanation, the theme of family considerations is perhaps the most directly related to respect and dignity. Parents and BCBAs agreed on several ways in which aspects of the family may vary, including level of support available, family members involved, and the family's journey through the diagnosis of ASD. Interestingly, parents touched on cultural differences (e.g. language, age, race as it pertains to perspective on mental health) that BCBAs did not discuss. For the most part, parents reported feeling that their family's unique needs were at least recognized by the BCBA, aligning with the BCBA emphasis on assessing for family needs and being flexible to these needs throughout the intervention process.

Aspects of communication also relate to respect and dignity, particularly the nuances of communication boundaries. Parents overwhelmingly agreed that they wanted more communication from their BCBAs and expressed frustration with the barriers in place that limit communication (i.e. limits placed by agencies). However, BCBAs felt pressure to push their personal boundaries in order to accommodate the needs of parents, for example answering phone calls outside of working hours. This indicates that BCBAs may recognize the importance of respecting families and strive to provide adequate communication, but they struggle to find a work-life balance that is also respectful to their own needs. BCBAs also reported a lack of emphasis on self-care and work-life balance in their training and in the field in general. One study of work-life balance among BCBAs found that 72% of BCBAs reported medium to high levels of burnout. Job-crafting (i.e. altering behaviors to decrease hindering job demands) strongly predicted both work-life balance and burnout, with BCBAs who reported more job-crafting behaviors reporting greater work-life balance and less burnout (Slowiak &

DeLongchamp, 2022). Creating boundaries for communication, such as determining and enforcing appropriate hours for communication, can be considered an example of job-crafting that may serve as a strategy for improving work-life balance for BCBAs. Balancing the parental desire for open communication with the BCBA need for work-life balance is a challenge that ABA agencies should consider addressing at company level in order to take the onus off of the BCBAs.

The concept of empathy emerged as an interesting component of both building relationships and parental stress/mental health with starkly different perspectives described by parents and BCBAs. BCBAs discussed the importance of demonstrating empathy, and parents identified empathy as a key component to building a positive relationship between the parent and BCBA. However, although BCBAs considered themselves to be empathetic, many parents shared examples that illustrated a lack of empathy. Parents described feeling judged by BCBAs, experiencing expectations placed by BCBAs that were too high, and feeling that BCBAs did not understand the stress associated with being the parent of a child with ASD. A possible explanation for this discrepancy is the barriers to addressing parental stress identified by BCBAs, including not being comfortable having conversations related to stress. Although BCBAs described feeling empathetic to the position of parents, they also reported feeling uncomfortable expressing this empathy by directly acknowledging or checking in on parental stress. This can be further related to the theme of supervisor/superior influence and the historical exclusive emphasis on behavior in ABA. Many BCBAs shared that their training emphasized the behavior of the client, aligning with the Task List created by the BACB (Behavior Analyst Certification Board, 2017). This emphasis neglects to consider not

only the cognition of the client, but the cognition of the parents as well. As a result, BCBAs are not prepared by their training programs to demonstrate empathy in ways such as addressing parental stress. This is sometimes perceived by parents as a lack of empathy altogether, putting a strain on the relationship between the parent and BCBA.

The themes of comorbid mental health diagnoses and trauma-informed care are closely related to the unique perspective and background of each family addressed by the respect and dignity component of FCC. The results of the focus group revealed that BCBAs work with families with diverse diagnoses and trauma histories, and although BCBAs recognize the importance of these factors, they are not trained on these factors or how to incorporate them into intervention. Research has shown that ABA can be successfully applied to mental health issues (Harvey et al., 2009), providing further rationale for including mental-health related training for BCBAs.

### *Information Sharing*

Information sharing involves providing information that is complete, unbiased, timely, and accurate in an affirming manner so that families can participate in care and decision-making (Institute for Patient- and Family-Centered Care, 2022). This explanation provides three aspects of information sharing to consider: the qualities of the information itself (i.e. complete, unbiased, timely, and accurate), the delivery of the information (i.e. in an affirming manner), and the purpose of information sharing (i.e. family participation in care and decision-making). The theme of communication was highly related to the quality aspect of information sharing. Parents painted a picture of inconsistency among BCBAs, sharing positive and negative examples related to the "timely" facet of communication. Parents and BCBAs discussed the delivery of

information throughout several themes. BCBAs specifically discussed the concept of engaging in difficult conversations, identifying a need for more training in this area to allow them to effectively share information with parents

Several identified themes and subthemes were relevant to the purpose of information (i.e. allowing parents to make informed decisions), particularly the concepts of diagnosis and parent expectations of ABA. Both parents and BCBAs identified that BCBAs would benefit from more training related to the diagnosis of ASD in order to help parents through the immediate aftermath of receiving a diagnosis. This is particularly important given the potential impact of parent perception of the diagnostic process. If parents have had an aversive diagnostic experience, they may be less likely to actively participate in intervention (Osborne & Reed, 2008). For newly diagnosed families, discussing the diagnosis and assessing for parent needs related to the diagnosis could help BCBAs to understand a family's knowledge and experience with the diagnostic process that may carry over into intervention. BCBAs should not be expected to be experts in the diagnosis of ASD; however, having an understanding of the diagnostic process and engaging parents in conversations about diagnosis could allow BCBAs to determine when a family is in need of more support, resources, or knowledge related to ASD.

Similarly, parents expressed a desire for BCBAs to clearly explain ABA and what parents should expect. BCBAs acknowledged that parent knowledge on this topic varies, but when asked if they provide any background related to ABA when beginning treatment with a family, none responded that they did so consistently. This contrasts with the Ethics Code for Behavior Analysts, which identifies "Communicating about Services" as a practice responsibility for BCBAs and includes clearly describing the

scope of services before beginning as a specific responsibility (Behavior Analyst Certification Board, 2020). Providing an overview of ABA during the first meeting with parents or during the first parent training session would help to ensure that families are consistently provided with complete knowledge related to the treatment their child will be receiving. This is particularly relevant to the purpose of information sharing, as being fully informed about what ABA is will allow parents to better make informed decisions related to treatment. However, it is possible that billing and insurance will serve as barriers to implementation of the practice of discussing diagnosis and ABA, as one BCBA explicitly cited this type of discussion as being "unbillable."

### *Participation*

When FCC is implemented, families are "encouraged and supported in participating in care and decision-making at the level they choose" (Institute for Patient- and Family-Centered Care, 2022). Based on parent and BCBA discussions related to treatment goals and incorporating others into treatment, this is an area of relative strength for the field of ABA. Parents and BCBAs described the inclusion of parents, siblings, grandparents, and individuals with ASD themselves in the process of determining treatment goals. Parents also provided examples of parents and siblings being incorporated into the intervention itself in a variety of ways. This may be due to the emphasis on involving stakeholders throughout the Ethics Code for Behavior Analysts (Behavior Analyst Certification Board, 2020).

### *Collaboration*

Collaboration in the context of FCC includes collaboration among all people involved in the care of the individual (e.g. family, treatment providers) as well as

collaboration on a larger level among leadership on issues of professional education, research, and delivery of care (Institute for Patient- and Family-Centered Care, 2022). Examples provided by parents and BCBA of interdisciplinary collaboration indicate that this type of collaboration is another area of relative strength for the field. Parents recognize the benefits of interdisciplinary collaboration, and BCBAs place great importance on effectively collaborating with other professionals. The Ethics Code emphasizes collaboration with fellow BCBAs and with other disciplines according to the best interests of the client (Behavior Analyst Certification Board, 2020), fostering this tenet of FCC. Although BCBAs identified barriers to effective collaboration (e.g. billing, reputation of ABA), they also identified strategies they have developed to overcome these barriers, further demonstrating the value placed on collaboration by BCBAs.

In terms of larger level collaboration, BCBAs identified several potential areas for improvement. Discussions related to the male dominance of the field, historical exclusive emphasis on behaviors, and lack of recognition of the role of mental health point to a disconnect between BCBAs and leadership in the field of ABA. As of July 2022, 86.4% of BCBAs were female. Demographic data on positions of leadership and education in ABA is not available, but BCBA participants in the focus groups felt that males are disproportionately represented. BCBAs also discussed the continued emphasis on behaviors in behavior analysis education and lack of training related to mental health. Despite the shift in the field of ABA away from the "strict behaviorism" of Skinner and acceptance of the impact of cognition on behavior, training for BCBAs is still overwhelming focused on behaviors (Araiba, 2020; Conners et al., 2019). BCBAs identify this as a weakness and feel unprepared to appropriately treat children with

complex needs. Collaboration among leadership in ABA to address professional education could help to address some of the training needs identified by BCBAs.

**Comparison of Identified Training Needs to BACB Requirements**

BCBAs identified several areas in which they would like to receive additional training. Training needs included the broad topics of interpersonal skills, diagnosis and typical development, transition age, comorbid mental health diagnoses, trauma-informed care, and self-care, and these topics were described in detail within the "Training Needs" theme. These self-identified training needs largely align with the areas of deficit described by parents. Examination of the requirements set by the BACB for licensure indicate that these training needs are likely due to lack of inclusion in BCBA training altogether rather than poor or incomplete training.

The behavior analytic coursework requirements outlined by the BACB include the following content areas: 1) BACB Ethics Code and Code-Enforcement System; Professionalism, 2) Philosophical Underpinnings; Concepts and Principles, 3) Measurement, Data Display, and Interpretation; Experimental Design, 4) Behavior Assessment, 5) Behavior-Change Procedures; Selecting and Implementing Intervention, and 6) Personnel Supervision and Management (Behavior Analysis Certification Board, 2022). With the exception of ethics and professionalism, none of these content areas appear to be related to the training needs identified in this study. Further information about the specific topics covered in each content area is not available, and different institutions offer different courses to fulfill these requirements. It is plausible that courses related to ethics and professionalism include interpersonal topics; however, only one course is required in this area and must include coverage of the BCBA Ethics Code and

code enforcement, likely leaving little room for in depth instruction related to interpersonal skills. Similarly, the BCBA Task List (5th Edition) on which the BCBA certification exam is based does not include topics related the identified training needs (Behavior Analysis Certification Board, 2017).

The BCBA Ethics Code contains the content most relatable to the identified training needs and FCC in general, although none of the training needs are discussed specifically. For example, several guidelines under the subsection of "Responsibility in Practice" include choosing interventions and goals that "best meet the diverse needs, contexts, and resources of the client and stakeholders." Meeting the diverse needs of families is the crux of FCC and is at the core of several needed training areas (e.g. comorbid mental health diagnoses, trauma-informed care, diagnosis, transition age). The code also includes the guideline "Addressing Conditions Interfering with Service Delivery" which specifically advises BCBAs to identify environmental conditions which may serve as a barrier to intervention (Behavior Analyst Certification Board, 2020). As illustrated by previous research (e.g. Osborne et al., 2008), parental stress impacts intervention, and should therefore be considered within the context of this guideline. Overall, the BCBA Ethics Code provides the rationale for targeting the areas identified in this study in training for BCBAs despite the fact that they are not included in the coursework and examination requirements set by the BACB.

**Implications**

Overall, focus groups conducted with parents and BCBAs highlighted some areas of strengths and weaknesses related to the provision of FCC. While participation and collaboration are two core concepts of FCC that appear to be valued and implemented

consistently by BCBAs, there are inconsistencies related to respect and dignity and information sharing. These inconsistencies demonstrate room for improvement in the field of ABA, and providing training to BCBAs can serve as a springboard for this improvement. In fact, BCBAs identified several areas in which they would like to receive additional training, including interpersonal skills, diagnosis and typical development, transition age, comorbid mental health diagnoses, trauma-informed care, and self-care.

There are several possible avenues for addressing these training needs. The first option, which was pursued in Phase Two of this study, involves targeting these areas with continuing education. Alternatively, behavior analysis training programs could incorporate these topics into their curriculum, ensuring that professionals who earn a master's degree in behavior analysis are exposed to some of the broader clinical skills gained by BCBAs with master's degrees in other areas. The most comprehensive but likely most strenuous avenue for addressing training needs is through expanding the scope of BCBA Task List to incorporate these areas. The Task List serves as the basis for the curriculum of BACB-approved training programs as well as the credentialing exam. As such, changes to the Task List would initiate downstream changes to behavior analysis training programs and the content of the BCBA certification exam. The content of the Task List has been focused strictly on the dimensions of ABA as put forth by Baer and colleagues (1968, 1987) since its first edition in 1994, indicating that a change in its content would require substantial consideration and exploration from the BACB (Johnston et al., 2017). It is important to note that Baer and colleagues recommended in their 1987 paper that the dimensions of ABA be re-evaluated every 20 years. As such an evaluation is not available in extant literature, a careful review of the BCBA Task List is

warranted, and future research should focus on exploring updates to these dimensions (Baer et al., 1987; Blydenburg & Diller, 2016).

It is important to consider that incorporation of family-centered topics into the training of BCBAs will not guarantee the implementation of FCC in ABA. As discussed by parents and BCBAs throughout many themes, billing requirements (i.e. productivity requirements) and insurance policies serve as a barrier to rapport building, communication, treatment goals, addressing parental stress, and addressing comorbid mental health diagnoses. As such, billing and insurance repeatedly impact the ability of BCBAs to uphold the pillars of FCC, particularly respect and dignity. Although training on some of these important topics would help expand the knowledge of BCBAs, productivity requirements and insurance policies can still prevent BCBAs from applying this knowledge. Addressing this issue would require substantial policy change among ABA provider agencies (e.g. relaxing productivity requirements) and/or insurance companies (e.g. allowing providers to bill for activities essential to the provision of FCC). Lack of organizational support for FCC has been identified as a barrier to the implementation of FCC for children with ASD (Gabovitch & Curtin, 2009). As such, it seems unlikely that the state of FCC in the field of ABA will improve without buy-in from the upper levels of the field. Although policy-level change is beyond the scope of this paper, literature on FCC provides ample justification for policy change in the future. FCC is now widely recognized as an essential component of quality clinical care and is related to improved outcomes for families of children with developmental disabilities (e.g. King et al., 1996; Burke & Hodapp, 2014; Hsiao et al., 2017). FCC is associated with lower levels of stress, an outcome particularly relevant for stakeholders in the field

of ABA, as parental stress decreases the impact of ABA on child outcomes (Osborne et al., 2008; Strauss et al., 2012). Additionally, parent-professional partnership is related to increased satisfaction with services (Casagrande & Ingersoll, 2017), providing further rationale for agencies and insurance companies to carefully consider the benefits of encouraging the provision of FCC in ABA.

**Limitations**

This study has several limitations that should be considered. The sample size was fairly small and did not reach the initial goal of 36-60 participants. Each group was relatively small in size, with one group having only two participants. Although the achieved sample size was sufficient to reach saturation, it is possible that larger focus groups would have fostered more rich discussion. Participants in focus groups were recruited from only three ABA companies; although these companies have multiple locations allowing for a more representative sample, they may not represent the full spectrum of FCC provided by agencies. Additionally, there is potential for self-selection bias among parents and BCBAs. Although all parents and BCBAs from the participating agencies were given the opportunity to participate, it is possible that those who chose to participate had different views on FCC or placed more value on FCC than those who did not choose to participate. It is also important to consider the demographics of the BCBA focus groups, which consisted of all white women. Although this is similar to the reported demographics of BCBAs in the United States, it does not allow for the inclusion of perspectives of male BCBAs or BCBAs of racial minorities. Finally, it is important to consider the possible implications of interrater agreement. There is no universally accepted lower limit for interrater agreement in qualitative data analysis, but Miles and

colleagues (2019) suggest a threshold of 80%. Overall agreement for the parent groups (66%) and BCBA groups (69%) fell below this standard. This is likely due to the large number of codes and complexity of codes. The process of calculating agreement for qualitative data analysis serves the primary purpose of fostering reflexivity within the research team, and intercoder disagreements are important for the process of refining codes (O'Connor & Joffe, 2020). The process of calculating agreement successfully fulfilled this purpose within this study.

# Chapter 5. Phase Two Methods

In Phase Two of this study, a series of ECHO model trainings ("ECHO for BCBAs") was provided to BCBAs based on the training needs identified in Phase One. A quasi-experimental design with pre- and post-measures was conducted to investigate the impact of these trainings on BCBA self-efficacy and implementation of FCC. Additionally, parental stress and perception of FCC was examined in a sample of caregivers to explore the relationship between these two constructs.

## Participants

### *Recruitment*

BCBA and caregiver participants were initially recruited through email by the same national ABA companies utilized in Phase One (Kadiant, Breakthrough Behavior, and the May Institute). Each company sent a recruitment flyer created by the study team to their email distribution lists for BCBAs and caregivers. A second round of recruitment targeting BCBAs was completed utilizing the autism special interest group distribution list from the Association of University Centers on Disabilities (AUCD) and BCBA distribution list from the Ohio Association for Behavior Analysis (OHABA). A third round of recruitment targeting caregivers was completed by distributing recruitment flyers at Nationwide Children's Hospital Center for Autism Spectrum Disorders summer camps. The recruitment flyers instructed those interested in participating to contact the research team for additional information and to complete a recruitment screening questionnaire if appropriate. A final method of recruiting parents involved asking participating BCBAs to distribute the parent recruitment flyer to the families they served.

### *Inclusion Criteria*

**BCBAs.** Participants qualified for this study if they were BCBAs providing ABA intervention to children with ASD. Participants were required to have at least one client on their caseload between the ages of two and eighteen. Confirmation of certification relied on BCBA report. Participants needed to be fluent in English, as trainings were conducted in English. Participants were required to have access to high-speed Internet and a forward-facing video camera on their electronic device of choice in order to fully participate in ECHO sessions.

**Caregivers.** Participants qualified for this study if they had a child between the ages of two and eighteen with a diagnosis of ASD receiving ABA intervention. The child's intervention team was required to include at least one BCBA. Confirmation of diagnosis and intervention relied on parent report. Participants needed to be fluent in English, as the measures were only available in English.

**Power Analysis.** An a priori power analysis was conducted and determined a required sample size of eight participants in order to examine the primary research question for Phase Two (i.e. change in BCBA self-efficacy). Researchers utilizing the ECHO model in the field of ASD frequently use change in provider self-efficacy as an outcome measure. The difference in means reported by Mazurek and colleagues was utilized for this power analysis, as the frequency, duration, and topics of the ECHO model trainings were similar to those of the current study (Mazurek et al., 2017). Based on an alpha level of .05 and a power of .80, the calculated required sample size is eight. A sample of 30 BCBAs was established as the recruitment goal in order to create a substantial learning community (e.g. Arora et al., 2011, Arora et al., 2014) and account

for possible dropout. Additionally, a sample size of 30 allows for the detection of medium to large effects for the secondary and exploratory research questions.

A separate power analysis was not conducted a priori to determine the required sample size for secondary and exploratory research questions regarding caregivers, as the original research plan involved matching caregivers to BCBAs participating in ECHO for BCBAs. A post hoc power analysis was conducted to determine the achieved power given the sample size and effect size of the caregiver-focused analyses and will be described in Chapter Six.

## Procedures

The Institutional Review Board at The Ohio State University approved the procedures implemented for this study.

### *Recruitment Screening*

Interested potential study participants contacted this author directly via phone or email. A telephone recruitment screening was conducted with all interested participants in order to determine eligibility for participation based on inclusion criteria. During the recruitment screening, potential participants were provided with an overview of the research study including informed consent.

### *Consent*

Participants received an email containing a link to an informed consent form on Research Electronic Data Capture (REDCap), an electronic capture system approved by The Ohio State University. Participants were instructed to review the informed consent form and contact the research team with any questions or concerns. Participants agreed to participate in the study by clicking "I agree" in REDCap.

### *ECHO for BCBAs*

Training was provided to BCBAs using the ECHO model. Eight biweekly sessions were held between February and May of 2022. Each session was 90 minutes long and covered a specific topic. ECHO for BCBAs utilized CarmenZoom™ for multipoint video conferencing.

**Hub Panel.** This study utilized a "hub and spoke" ECHO network, with a "hub" consisting of the research team and an expert panel, and "spokes" of BCBAs. The expert panel consisted of two clinical psychologists, two clinical psychologists with BCBA-D certifications, one medical doctor, and one parent of a child with ASD with experience with ABA intervention. The expert panel represented expertise in the areas of ASD, behavior analysis, and the specific training topics targeted. Additional information about the credentials of the expert panel can be found in Appendix G. Additionally, two members of the research team joined each session to provide technical assistance, take attendance, manage breakout rooms, and assist with facilitating discussions when needed. This author served as facilitator responsible for guiding each session.

**Structure.** Each session consisted of the following components: 1) introduction to the ECHO model and expert panel; 2) brief didactic; 3) case presentation; and 4) closing announcements. The didactic presentation was given by one of the members of the expert panel and was typically 30-40 minutes long. Each didactic was followed by one deidentified case presentation describing a challenge related to the training topics of the ECHO series. BCBAs interested in presenting a case for discussion completed a deidentified case narrative form and submitted it to the facilitator for review prior to the session in which it was presented (see Appendix H). The case was then presented during

the session by the BCBA or the facilitator at the discretion of the BCBA. All participants and hub members were given the opportunity to ask the BCBA follow-up questions following the case presentation. Small group discussions were then held using the "breakout room" function of CarmenZoom™. Each small group consisted of 6-10 participants and discussion was facilitated by 1-2 members of the hub team. All participants were encouraged to participate in small group discussions. Evidence-based recommendations and strategies were discussed in small groups followed by a whole-group discussion. Following the session, the facilitator compiled a comprehensive feedback summary including a list of recommendations, and a member of the expert panel reviewed the summary for suitability. The feedback summary was then provided to the presenting BCBA.

**Session Topics and Objectives.** Session topics were determined based on the results of Phase One of this study, comparison of these results to the current training requirements for BCBAs, and a comprehensive literature review. Each session had two to three clear objectives related to the session topic. These objectives were developed based on the BCBA Task and Ethics Code, consultation with the expert panel, and feedback from the agency responsible for issuing continuing education units. The session topics were as follows:

Session 1: Diagnostic Process and Interpreting Diagnostic Reports

Session 2: ASD Through the Lifespan – Typical Development

Session 3: ASD Through the Lifespan – Transition Age

Session 4: Common Medical Conditions in ASD

Session 5: Comorbid Mental Health Diagnoses

Session 6: Parental Stress

Session 7: Trauma-Informed Care

Session 8: Interdisciplinary Collaboration

A comprehensive list of session topics, objectives, presenters, and related Task List and Ethics Code items can be found in Appendix I.

***Continuing Education***

BCBAs who attended at least six sessions and completed pre- and post-measures received 1.5 continuing education units (CEUs) for each session attended, for a total of 12 possible CEUs. Kadiant provided CEUs for the first two sessions, and Behavior Live provided CEUs for the remaining six sessions. The BACB requires that continuing education events are presented by or supervised by a BCBA in good standing. As such, all didactics were reviewed by one of the BCBA-D members of the expert panel prior to sessions if not presented by one of these members. At least one of the BCBA-D panel members were present at each session. The BACB also requires that continuing education content goes beyond the Task List, is behavior-analytic in nature, is designed for attendees with a behavior-analytic background, and reflects current and accurate content (Behavior Analysis Certification Board, 2020). In order to ensure that each of these provisions was met, a member of the leadership team from the agency providing CEUs (i.e. Kadiant or Behavior Live) reviewed and approved the objectives for each session.

***Data Collection***

BCBAs completed measures at two time points (pre- and post-test), and caregivers completed measures at one time point. BCBAs and caregivers were provided with an email containing a secure, individualized link to complete a questionnaire online

using REDCap. At pretest, BCBAs completed measures in the following order: 1) demographics form; 2) self-efficacy questionnaire; and 3) measure of FCC. At posttest, BCBAs completed measures in the following order: 1) self-efficacy questionnaire; 2) measure of FCC; and 3) satisfaction survey. Caregivers completed measures in the following order: 1) demographics form; 2) measure of FCC,; and 3) measure of parental stress. Each questionnaire took approximately 20-30 minutes to complete. BCBA pretest data was collected from December 2021 to January 2022, and posttest data was collected in May 2022. Caregiver data was collected from December 2021 to July 2022. Caregivers who completed the questionnaire were sent a $10 Amazon gift card in the mail. BCBAs received CEUs as described above.

**BCBA Measures**

***Demographics***

BCBA participants completed a demographics form (see Appendix J) at pretest. This form included information about the participant's age, gender, race, education, current job, current clientele (deidentified), and previous training.

***Self-Efficacy Questionnaire (SEQ)***

BCBA self-efficacy was measured at pre- and post-test using a self-report questionnaire developed for the purpose of this study. The SEQ is a 19-item questionnaire based on the format of self-efficacy questionnaires used in previous ECHO model studies (e.g. Mazurek et al., 2017, Mazurek et al., 2019; Nowell et al., 2020). Participants were asked to report the degree to which they felt confident in their ability to effectively implement skills and provide care based on the specific topics covered in the ECHO sessions. Items are rated on a six-point Likert scale, with one indicating "not at all

confident" and six indicating "extremely confident/expert." An overall score is computed as the average of the ratings of each item and therefore ranges from one to six. The SEQ can be found in Appendix K.

***Measure of Processes of Care – Service Provider (MPOC-SP)***

BCBA delivery of FCC was measured at pre- and post-test using the MPOC-SP. The MPOC-SP is a 27-item scale developed as a companion to the MPOC (described below) to examine providers' self-perception of their FCC behaviors (see Appendix L). The MPOC-SP has been validated for use with a variety of healthcare professionals including occupational therapists, psychologists, social workers, nurses, and speech language pathologists. The respondent is asked to use a seven-point Likert scale to indicate the extent to which they have practiced FCC behaviors over the past year, with one indicating "not at all" and seven indicating "to a great extent." A mean score near four indicates than on average, respondents "sometimes" engage in the FCC behaviors. Respondents also have the option to indicate that an item is "not applicable," which is given a value of zero and is not considered a valid response. In order for a scale score to be calculated, at least 66% of the items of that scale must be valid (i.e. completed item with a rating from one to seven). Scale scores are computed as the average of the ratings of each item and therefore range from one to seven (Woodside et al., 2001).

The MPOC-SP consists of four scales based on the results from exploratory factory analysis: 1) Showing Interpersonal Sensitivity; 2) Providing General Information; 3) Communicating Specific Information About the Child; and 4) Treating People Respectfully. The MPOC-SP has good internal consistency (Cronbach's alphas ranging from .76-.88) and test-retest reliability (intraclass correlation coefficients ranging from

.79-.99). During the initial validation study, Woodside and colleagues (2001) found a significant difference between providers rating of their own behavior using the MPOC-SP and rating of ideal behavior, demonstrating evidence of construct validity and the absence of a social desirability bias. Additionally, the MPOC-SP has been shown to be sensitive to change (Gafni Lachter et al., 2019).

### *Satisfaction Surveys*

BCBA satisfaction was assessed posttest using a nine-item survey developed for the purpose of this study as well as following each individual ECHO session using a five-item survey developed for the purpose of this study (see Appendix M). These surveys are based on the format and content of surveys utilized by previous ECHO model trainings (e.g. Salvador et al., 2020; Mazurek et al., 2017; ECHO SCOPE, manuscript in progress).

## Caregiver Measures

### *Caregiver Demographics*

Caregiver participants completed a demographics form (see Appendix N). This form included information about the child's age, gender, race, and diagnoses as well as the caregiver's age, gender, race, level of education, and income.

### *Measure of Processes of Care (MPOC-20)*

Caregiver perception of FCC was measured using the MPOC-20. The MPOC is a scale designed to evaluate parents' perception of the degree to which the services they receive are family-centered. It is focused on the concordance between parents' needs and the care they receive and has found to be significantly correlated with parental satisfaction with services (King et al., 2004). The MPOC scales were originally validated with 653 parents of children aged seven months to 20 years receiving rehabilitation

services for a neurodevelopmental disorder. The majority of parents in this sample had children with a diagnosis of cerebral palsy or spina bifida, and ASD was not included (King et al., 1996). The MPOC-20 was subsequently developed using 20 of the original 56 items from the MPOC (see Appendix O). The MPOC-20 was validated using the original sample as well as a new sample that included parents of children diagnosed with a wide variety of neurodevelopmental diagnoses including developmental delay (King et al., 2003; King et al., 2004). Additionally, a 2014 review conducted by Cunningham and Rosenbaum found that the MPOC-20 has been successfully used to assess a variety of services with parents of children with a wide range of diagnoses including ASD (Cunningham & Rosenbaum, 2014). Most recently, the MPOC-20 was used to assess services provided to parents of children with ASD by ABA programs in Canada (Williams et al., 2021).

The respondent is asked to use a seven-point Likert scale to indicate the extent to which they have experienced FCC behaviors of service providers over the past year, with one indicating "not at all" and seven indicating "to a great extent." A mean score near four indicates that on average, parents report that services providers "sometimes" meet parents' needs. Respondents also have the option to indicate that an item is "not applicable," which is given a value of zero and is not considered a valid response. In order for a scale score to be calculated, at least 66% of the items of that scale must be valid (i.e. completed item with a rating from one to seven). Scale scores are computed as the average of the ratings of each item and therefore range from one to seven. King and colleagues (1996) conducted exploratory factor analysis for the original MPOC, and five scales were identified: 1) Enabling and Partnership, 2) Providing General Information, 3)

Providing Specific Information About the Child, 4) Coordinated and Comprehensive Care for Child and Family, and 5) Respectful and Supportive Care. Subsequent examination of the MPOC-20 found comparable psychometrics to the MPOC (King et al., 2004). The MPOC-20 has been found to have good internal consistency (Cronbach's alphas over 0.80) and test-retest reliability (intraclass correlations ranging from .78 to .88). Additionally, concurrent validity has been demonstrated through positive correlations to parental satisfaction with services and negative correlations with parental stress (King et al., 2004; King et al., 1996). The MPOC-20 has been shown to be sensitive to change in parents of medically complex children with chronic conditions (Cohen et al., 2010; Cohen et al., 2012).

***Caregiver Strain Questionnaire (CGSQ)***

Parental stress was measured using the CGSQ. The CGSQ is a 21-item scale originally developed and validated to assess stress in parents of children with severe emotional and behavioral disorders (Brannan et al., 1997; Brannon & Heflinger, 2001) (see Appendix P). The respondent is asked to rate on a 5-point scale how much of a problem each item has been in the past 6 months as a result of the child's problems. The scale ranges from "not at all a problem" (1) to "very much a problem" (5). The developers of the CGSQ sought to include assessment of both objective and subjective strain, and exploratory factor analysis was conducted to assess if the items did measure these two dimensions. Based on the results of the exploratory factor analysis, three subscales were identified: objective strain, internalized subjective strain, and externalized subjective strain. The objective strain subscale measures negatives consequences of caring for the child. The internalized subjective strain subscale measures feelings

internalized by the caregiver such as sadness or worry. The externalized subjective strain subscale measures negative feelings directed at the child such as resentment and anger. Each subscale score is calculated as the mean of the items in that subscale, and a global score is calculated as the mean of all of the items (Brannan, et al., 1997). If more than 15% of items on a subscale are missing, that subscale score in not valid. A global score cannot be calculated if one or more subscale scores are invalid. The CGSQ has been validated for use in the ASD population. Khanna and colleagues (2012) demonstrated the CGSQ to have excellent internal consistency and adequate convergent validity within a sample of children with ASD. The CGSQ is also sensitive to change (Holly et al., 2019).

The wording of items on the CGSQ was modified slightly based on modifications implemented by Khanna and colleagues when utilizing the measure within a sample of children with ASD. With permission from the author, the phrase "your child's emotional or behavior problem" was replaced with "your child's developmental problem" for each item of the CGSQ in order to make the measure more applicable to children with ASD.

**Data Analysis**

IBM SPSS Statistics version 28 was used for statistical analyses in this study with the exception of power analyses. Power analyses were conducted using G*Power version 3.1. For all analyses involving a comparison of BCBA pre- and post-test measures (i.e. Research Questions #1 and #5), only BCBA who attended a minimum of five ECHO sessions were included. All BCBAs who completed pretest measures were included in analyses regarding pretest implementation of FCC (i.e. Research Questions #2 and #6).

### *Primary and Secondary Research Questions*

In order to examine change in BCBA self-efficacy and self-rating of FCC delivery (Research Question #1), paired samples t-tests were conducted to test for mean differences between pretest and posttest SEQ scores and each of the four scales of the MPOC-SP. A Bonferroni correction was applied to the alpha level for each MPOC-SP scale to account for multiple comparisons. The alpha level was set at .0125 for the MPOC-SP scales (.05/4 scales). It was hypothesized that SEQ and MPOC-SP scores would increase following implementation of the ECHO trainings, and a one-tailed test was conducted accordingly. Cohen's D is reported as the effect size. In order to examine the extent to which BCBAs perceive that they deliver FCC and the extent to which parents perceive that they receive FCC (Research Questions #2 and #3), descriptive statistics for pretest MPOC-SP scale scores and MPOC-20 scale scores were calculated.

### *Exploratory Analyses*

To examine the characteristics of BCBAs that benefit most from ECHO for BCBAs and implement FCC prior to training, independent samples t-tests were conducted comparing change in SEQ and MPOC-SP scale scores (Research Question #5) and pretest MPOC-SP scale scores (Research Question #6) for the categorical variable of interest, and correlations were conducted for the continuous variable of interest. It was hypothesized that there would be significant differences in change SEQ and MPOC-SP scores from pre- to- post-test and pretest MPOC-SP scores based on the BCBA characteristics of pathway to certification, degree level, degree area, and years of experience. However, the sample did not yield enough variability within pathway to certification and degree level to explore these variables. As such, degree area and years in

the field of ABA were the two included independent variables of interest. The degree area variable was collapsed into behavior analysis (group one) and psychology, education, and other (group two) and entered as the independent variable for independent samples t-tests. Difference scores for each scale (Posttest – Pretest) were calculated and entered as the dependent variables. Two-tailed tests were conducted to allow for differences in either direction. A Bonferroni correction was applied to the alpha level for each MPOC-SP scale to account for multiple comparisons. The alpha level was set at .0125 for the MPOC-SP scales (.05/4 scales). Cohen's D is reported as the effect size. To explore the role of years of experience, Spearman correlations were conducted between years in the field of ABA and SEQ and MPOC-SP difference scores from pre- to-post-test and pretest MPOC-SP scale scores. Spearman correlations were utilized as visual inspection of scatterplots revealed that the relationships between variables were not clearly linear. It was hypothesized that years in the field of ABA would be negatively correlated with SEQ and MPOC-SP difference scores and positively correlated with pre-test MPOC-SP scores.

To examine the relationship between FCC and parental stress (Research Question #7), Pearson correlations between MPOC-20 scales and CGSQ subscales and global score were calculated. Pearson correlations were utilized as visual inspection of scatterplots revealed that the relationships between variables were linear. It was hypothesized that there would be a negative correlation between FCC as measured by the MPOC-20 and parental stress as measured by the CGSQ.

For all exploratory analyses, we will use the magnitude descriptors initially recommended by Cohen to describe these effect sizes. For Cohen's D, the magnitude

descriptors will be: 0.01, “very small”; 0.20, “small”; 0.50, “medium”; 0.80, “large”; 1.20, “very large”; and 2.0, “huge.” For correlations, the magnitude descriptors will be: 0.10, “small”; 0.20, “medium”; and 0.50, “large” (Cohen, 1988).

***Missing Data***

MPOC-SP and MPOC-20 scale scores are valid if 66% of items of the scale are completed with a rating other than zero (“not applicable”). Scores with less than 66% valid items were removed from analyses. The number of cases removed from MPOC-SP scales ranged from zero to two, and the number of cases removed from MPOC-20 scales ranged from zero to three. CGSQ subscale scores are valid if less than 15% of items are missing, and the global score is only calculated if all subscale scores are valid. Scores with less than 15% valid items were removed from analyses. One case was removed from the CGSQ Objective Strain subscale and therefore the global score.

# Chapter 6. Phase Two Results

## BCBA Results

### *Study Sample*

A total of 52 individuals responded to the recruitment flyer and completed the screening questionnaire. Two individuals were excluded because they were not BCBAs (one BCaBA and one individual who had not yet passed the certification exam). Two BCBAs chose not to move forward with participation due to scheduling conflicts. A total of 48 BCBAs completed the process of informed consent and completed the pretest questionnaire; these 48 BCBAs were included in all analyses examining pretest FCC only (i.e. Research Questions #2 and #6). Two BCBAs subsequently withdrew without attending any ECHO sessions due to scheduling conflicts. An additional six BCBAs attended less than five ECHO sessions and were therefore excluded from analyses comparing pre- and post-test measures. A total of 40 BCBAs attended five or more ECHO sessions and were included in all analyses. A flowchart of BCBA dropout and inclusion in analyses can be found in Figure 1.

### *Participant Characteristics*

Participant characteristics describe the 48 BCBAs who completed the pretest questionnaire. The majority of BCBAs were female (93.7%) and white (89.6%). The average age was 35.8 years (*SD*=9.2), ranging from 24 to 63. The majority of BCBAs held a certification of BCBA (95.8%) rather than BCBA-D and had a master's degree (87.5%). Almost half of BCBAs held degrees in the area of behavior analysis (45.8%), and 25.0% held degrees in the areas of education and psychology each. The majority of BCBAs reached certification through the behavior analytic coursework pathway (93.8%).

BCBAs held an average of 3.5 years in their current job position (*SD*=3.6) and an average of 10.0 years in the field of ABA (*SD*=6.0, ranging from 1.0 to 25.0). BCBAs were employed by 22 different ABA companies in 12 states (California, Florida, Georgia, Illinois, Indiana, Massachusetts, Maryland, New York, North Dakota, Ohio, Vermont, and Wisconsin), with the largest number employed in Ohio (35%). Additional BCBA demographic information can be found in Table 5.

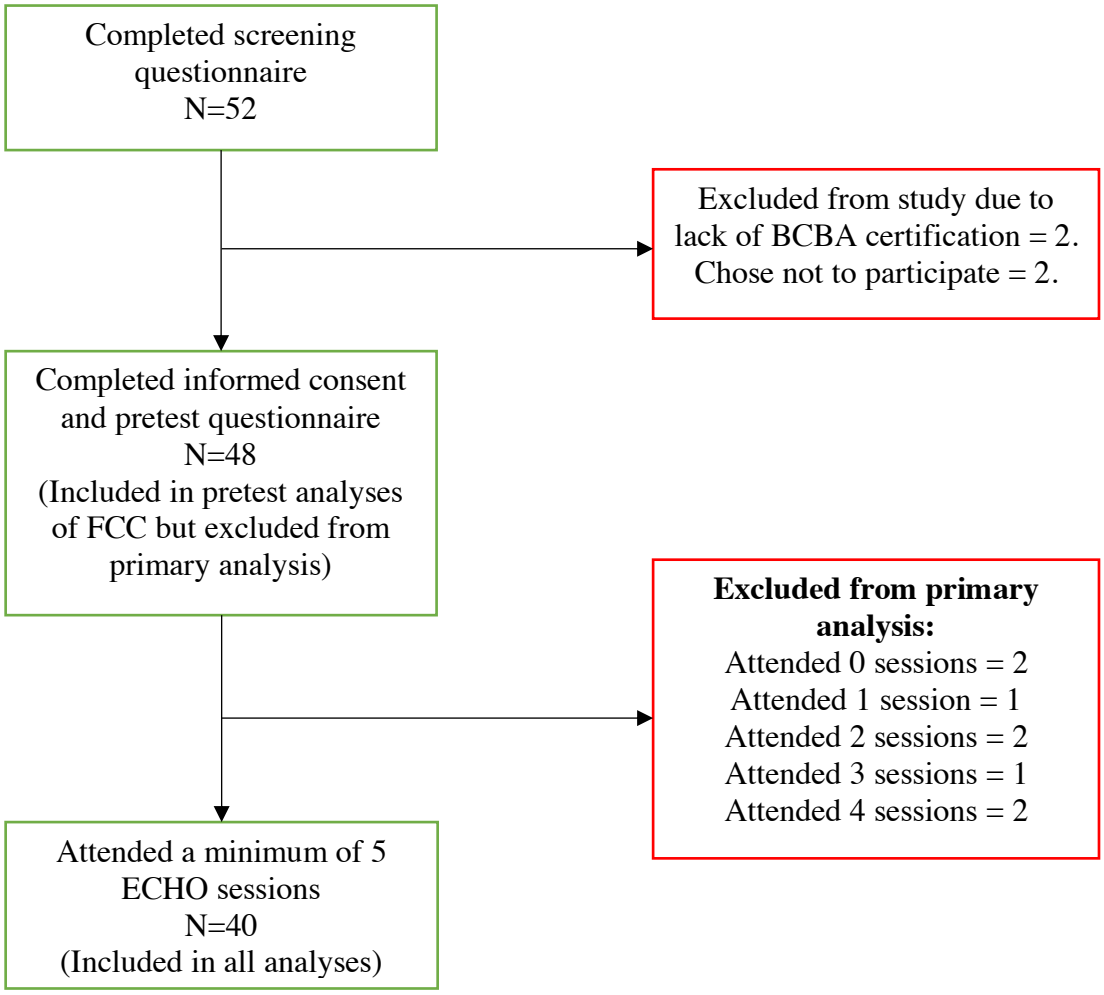


Figure 1. Flow chart of BCBA dropout and inclusion in analyses

BCBAs directly served an average of 8.5 clients (*SD*=6.0), serving clients as young as 5.5 years on average (*SD*=3.8) and as old as 14.3 years on average (*SD* = 8.0).

The total number of clients served by BCBAs who participated in at least one ECHO session was 942. The majority of BCBAs served at least one client with a comorbid mental health diagnosis (72.9%), receiving additional treatments (95.8%), and with a significant trauma history (68.8%). Additional details related to the clients served by BCBAs can be found in Table 6. A total of 30 BCBAs provided supervision to some extent (62.5%). BCBAs provided supervision to Registered Behavior Technicians (RBTs), BCaBAs, BCBAs, and others. Supervising BCBAs had an average of 5.4 supervisees (*SD*=3.0) and supervised an average of 19.4 clients (*SD*=22.8). Additional details related to supervision can be found in Table 7. Over half of BCBAs had previous training experiences with the topics of FCC (58.3%), comorbid mental health diagnoses (58.3%), and trauma-informed care (70.8%). Additional details related to previous training experience can be found in Table 8.

Table 5. BCBA characteristics for Phase Two

| **Variables** | **Mean (*SD*)/ Percentage** | **Min** | **Max** |
|---|---|---|---|
| Age | 35.8 (9.2) | 24 | 63 |
| Race | | | |
| White | 89.6% | | |
| Asian | 4.2% | | |
| American Indian or Alaskan Native | 4.2% | | |
| Hispanic/Latino | 4.2% | | |
| Black | 2.1% | | |
| Sex | | | |
| Female | 93.7% | | |
| Male | 6.3% | | |
| Certification | | | |
| BCBA | 95.8% | | |
| BCBA-D | 4.2% | | |
| Degree level | | | |
| Master's | 87.5% | | |
| Doctoral | 12.5% | | |
| Degree area | | | |
| Behavior Analysis | 45.8% | | |
| Education | 25.0% | | |
| Psychology | 25.0% | | |
| Other | 4.2% | | |
| Path to certification | | | |
| Behavior analytic coursework | 93.8% | | |
| Postdoctoral experience in ABA | 4.2% | | |
| Faculty teaching and coursework | 2.1% | | |
| Years in current position | 3.5 (3.6) | <1 | 15.0 |
| Years in ABA field | 10.0 (6.0) | 1.0 | 25.0 |
| State | | | |
| Ohio | 35.4% | | |
| Vermont | 16.7% | | |
| Massachusetts | 10.4% | | |
| Wisconsin | 10.4% | | |
| California | 6.3% | | |
| Georgia | 6.3% | | |
| Illinois | 4.2% | | |
| Florida | 2.1% | | |
| Indiana | 2.1% | | |
| Maryland | 2.1% | | |
| New York | 2.1% | | |
| North Dakota | 2.1% | | |

Table 6. Characteristics of clients served by BCBAs

| **Variables** | **Mean (*SD*)** |
|---|---|
| Number of clients directly served by BCBA | 8.5 (6.0) |
| Age of youngest client in years | 5.5 (3.8) |
| Age of oldest client in years | 14.3 (8.0) |
| | **Percentage** |
| Serving clients with comorbid mental health diagnosis | |
| Yes | 72.9% |
| No | 20.8% |
| Unsure | 4.2% |
| Serving clients who receive additional treatment | |
| Yes | 95.8% |
| No | 4.2% |
| Serving clients with significant trauma history | |
| Yes | 68.8% |
| No | 14.6% |
| Unsure | 14.6% |

Table 7. Supervision characteristics

| **Variables** | **n** | **Percentage** |
|---|---|---|
| Provide Supervision | | |
| Yes | 30 | 62.5%% |
| No | 18 | 37.5% |
| Supervise RBTs | | |
| Yes | 23 | 76.7% |
| No | 7 | 23.3% |
| Supervise BCaBAs | | |
| Yes | 3 | 23.3% |
| No | 27 | 76.7% |
| Supervise BCBAs | | |
| Yes | 15 | 50% |
| No | 15 | 50% |
| Supervise Other | | |
| Yes | 10 | 33.3% |
| No | 20 | 66.6% |
| | | **Mean (*SD*)** |
| Number of Supervisees | | 5.4 (3.0) |
| Number of Clients Supervised | | 19.4 (22.8) |

Table 8. Previous training experience

| Variables | Percentage |
|---|---|
| Previous training on FCC | |
| Yes | 58.3% |
| No | 41.7% |
| Previous training on comorbid mental health diagnoses | |
| Yes | 58.3% |
| No | 41.7% |
| Previous training on trauma or trauma-informed care | |
| Yes | 70.8% |
| No | 29.2% |

***Primary Analyses: Paired Samples T-Tests***

A total of 40 cases were included in the primary analyses (i.e. participants who attended at least five ECHO sessions). Paired samples t-tests were conducted to examine mean differences between pretest and posttest SEQ and MPOC-SP scale scores. A Bonferroni-corrected alpha level of .0125 was utilized for MPOC-SP scales. Varying degrees of freedom are due to exclusion of invalid scale scores. MPOC-SP scales consist of Showing Interpersonal Sensitivity (SIP), Providing General Information (PGI), Communicating Specific Information (CSI), and Treating People Respectfully (TPR).

Prior to conducting the t-tests, a variety of statistics and charts were examined in order to ensure the assumption of normality of difference scores (Posttest – Pretest) was met. First, a Shapiro-Wilk test of normality was completed and did not show evidence of non-normality for difference scores for the SEQ, MPOC-SP SIP scale, and MPOC-SP TPR scale. Thus, the assumption of normality was met for these scales. However, a significant departure from normality was found for difference scores for the MPOC-SP PGI scale and MPOC-SP CSI scale. Subsequent visual inspection of graphs was completed for these two scales. Histograms revealed distributions of difference scores

were appropriately close to normal, with the majority of scores falling in the middle of the distribution. Additionally, plots of expected normal values and observed values closely followed the comparison lines, indicating that scores were close to normally distributed. Thus, it was determined that the distributions for each scale were approximately normally distributed. Shapiro-Wilk test of normality results, histograms, and plots of expected normal values and observed values for SEQ and MPOC-SP difference scores can be found in Appendix Q.

On average, BCBAs improved on the SEQ from pretest ($M$=3.8, $SD$=0.9) to posttest ($M$=4.8, $SD$=0.6), $t$(39)=-9.00, $p$<.001, $d$=-1.42. BCBAs improved on the MPOC-SP SIP scale from pretest ($M$=5.3, $SD$=0.9) to posttest ($M$=5.8, $SD$=0.9; $t$[37]=03.01, $p$=.002, $d$=-0.50), the PGI scale from pretest ($M$=4.2, $SD$=1.8) to posttest ($M$=4.9, $SD$=1.7; $t$[37]=-2.68, $p$=.005, $d$=-0.44), and the TPR scale from pretest ($M$=5.9, $SD$=0.8) to posttest ($M$=6.2, $SD$=0.7; $t$[39]=-2.86, $p$=.003, $d$=-0.45). BCBAs did not improve significantly on the CSI scale of the MPOC-SP from pretest ($M$=5.7, $SD$=1.0) to posttest ($M$=6.0, $SD$=0.9), $t$(39)=-1.60, $p$=.059, $d$=-0.25. Results of the paired samples t-tests can be found in Table 9, and pretest and posttest means are depicted graphically in Figures

| Scale | Pretest | | Posttest | | *t* | *df* | *p* | Cohen's *d* |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | | | | |
| SEQ[1] | 3.8 | 0.9 | 4.8 | 0.6 | -9.00 | 39 | <.001** | -1.42 |
| MPOC-SP Showing Interpersonal Sensitivity[2] | 5.3 | 0.9 | 5.8 | 0.9 | -3.01 | 37 | .002* | -0.50 |
| MPOC-SP Providing General Information[2] | 4.2 | 1.8 | 4.9 | 1.7 | -2.68 | 37 | .005* | -0.44 |
| MPOC-SP Communicating Specific Information[2] | 5.7 | 1.0 | 6.0 | 0.9 | -1.60 | 39 | .059 | -0.25 |
| MPOC-SP Treating People Respectfully[2] | 5.9 | 0.8 | 6.2 | 0.7 | -2.86 | 39 | .003* | -0.45 |

Table 9. Paired samples t-tests for SEQ and MPOC-SP scales

[1]SEQ score represents an average of item scores with a possible range of 1-6.
[2]MPOC-20 scale scores represent an average of item scores with a possible range of 1-7.
*$p$<.0125 (Bonferroni correction for MPOC-SP scales, $\alpha = .05/4$); **$p$<.001

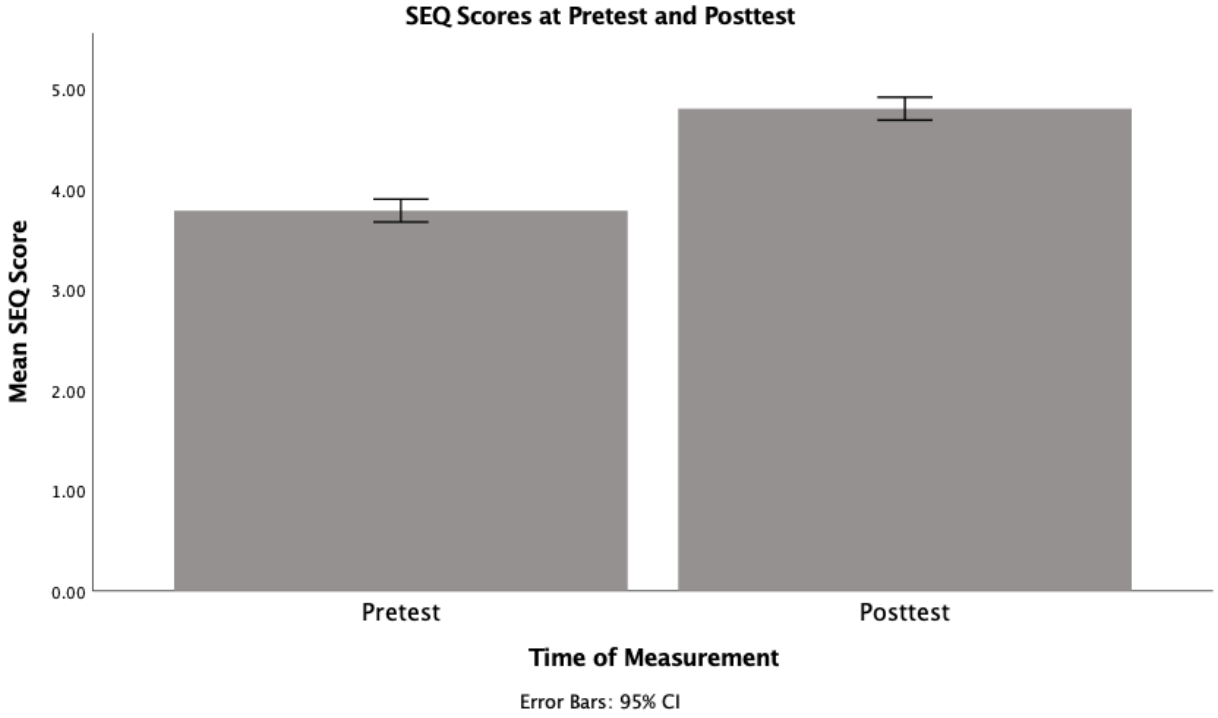


Figure 2. Bar graph of SEQ pre- and post-test mean scores

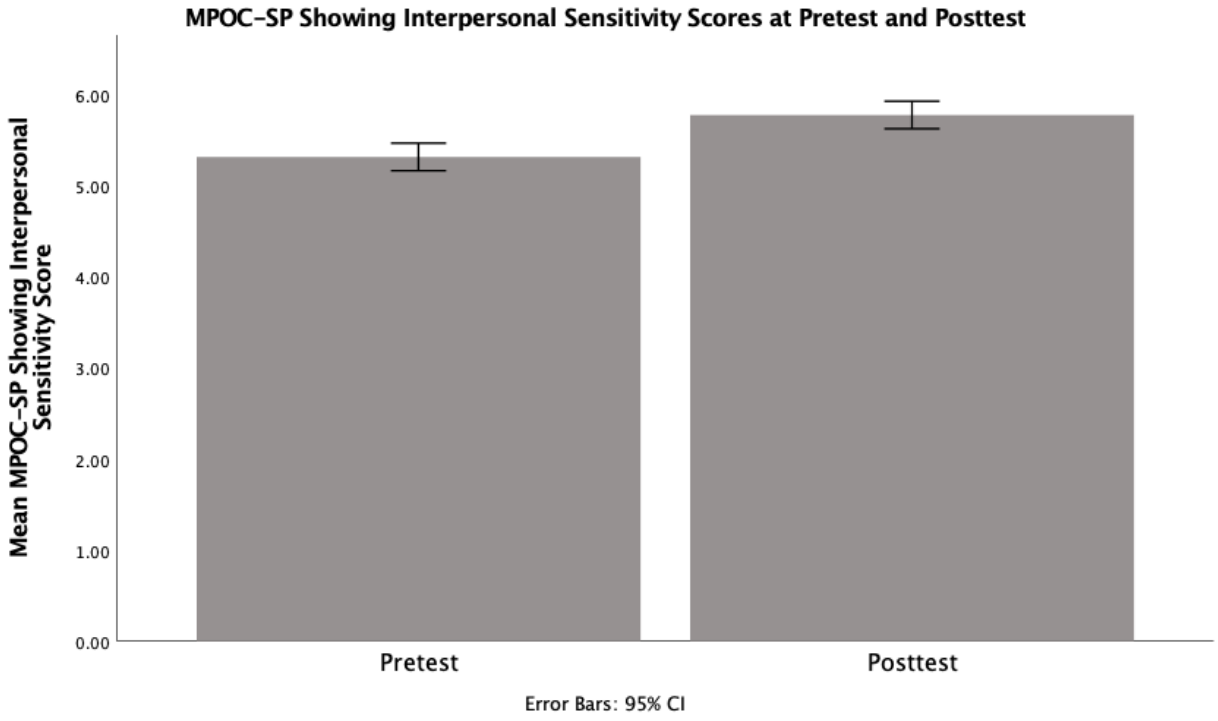


Figure 3. Bar graph of MPOC-SP SIS pre- and post-test mean scores

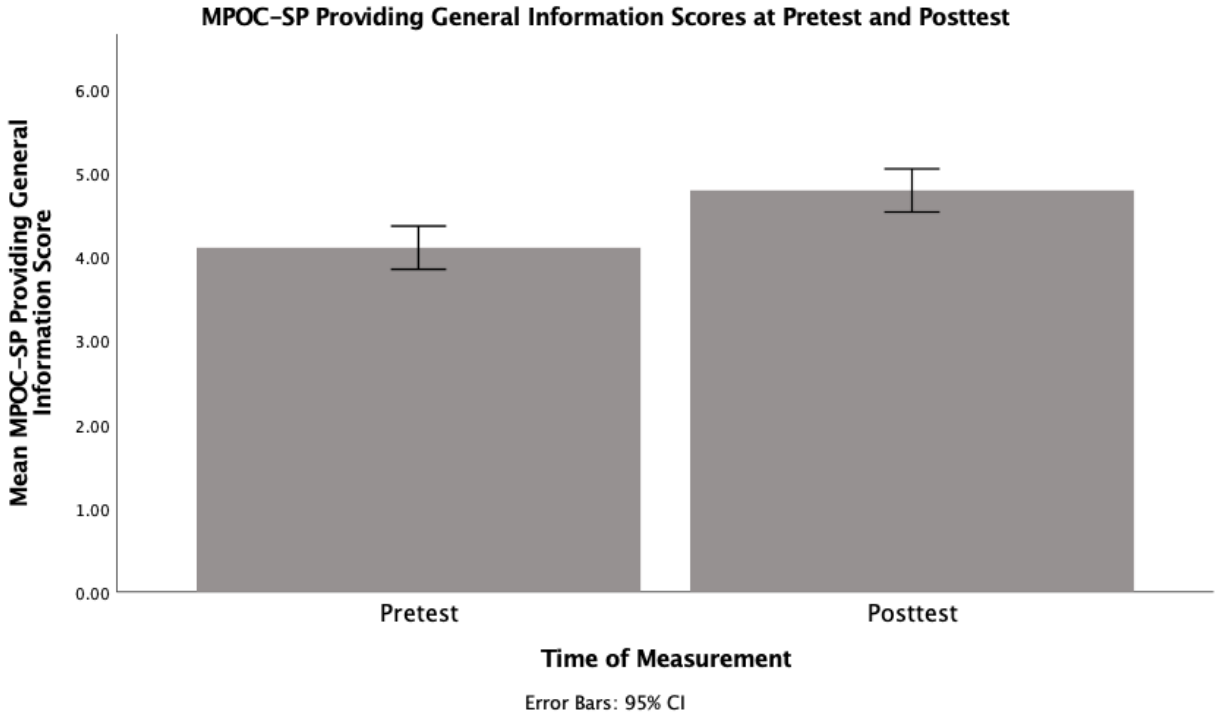


Figure 4. Bar graph of MPOC-SP PGI pre- and post-test mean scores

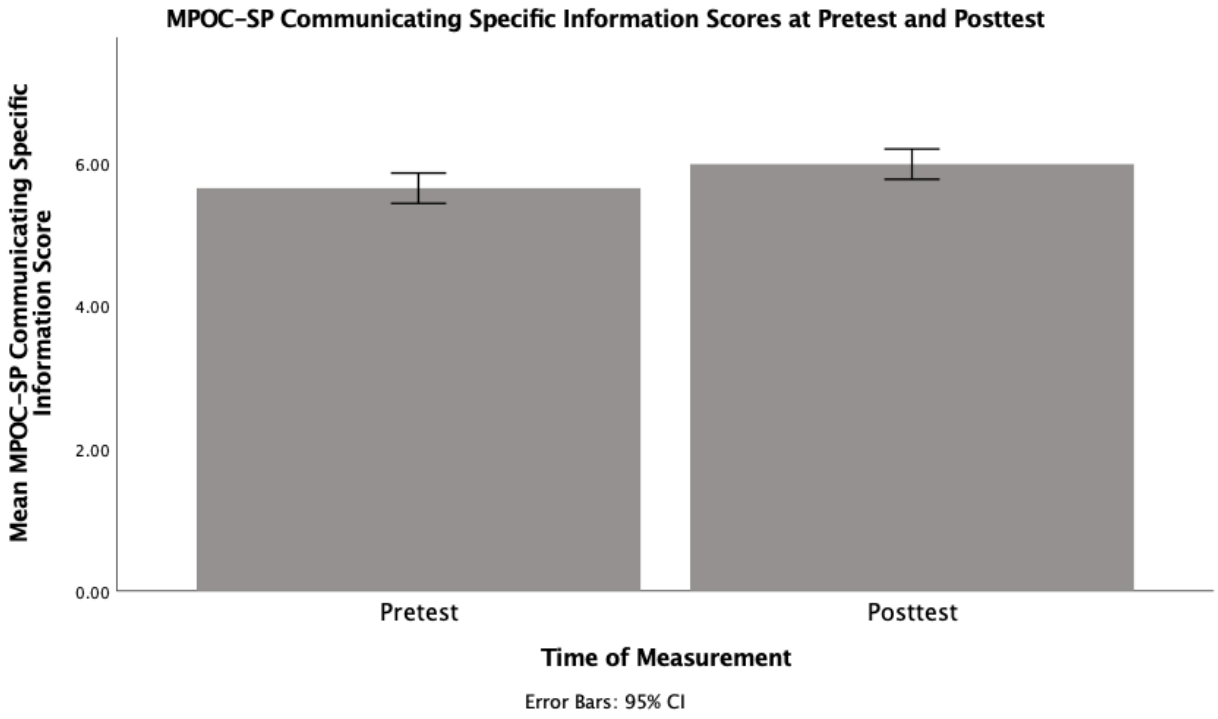


Figure 5. Bar graph of MPOC-SP CSI pre- and post-test mean scores

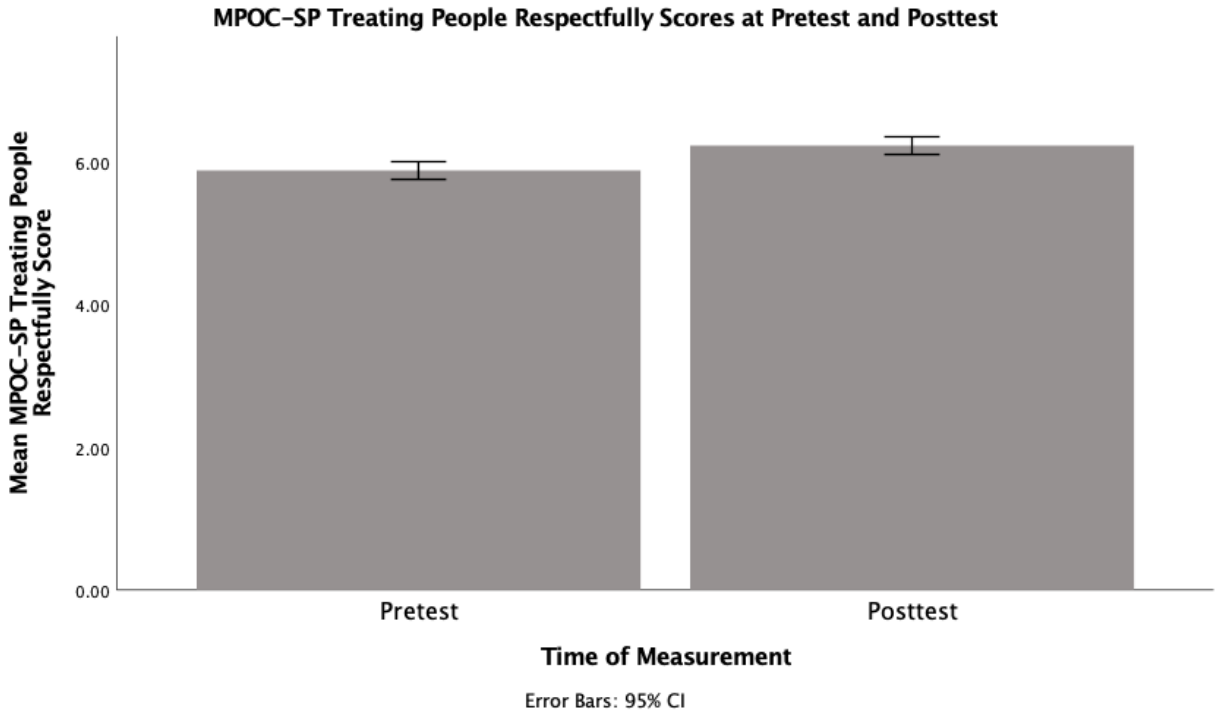


Figure 6. Bar graph of MPOC-SP TPR pre- and post-test mean scores

***Secondary Analyses: Pretest Measures***

A total of 48 cases were included in analyses of pretest measures (i.e. all participants who completed the pretest questionnaire). On average, BCBAs rated their self-efficacy as measured by the SEQ at 3.8 out of a total possible score of six at pretest (*SD*=0.8). MPOC-SP scale scores have a total possible average score of seven. On average, BCBAs rated themselves highest on the TPR scale, indicating that they engage in these behaviors to a great extent (*M*=5.9, *SD*=1.0). They rated themselves lowest on the PGI scale, indicating that they sometimes engage in these behaviors (*M*=4.1, *SD*=1.7). The SIP scale yielded a mean of 5.3 (*SD*=0.9), and the CSI scale yielded a mean of 5.6 (*SD*=1.0), both indicating that behaviors occur between to a fairly great extent and to a great extent. A summary of SEQ and MPOC-SP scores at pretest can be found in Table 10.

Table 10. SEQ score and MPOC-SP scale scores at pretest

| Scale | n | Mean (SD) |
|---|---|---|
| SEQ[1] | 48 | 3.8 (0.8) |
| MPOC-SP Showing Interpersonal Sensitivity[2] | 47 | 5.3 (0.9) |
| MPOC-SP Providing General Information[2] | 46 | 4.1 (1.7) |
| MPOC-SP Communicating Specific Information[2] | 48 | 5.6 (1.0) |
| MPOC-SP Treating People Respectfully[2] | 48 | 5.9 (0.7) |

[1]SEQ score represents an average of item scores with a possible range of 1-6.
[2]MPOC-20 scale scores represent an average of item scores with a possible range of 1-7.

There were large correlations between the SEQ and the following MPOC-SP scales: SIP ($r$=.747, $p$<.001), PGI ($r$=.575, $p$<.001), and TPR ($r$=.630, $p$<.001). There was a medium correlation between the SEQ and MPOC-SP CSI scale ($r$=.308, $p$=.033). Correlations for SEQ and MPOC-SP sales are presented in Table 11.

Table 11. Correlation matrix of SEQ and MPOC-SP scales at pretest

| Variables | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. SEQ | - | | | | |
| 2. MPOC-SP Showing Interpersonal Sensitivity | .747** | - | | | |
| 3. MPOC-SP Providing General Information | .575** | .577** | - | | |
| 4. MPOC-SP Communicating Specific Information | .308 | .482** | .272 | - | |
| 5. MPOC-SP Treating People Respectfully | .630** | .804** | .416* | .542** | |

*$p$<.0125 (Bonferroni correction for MPOC-SP scales, $\alpha$ = .05/4); **$p$<.001

***Exploratory Analyses***

A series of independent samples t-tests and Spearman correlations were conducted in order to examine the impact of degree area (behavior analysis versus other) and years of experience with ABA on improvement in SEQ and MPOC-SP scores from pre- to post-test and MPOC-SP scale scores at pretest. Among the 48 BCBAs who completed pretest measures, 22 had a degree in behavior analysis, and 26 had a degree in a different area. Among the 40 BCBAs included in pre-post analyses, 19 had a degree in behavior analysis, and 21 had a degree in a different area. This breakdown can be found in Table 12.

Table 12. Degree area of BCBAs by analyses

| | Degree in behavior analysis | Degree in other area | Total |
|---|---|---|---|
| BCBA included in analyses of pretest measures | 22 | 26 | 48 |
| BCBAs included in analyses of pre-post differences | 19 | 21 | 40 |

**SEQ and MPOC-SP Difference Scores from Pre- to Post-Test: Between Group Differences.** A Shapiro-Wilk test of normality was conducted for difference scores for the SEQ and MPOC-SP scales to test the assumption of normality. Results were non-significant for the SEQ, SIP scale, and TPR scale for both groups and the PGI and CSI scales for the behavior analysis group, indicating a normal distribution of scores. However, there was a significant departure from normality for the non-behavior analysis group for the PGI and CSI scales. Subsequent visual inspection of graphs was completed for these two scales. Histograms revealed distributions were appropriately close to normal, with the majority of scores falling in the middle of the distribution. Additionally, plots of expected normal values and observed values closely followed the comparison lines, indicating that scores were close to normally distributed. Thus, it was determined that the distributions for each scale were approximately normally distributed. Levene's test for equality of variances was conducted for difference scores for the SEQ and MPOC-SP scales. Results were nonsignificant for four of the five scale, meeting the assumption of homogeneity of variance. The exception was the MPOC-SP PGI scale, for which the assumption of homogeneity of variance was not met. As such, the following results are reported with equal variances not assumed for the MPOC-SP PGI scale and with equal variances assumed for the remaining scales. Shapiro-Wilk test results, histograms, plots of expected normal values and observed values, and Levene's test results for difference scores for the SEQ and MPOC-SP scales can be found in Appendix R.

On average, BCBAs with a degree in behavior analysis demonstrated significantly greater improvement in SEQ scores ($M$=1.3, $SD$=0.7) than BCBAs with a degree in other

areas (*M*=0.7, *SD*=0.6), *t*(38)=3.09, *p*<.004, Cohen's *d*=0.98. BCBAs with a degree in behavior analysis also demonstrated significantly greater improvement in MPOC-SP PGI scores (*M*=1.4, *SD*=1.9) than BCBAs with a degree in other areas (*M*=0.1, *SD*=1.0), *t*(36)=2.74, *p*=.010, Cohen's *d*=0.89. There was a large although not statistically significant difference at the .0125 alpha level on the MPOC-SP SIP scale, with BCBAs with a degree in behavior analysis demonstrating greater improvement (*M*=0.8, *SD*=0.9) than BCBAs with a degree in other areas (*M*=0.1, *SD*=0.8), *t*(36)=2.56, *p*<.015, Cohen's *d*=0.83. There was a medium although not statistically significant difference on the MPOC-SP CSI scale, with BCBAs with a degree in behavior analysis demonstrating greater improvement (*M*=0.7, *SD*=1.2) than BCBAs with a degree in other areas (*M*=0.0, *SD*=1.4), *t*(38)=1.86, *p*<.071, Cohen's *d*=0.59. There was also a medium although not statistically significance on the MPOC-SP TPR scale, with BCBAs with a degree in behavior analysis demonstrating greater improvement (*M*=0.5, *SD*=0.8) than BCBAs with a degree in other areas (*M*=0.2, *SD*=0.7), *t*(38)=1.58, *p*<.123, Cohen's *d*=0.50. Results related to improvement in SEQ and MPOC-SP scale scores are presented in Table 13, and mean difference scores by degree area of concentration are depicted graphically in Figures 7-11.

Table 13. Difference between BCBAs with a degree in behavior analysis and BCBAs with a degree in other areas on SEQ and MPOC-SP difference scores from pre- to- post-test.

| | Degree in behavior analysis | | Degree in other area | | *t* | *df* | *p* | Cohen's *d* |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | | | | |
| SEQ | 1.3 | 0.7 | 0.7 | 0.6 | 3.09 | 38 | .004* | 0.98 |
| MPOC-SP Showing | 0.8 | 0.9 | 0.1 | 0.8 | 2.56 | 36 | .015 | 0.83 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Interpersonal Sensitivity | | | | | | | | |
| MPOC-SP Providing General Information | 1.4 | 1.9 | 0.1 | 1.0 | 2.74 | 36 | .010** | 0.89 |
| MPOC-SP Communicating Specific Information | 0.7 | 1.2 | 0.0 | 1.4 | 1.86 | 38 | .071 | 0.59 |
| MPOC-SP Treating People Respectfully | 0.5 | 0.8 | 0.2 | 0.7 | 1.58 | 38 | .123 | 0.50 |

*$p$<.05; **p<.0125 (Bonferroni correction for MPOC-SP scales, $\alpha$ = .05/4)

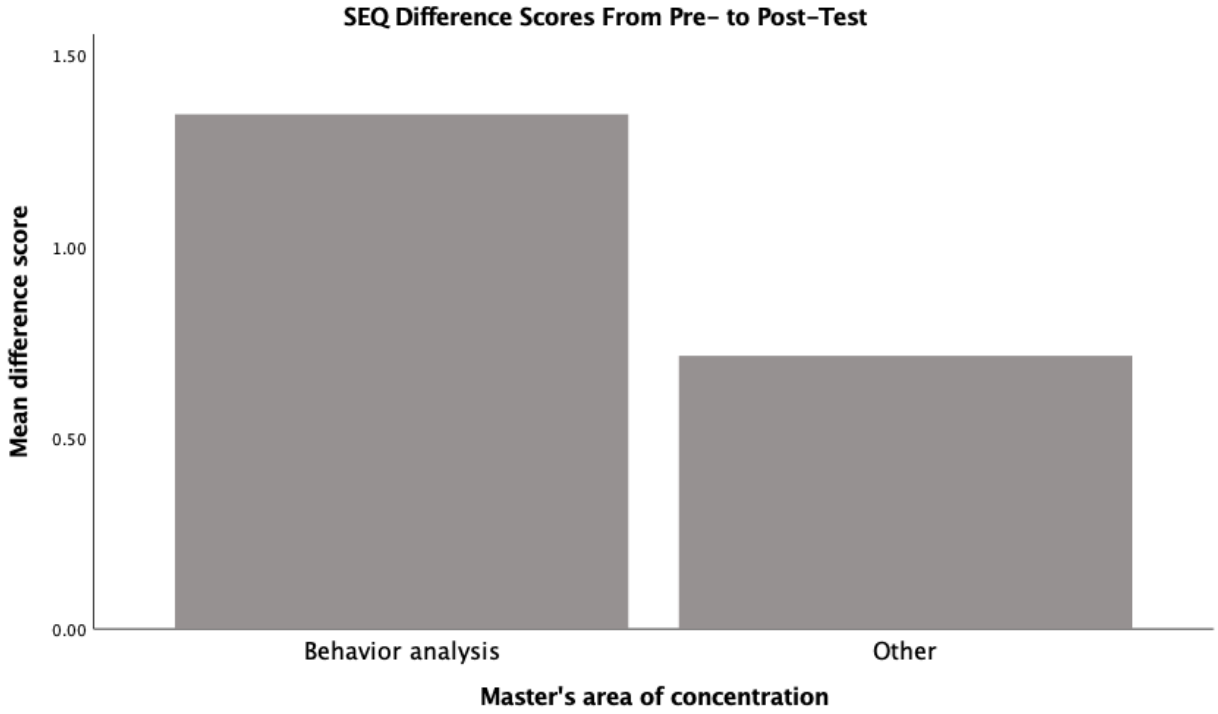


Figure 7. Bar graph of SEQ difference scores by master's area of concentration

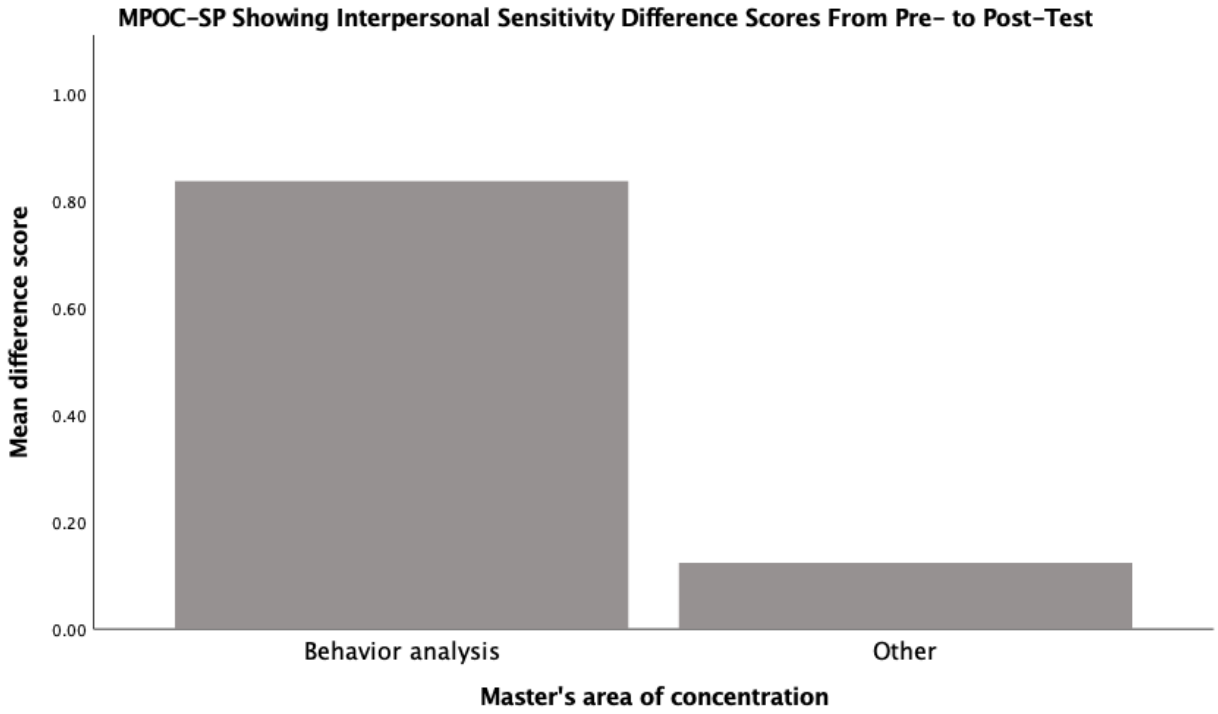


Figure 8. Bar graph of MPOC-SP SIS difference scores by master's area of concentration

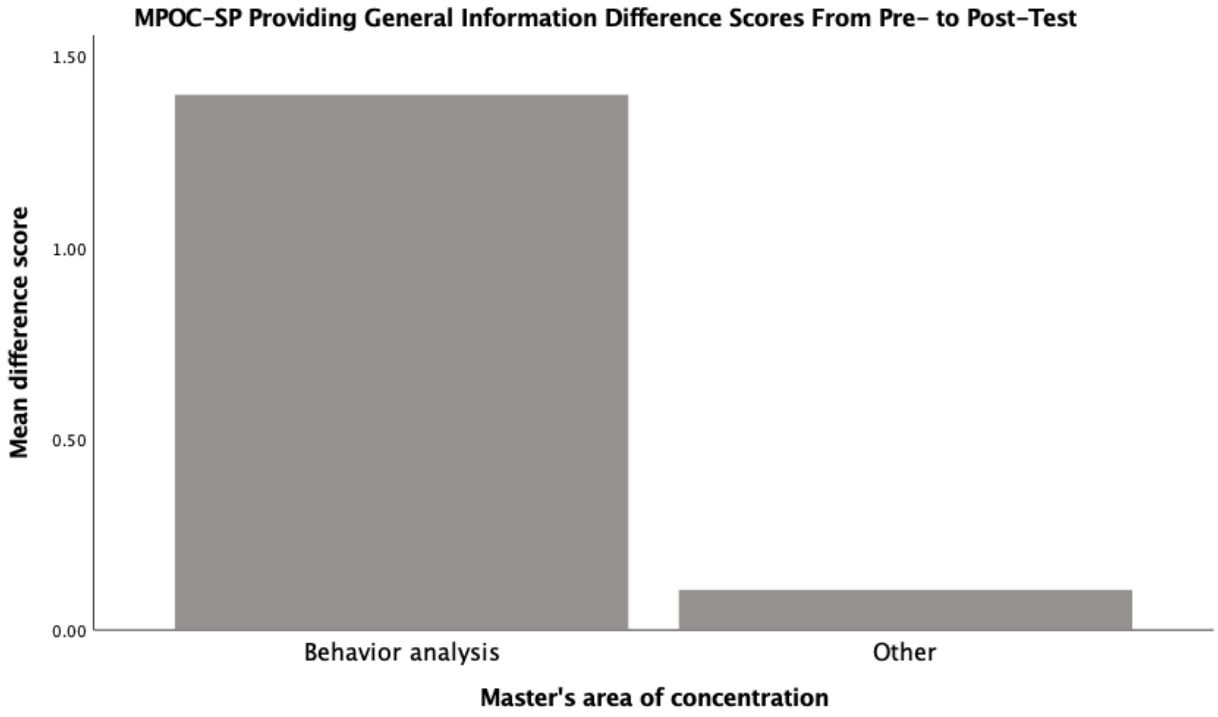


Figure 9. Bar graph of MPOC-SP PGI difference scores by master's area of concentration

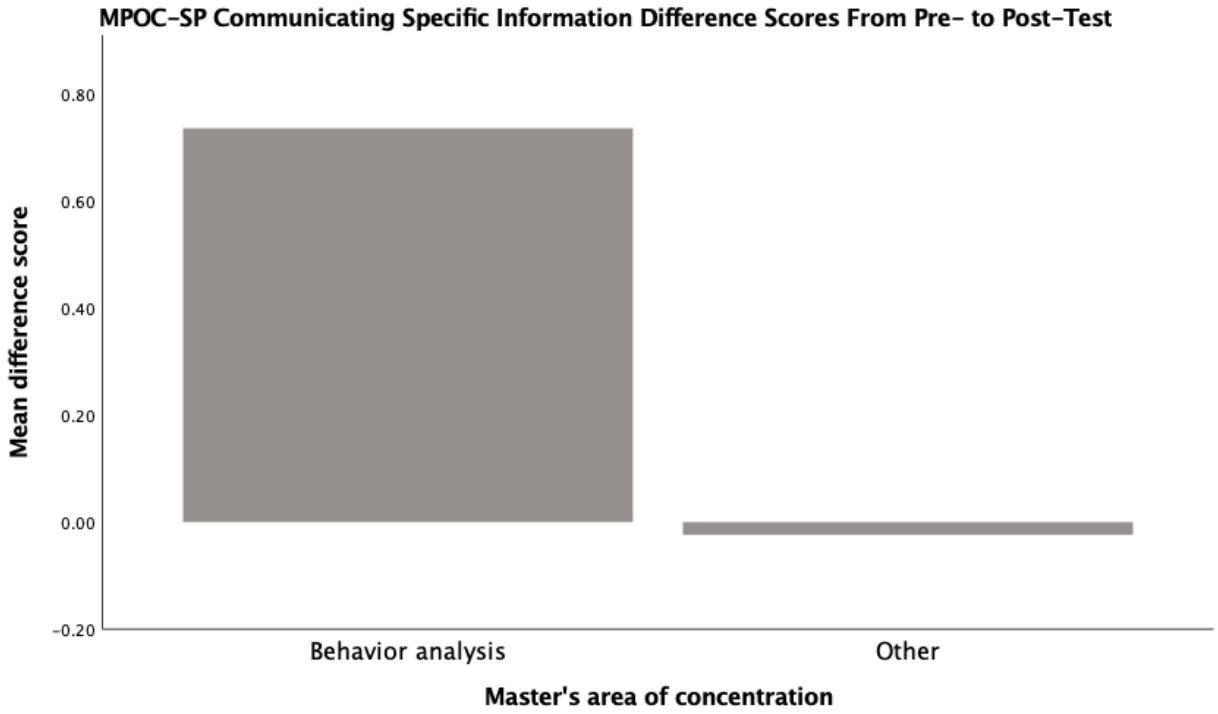


Figure 10. Bar graph of MPOC-SP CSI difference scores by master's area of concentration

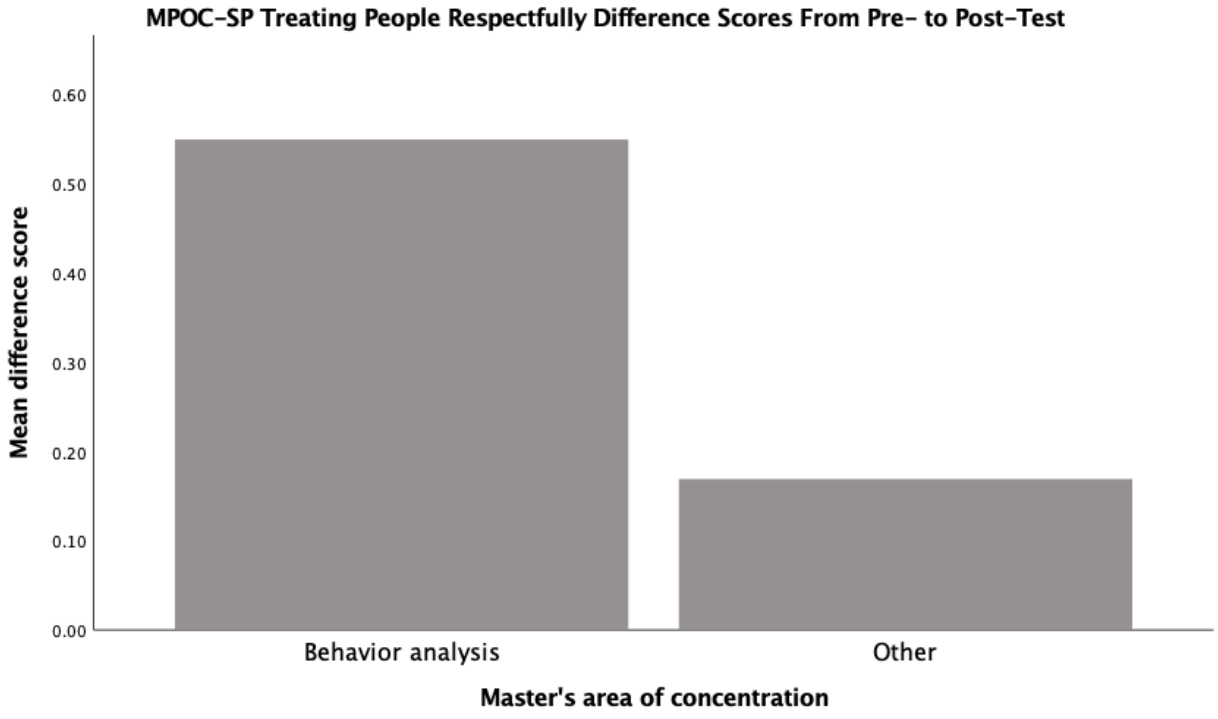

Figure 11. Bar graph of MPOC-SP TPR difference scores by master's area of concentration

**SEQ and MPOC-SP Difference Scores from Pre- to Post-Test: Correlations.** Spearman's correlations revealed no significant correlations between years in the field of ABA and difference scores for SEQ and MPOC-SP scales. The effect size for the PGI scale of the MPOC-SP was medium and negative ($r_s$=-0.32). The remaining effect sizes were small and negative, ranging from 0.04 (MPOC-SP CSI) to -.27 (SEQ). All correlation coefficients can be found in Table 14. Scatterplots of the relationship between years in the field of ABA and difference scores for the SEQ and MPOC-SP can be found in Appendix S.

Table 14. Correlation between difference scores and BCBA experience

| | Years in ABA field | |
|---|---|---|
| | $r_s$ | *P* |
| SEQ difference score | -.27 | .093 |
| MPOC-SP Showing Interpersonal Sensitivity difference score | -.06 | .704 |
| MPOC-SP Providing General Information difference score | -.32 | .049 |
| MPOC-SP Communicating Specific Information difference score | -.04 | .798 |
| MPOC-SP Treating People Respectfully difference score | -.15 | .364 |

*$p$<.05; **p<.0125 (Bonferroni correction for MPOC-SP scales, $\alpha$ = .05/4)

**MPOC-SP Scale Scores at Pretest: Between-Group Differences.** A Shapiro-Wilk test of normality was conducted for each MPOC-SP scale at pretest to test the assumption of normality. Results were non-significant for the SIP and TPR scales for both groups and the PGI and CSI scales for the behavior analysis group, indicating a normal distribution of scores. However, there was a significant departure from normality

for the non-behavior analysis group for the PGI and CSI scales. Subsequent visual inspection of graphs was completed for these two scales. Histograms revealed distributions were appropriately close to normal, with the majority of scores falling in the middle of the distribution. Additionally, plots of expected normal values and observed values closely followed the comparison lines, indicating that scores were close to normally distributed. Thus, it was determined that the distributions for each scale were approximately normally distributed. Levene's test for equality of variances was conducted for each MPOC-SP scale at pretest. Results were nonsignificant for each of the MPOC-SP scales at pretest, thus the assumption of homogeneity of variance was met and the following results are reported with equal variances assumed. Shapiro-Wilk test results, histograms, plots of expected normal values and observed values for MPOC-SP scales, and Levene's test results be found in Appendix T.

Although small to medium effect sizes were detected, differences between BCBAs with a degree in behavior analysis and BCBAs with a degree in other areas were not statistically significant for any MPOC-SP scales at pretest at the alpha level of .0125. There was a medium difference between BCBAs with a degree in behavior analysis and BCBAs with a degree in other areas for the MPOC-SP scales of SIP ($t$[45]=-1.87, $p$=.068, $d$=-0.71) and PGI ($t$[44]=-2.37, $p$=.022, $d$=-0.), with those with a degree in behavior analysis rating themselves lower on both scales. There was a small difference between BCBAs with a degree in behavior analysis and BCBAs with a degree in other areas for the MPOC-SP scales of CSI ($t$[46]=-0.95, $p$=.348, $d$=-0.28) and TPR ($t$[46]=-1.08, $p$=.283, $d$=-0.31), with those with a degree in behavior analysis rating themselves lower

on both scales. Results of the independent samples t-tests are reported in Table 15, and group means are depicted graphically in Figures 12-15.

Table 15. Independent samples t-tests comparing BCBAs with a degree in behavior analysis and BCBAs with a degree in other areas on pretest MPOC-SP scales

| | Degree in behavior analysis | | Degree in other area | | *t* | *df* | *P* (2-sided) | *Cohen's d* |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | | | | |
| MPOC-SP Showing Interpersonal Sensitivity | 5.0 | 0.8 | 5.5 | 1.0 | -1.87 | 45 | .068 | -0.55 |
| MPOC-SP Providing General Information | 3.4 | 1.8 | 4.6 | 1.6 | -2.37 | 44 | .022 | -0.71 |
| MPOC-SP Communicating Specific Information | 5.5 | 1.0 | 5.8 | 1.1 | -0.95 | 46 | .348 | -0.28 |
| MPOC-SP Treating People Respectfully | 5.7 | 0.7 | 6.0 | 0.8 | -1.08 | 46 | .283 | -0.31 |

*$p$<.0125 (Bonferroni correction for MPOC-SP scales, $\alpha = .05/4$)

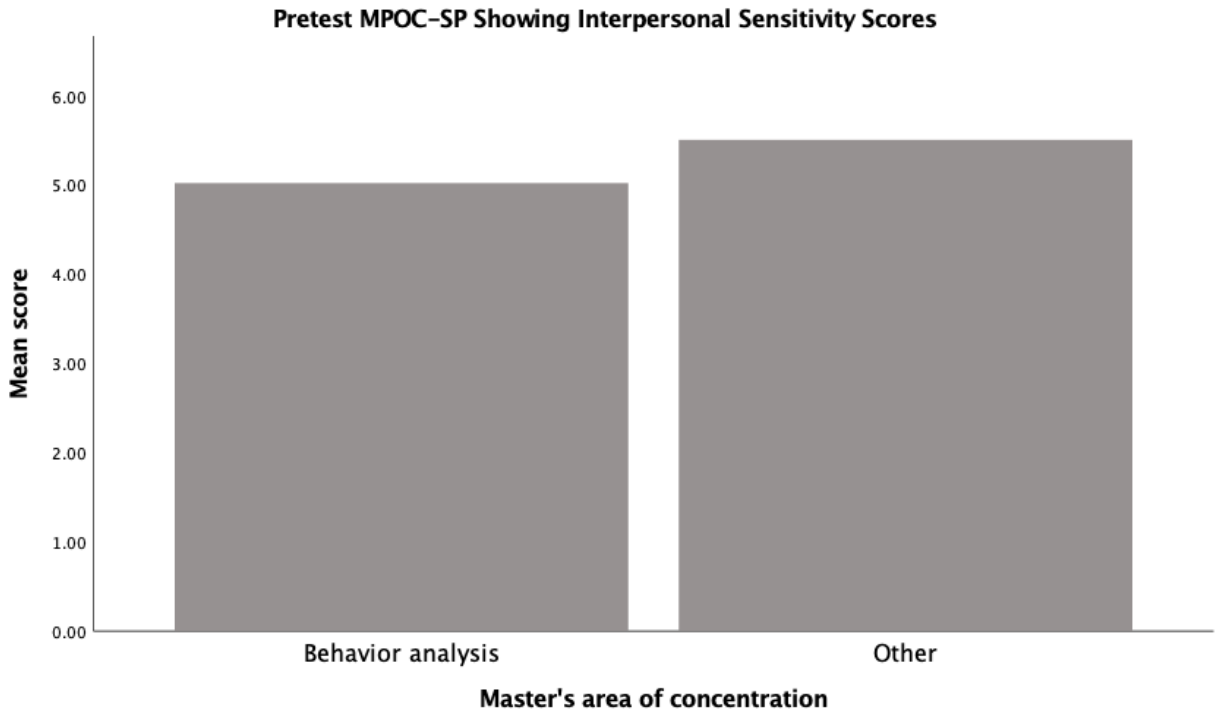


Figure 12. Bar graph of pretest MPOC-SP SIS mean scores by master's area of concentration

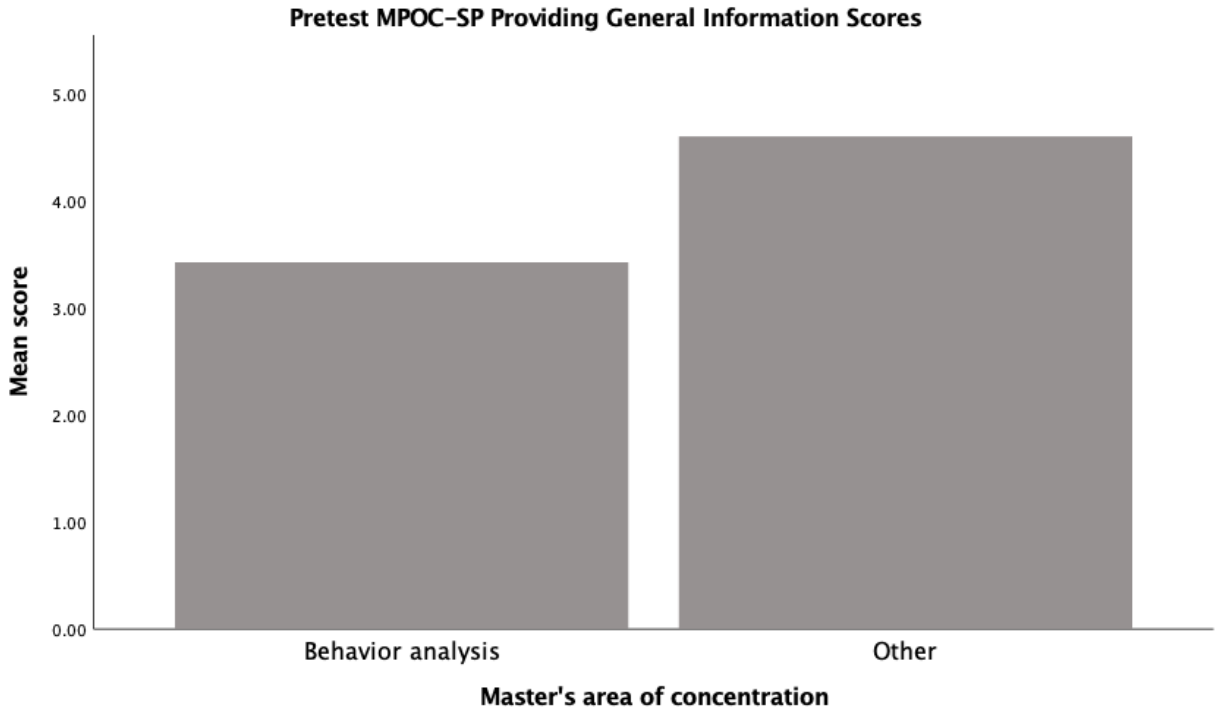


Figure 13. Bar graph of pretest MPOC-SP PGI mean scores by master's area of concentration

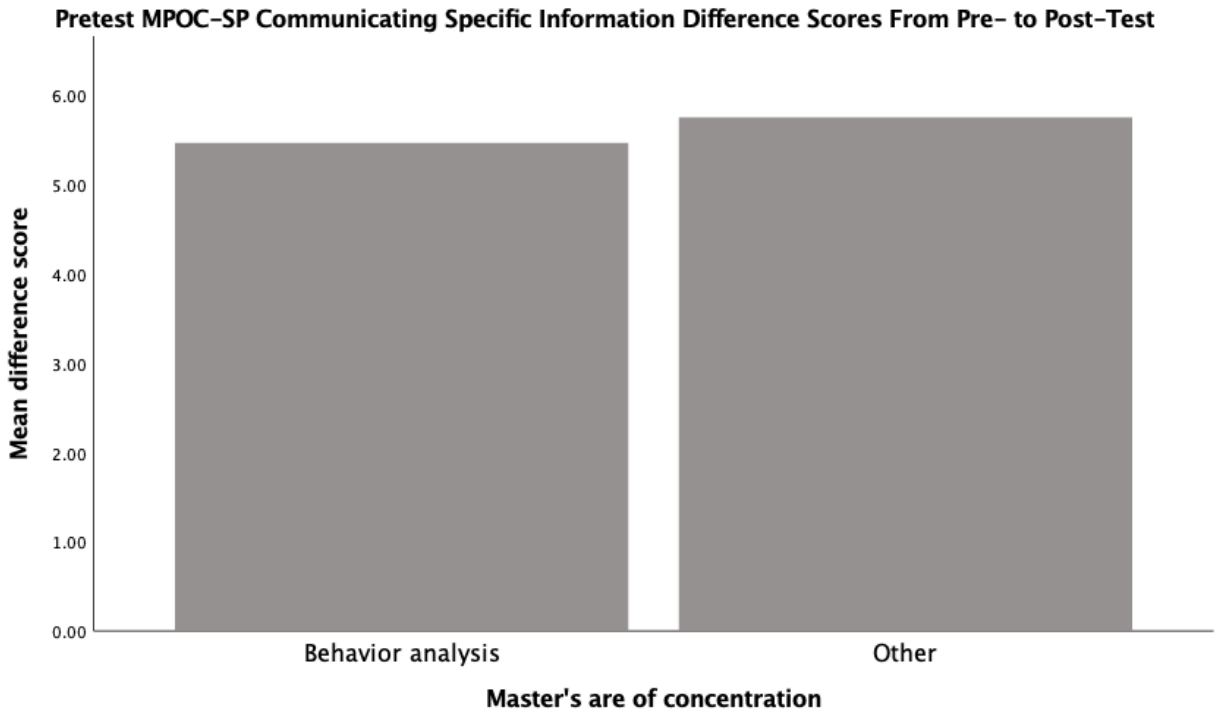

Figure 14. Bar graph of pretest MPOC-SP CSI mean scores by master's area of concentration


Figure 15. Bar graph of pretest MPOC-SP TPR mean scores by master's area of concentration

**MPOC-SP Scale Scores at Pretest: Correlations.** Spearman's correlations revealed no significant correlations between years in the field of ABA and MPOC-SP scales at pretest. Effect sizes were small and ranged from -.14 (CSI) and .20 (TPR). All correlation coefficients can be found in Table 16. Scatterplots of the relationship between years in the field of ABA and each MPOC-SP scale at pretest can be found in Appendix U.

Table 16. Correlations between pretest MPOC-SP scales and BCBA experience

| | Years in ABA field | |
|---|---|---|
| | $r_s$ | *P* |
| MPOC-SP Showing Interpersonal Sensitivity | .14 | .337 |
| MPOC-SP Providing General Information | .19 | .212 |
| MPOC-SP Communicating Specific Information | -.14 | .347 |
| MPOC-SP Treating People Respectfully | .20 | .167 |

***Satisfaction***

Satisfaction was evaluated for BCBAs who attended at least five ECHO sessions. BCBAs reported high levels of satisfaction with ECHO for BCBAs, with 85% of participants reporting that they agreed or strongly agreed with all satisfaction statements. On five of the satisfaction survey items, 100% of participants responded that they agreed or strongly agree. On the remaining four satisfaction survey items, a small number of participants (one to five) responded "disagree." No participants responded "strongly disagree" on any of the satisfaction survey items. For the overall satisfaction item ("Overall I am satisfied with the ECHO model trainings"), 61.5% of participants responded with "strongly agree" and 38.5% responded with "agree"; no participants disagreed or strongly disagreed with this statement. Results for all satisfaction items are presented in Table 17. Results for individual weekly evaluations can be found in Appendix V.

Table 17. Results of satisfaction survey

| Item | Percentage | | | |
|---|---|---|---|---|
| | Strongly Agree | Agree | Disagree | Strongly Disagree |
| The trainings were useful. | 59.0% | 41.0% | 0% | 0% |
| The trainings were relevant. | 60.0% | 37.5% | 2.5% | 0% |
| All learning objectives were met. | 57.5% | 42.5% | 0% | 0% |
| The trainings helped me to improve my clinical Skills | 45.0% | 52.5% | 2.5% | 0% |
| I will use the knowledge I have gained from the trainings. | 60.0% | 40.0% | 0% | 0% |
| I believe I can successfully apply what I've learned to my work. | 52.5% | 47.5% | 0% | 0% |
| Attending the trainings helped me feel connected to other professionals. | 57.5% | 37.7% | 5.0% | 0% |
| I feel like I have expanded my professional network by participating in sessions. | 42.5% | 45.0% | 12.5% | 0% |
| Overall I am satisfied with the ECHO model trainings. | 61.5% | 38.5% | 0% | 0% |

**Parent Results**

***Study Sample***

A total of 392 individuals responded to the recruitment flyer. Following an email request from the researcher to schedule a screening questionnaire, 364 of these individuals did not respond. The initial email communication initiated by these 364 individuals was suspected to be automated due to repeated language, spelling and grammar errors, formatting of email addresses, and overall odd language. A total of 28 individuals completed the screening questionnaire. Two individuals were excluded because they did not have a BCBA on their treatment team, and one individual was excluded because their child was no longer receiving ABA intervention. Of the 25

individuals who were determined to be eligible to participate and therefore were provided with link to the online questionnaire, three did not complete the questionnaire. Two of these individuals did not begin the questionnaire, and one completed consent and the demographics form only. A total of 22 participants therefore completed the questionnaire.

***Participant Characteristics***

The majority of caregivers were mothers (77.3%), white (77.3%), and indicated that English was the primary language spoken in the home (95.5%). The average age of caregivers was 43.2 years (*SD*=7.9), ranging from 33 to 67. Additional caregiver demographic information is presented in Table 18.

Table 18. Parent characteristics for Phase Two

| **Variables** | **Mean (*SD*)/Percentage** |
|---|---|
| Age in years | 43.2 (7.9) |
| Race | |
| White | 77.3% |
| Asian | 18.2% |
| Black | 4.5% |
| Hispanic/Latino | 4.5% |
| Prefer not to answer | 4.5% |
| Sex | |
| Female | 77.3% |
| Male | 22.7% |
| Relationship to Child | |
| Mother | 77.3% |
| Father | 18.2% |
| Grandparent | 4.5% |
| Education Level | |
| High school graduate or GED | 4.5% |
| Some college or post-high school or 2-year degree | 27.3% |
| Completed 4-year degree | 45.5% |
| Advanced graduate or professional degree | 22.7% |
| Household Income | |
| $20,0001-$40,000 | 31.8% |
| $40,0001-$60,000 | 18.2% |
| $60,0001-$90,000 | 13.6% |
| More than $90,000 | 36.4% |
| Language Spoken in Home | |
| English | 95.5% |
| American Sign Language | 4.5% |

The average age of the child with ASD was 8.9 years (*SD*=4.0) and ranged from three to 18 years. The majority of children were male (77.3%) and white (90.9%). The majority of children did not have a comorbid mental health diagnosis (68.2%). Among those with a comorbid mental health diagnosis, ADHD and anxiety disorders were the most common, at 27.3% and 22.7% respectively. Children were receiving an average of 20.9 hours of ABA intervention per week (*SD*=11.5). For the majority of participants, the

role of the BCBA on the treatment team was to oversee a team of behavior techs and provide parent training (54.5%), with solely overseeing a team of behavior techs as the second most common role (27.3%). The majority of participants received funding for ABA intervention from Medicaid (68.2%) or private health insurance (40.9%). Additional child demographic information can be found in Table 19, and additional treatment characteristics can be found in Table 20.

Table 19. Child characteristics for Phase Two

| **Variables** | **Mean (*SD*)/Percentage** |
|---|---|
| Age in years | 8.9 (4.0) |
| Race | |
| White | 90.9% |
| Asian | 18.2% |
| Black | 4.5% |
| Hispanic/Latino | 4.5% |
| Sex | |
| Male | 77.3% |
| Female | 22.7% |
| Child Comorbid Psychiatric Diagnoses | |
| None | 68.2% |
| Attention-Deficit/Hyperactivity Disorder (ADHD) | 27.3% |
| Anxiety Disorders | 22.7% |
| Obsessive Compulsive Disorders | 9.1% |
| Disruptive Disorders | 9.1% |
| Mood Disorders | 4.5% |
| Other[1] | 9.1% |

[1]Pathological Demand Avoidance, Pediatric Acute-onset Neuropsychiatric Syndrome

Table 20. Treatment characteristics for Phase Two

| Variables | Mean (*SD*)/Percentage |
|---|---|
| ABA hours per week | 20.9 (11.5) |
| Role of BCBA on treatment team | |
| Oversees a team of behavior techs and provides parent training | 54.5% |
| Oversees a team of behavior techs | 27.3% |
| Directly provides intervention to child and provides parent Training | 13.6% |
| Directly provides intervention to child | 4.5% |
| Funding source | |
| Medicaid | 68.2% |
| Private health insurance | 40.9% |
| Autism Scholarship | 13.6% |
| County board | 9.1% |
| State-funded early intervention services | 9.1% |
| Private pay | 9.1% |
| School funding | 4.5% |

### *MPOC-20 and CGSQ Scores*

MPOC-20 scales have a total possible score of seven. Scales include Enabling and Partnership (EP), Providing General Information (PGI), Providing Specific Information (PSI), Coordinated and Comprehensive Care (CCC), and Respectful and Supportive Care (RSC).

On average, participants rated the RSC scale the highest, with a mean of 6.0 (*SD*=1.0), indicating that BCBAs meet parents' needs in this area to a great extent. The EP scale yielded a mean score of 5.5 (*SD*=1.5), the PSI scale yielded an average rating of 5.3 (*SD*=1.7), and the CCC scale yielded an average rating of 5.8 (*SD*=1.3). Results of the EP, PSI, and CCC scales indicate that parents' needs in these areas are met between to a fairly great extent and to a great extent. Participants rated the PGI scale the lowest, with a mean score of 3.9 (*SD*=1.7), indicating that parents' needs in this area are sometimes met.

CGSQ subscale scores have a total possible score of five. On average, participants rated Subjective Internalized Strain the highest (*M*=3.1, *SD*=1.0) and Subjective Externalized Strain the lowest (*M*=1.7, *SD*=0.4). The Objective Strain subscale yielded a mean of 2.4 (*SD*=1.0). The mean global score (i.e. sum of subscale scores) was 7.0 (*SD*=2.0). A summary of MPOC-20 and CGSQ scores can be found in Table 21.

Table 21. MPOC-20 and CGSQ scale scores

| **Scale** | **n** | **Mean (SD)** |
|---|---|---|
| MPOC-20 Enabling and Partnership[1] | 22 | 5.5 (1.5) |
| MPOC-20 Providing General Information[1] | 19 | 3.9 (1.7) |
| MPOC-20 Providing Specific Information[1] | 22 | 5.3 (1.7) |
| MPOC-20 Coordinated and Comprehensive Care[1] | 22 | 5.8 (1.3) |
| MPOC-20 Respectful and Supportive Care[1] | 22 | 6.0 (1.0) |
| CGSQ Subjective Internalized Strain[2] | 22 | 3.1 (1.0) |
| CGSQ Objective Strain[2] | 21 | 2.4 (1.0) |
| CGSQ Subjective Externalized Strain[2] | 22 | 1.7 (0.4) |
| CGSQ Global[3] | 21 | 7.0 (2.0) |

[1]MPOC-20 scale scores are an average of item scores with a possible range of 1-7.
[2]CGSQ scale scores are an average of item scores with a possible range of 1-5.
[3]GCSQ Global score is a sum of the three CGSQ scale score.

***Correlation Between MPOC-20 and CGSQ***

All Pearson correlations between MPOC-20 scales and CGSQ subscales and global scores were negative, with some significant relationships found. The PGI scale of the MPOC-20 was significantly correlated to a large extent with the CGSQ global score (*r*=-.54) and the CGSQ Objective Strain subscale (*r*=-.58). The PSI scale of the MPOC-20 was significantly correlated to a medium extent with the CGSQ global score (*r*=-.44) and the CGSQ Objective Strain subscale (*r*=-.43). Medium but nonsignificant correlations were found between the PGI scale of the MPOC-20 and the CGSQ Subjective Externalized Strain subscale (*r*=-.45) and the CGSQ Subjective Internalized

Strain subscale (*r*=-.40). Medium but nonsignificant correlations were also found between the CSI scale of the MPOC-20 and the CGSQ Subjective Externalized Strain subscale (*r*=-.32) and the CGSQ Subjective Internalized Strain subscale (*r*=-2.0). Finally, medium but nonsignificant correlations were found between the EP scale of the MPOC-20 and the CGSQ Objective Strain subscale (*r*=-.23) and the CGSQ Subjective Externalized Strain subscale (*r*=-.21). A correlation matrix for all scales is presented in Table 22. Scatterplots depicting the significant correlations between MPOC-20 and CGSQ scales can be found in Figures 16-19. Scatterplots depicting all correlations between MPOC-20 and CGSQ scales can be found in Appendix W.

Table 22. Correlation matrix of MPOC-20 and CGSQ scales

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. MPOC-20 Enabling and Partnership | - | | | | | | | | |
| 2. MPOC-20 Providing General Information | .69** | - | | | | | | | |
| 3. MPOC-20 Providing Specific Information | .81*** | .80*** | - | | | | | | |
| 4. MPOC-20 Coordinated and Comprehensive Care | .93*** | .58** | .70*** | - | | | | | |
| 5. MPOC-20 Respectful and Supportive Care | .79*** | .56* | .61** | .85*** | - | | | | |
| 6. CGSQ Global | -.16 | -.54* | -.44* | -.08 | -.07 | - | | | |
| 7. CGSQ Objective Strain | -.23 | -.58* | -.43* | -.06 | -.04 | .87*** | - | | |
| 8. CGSQ Subjective Externalized Strain | -.21 | -.45 | -.32 | -.20 | -.18 | .72*** | .46* | - | |
| 9. CGSQ Subjective Internalized Strain | -.06 | -.40 | -.20 | -.02 | -.05 | .91*** | .65** | .61** | - |

*p<.05; **p<.01; **p<.001

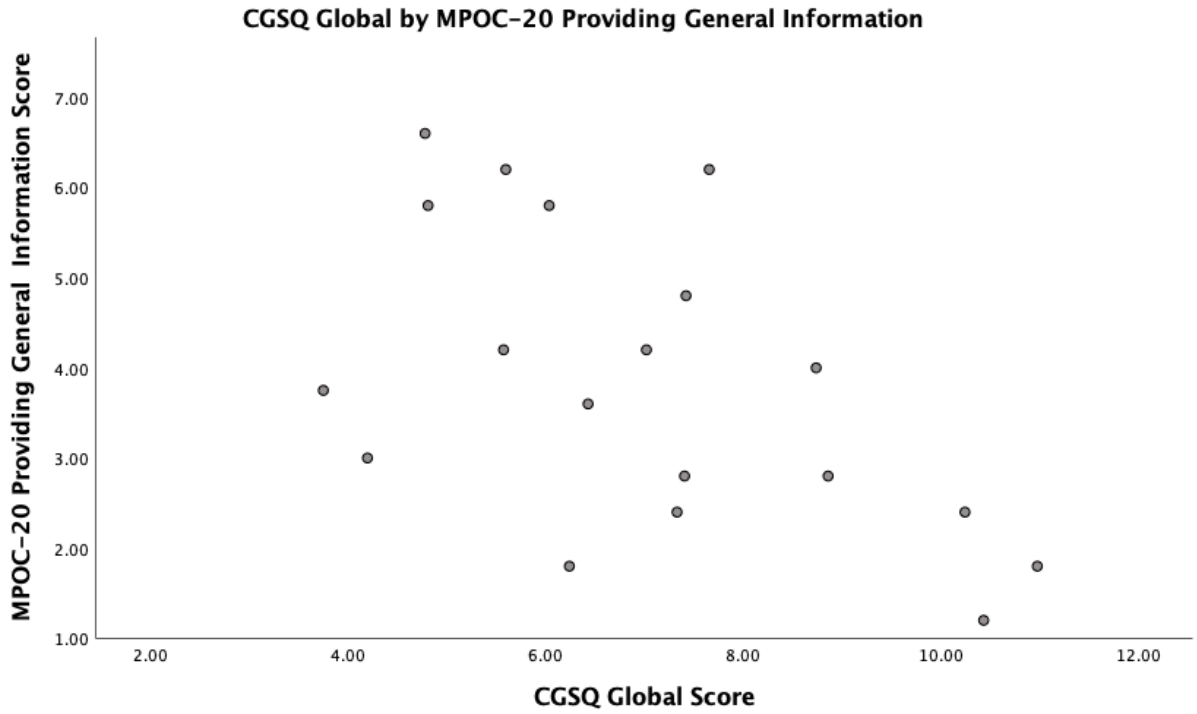


Figure 16. Scatterplot of CGSC global scores by MPOC-20 PGI scores

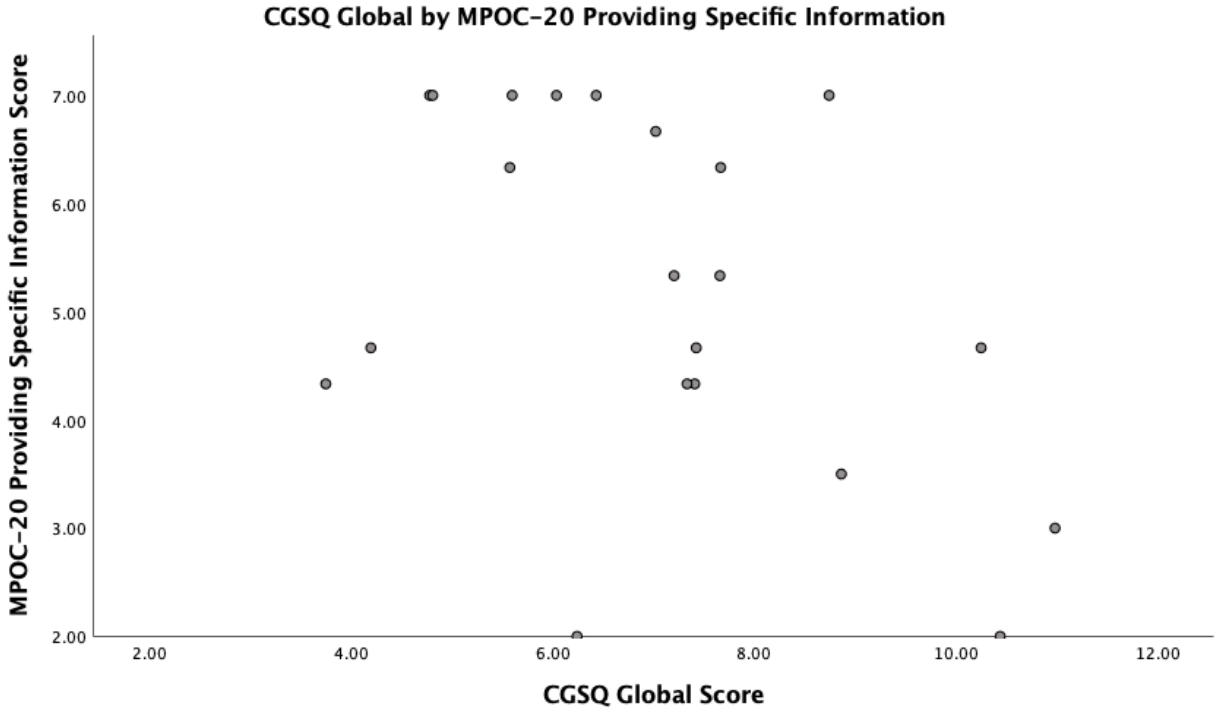


Figure 17. Scatterplot of CGSC global scores by MPOC-20 PSI scores

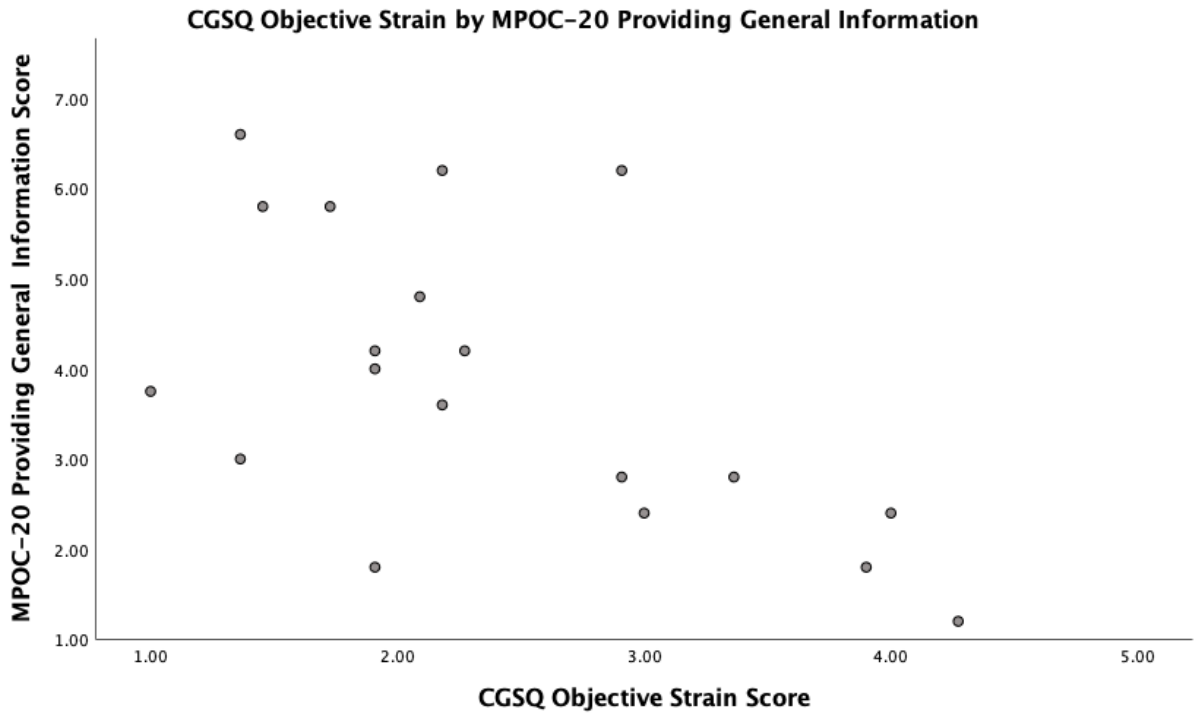


Figure 18. Scatterplot of CGSC Objective Strain score by MPOC-20 PGI scores

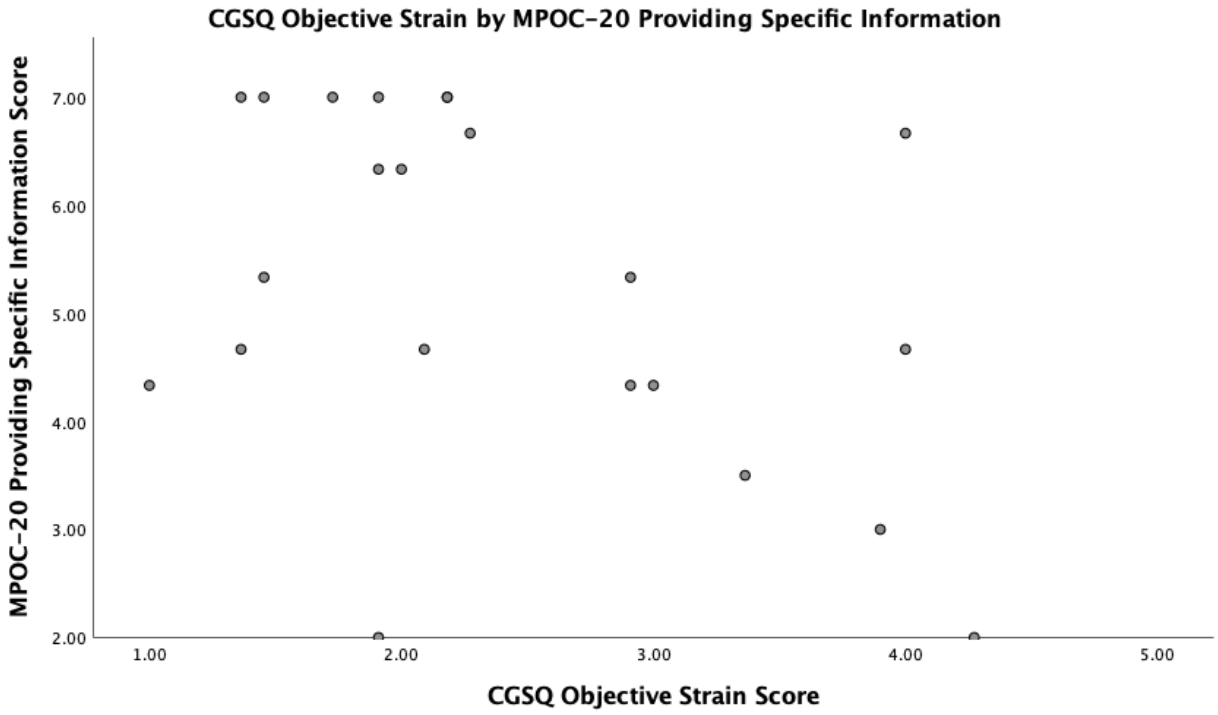

Figure 19. Scatterplot of CGSC Objective Strain score by MPOC-20 PSI scores

***Post Hoc Power Analysis***

A post hoc power analysis was conducted to determine the achieved power given a sample size of 22 and resulting effect sizes (i.e. correlations between MPOC-20 and CGSQ scales). Two post hoc power analyses were conducted: one using the largest significant effect size (correlation between MPOC-20 PGI scale and CGSQ Objective Strain subscale, $r$=-.58) and one using the smallest significant effect size (correlation between MPOC-20 PSI scale and CGSQ Objective Strain subscale; $r$=-.43). Given a sample size of 22, a 5% Type I error rate, and an effect size of .58, the resulting power is 0.89. Given a sample size of 22, a 5% Type I error rate, and an effect size of .43, the resulting power is 0.57.

# Chapter 7. Phase Two Discussion

Despite the robust evidence base demonstrating the relationship between FCC and positive outcomes for children with developmental disabilities, parents of children with ASD are less likely to report receiving FCC than children with other health care needs (Dunst et al., 2007; Brachlow et al., 2007; Gabovitch & Curtin, 2009). Phase Two of this study sought to improve FCC for children with ASD by targeting BCBAs, a population of clinicians in a position to make a significant impact on families given the often intense and involved nature of ABA intervention. The primary purpose of Phase Two was to develop and test the ECHO model as a means of improving self-efficacy related to FCC and delivery of FCC among BCBA providing ABA intervention to children with ASD. The impact of BCBA characteristics on implementation of FCC was explored. Additionally, parental perception of FCC and its relationship to parental stress was explored. The results of this study provide evidence that the ECHO model is an effective method for increasing self-efficacy and implementation of family-centered practices, and BCBAs were highly satisfied overall with ECHO for BCBAs. Differences between BCBAs with a master's degree in behavior analysis and BCBAs with a master's degree in other areas were demonstrated with regard to effectiveness of the ECHO model, and evidence of a relationship between FCC and parental stress was found

## Effectiveness of ECHO for BCBAs

Based on the results of paired samples t-tests, BCBAs improved in self-efficacy following attendance of five or more ECHO sessions. Scores on the SEQ increased significantly from pretest to posttest, with BCBAs reporting increased confidence related to their ability to successfully apply FCC topics to their ABA practice. BCBAs also

improved in self-rated delivery of FCC, with scores on the MPOC-SP scales of Showing Interpersonal Sensitivity (SIP), Providing General Information (PGI), and Treating People Respectfully (TPR) increasing significantly from pretest to posttest. MPOC-SP Communicating Specific Information (CSI) scores increased as well but did not reach statistical significance, although a medium effect was found. This provides evidence of support for the primary hypothesis that ECHO model trainings would improve BCBA ratings of self-efficacy and delivery of FCC.

ECHO model trainings have been found to improve self-efficacy for physicians, educators, and clinicians working with a variety of mental health conditions (Arora et al., 2011, 2014; Mazurek et al., 2017; Salvador et al., 2020). ECHO Autism in particular has been shown to improve self-efficacy of physicians and psychologists related to various aspects of diagnosing and treating ASD (Mazurek et al., 2017; Nowell et al., 2020). This was the first known study to apply the ECHO model to BCBAs, thus extending findings of previous ECHO model studies to a new population of learners. Additionally, this was the first known ECHO study to specifically target FCC in any population. ECHO for BCBAs also expanded the rigorous outcome evaluation that is a key component of the ECHO model by including an existing measure of the broad construct being targeted by trainings (i.e. MPOC-SP as a measure of FCC). Research studies utilizing the ECHO model almost always include a measure of satisfaction and often involve evaluation of self-efficacy, practice behavior, and/or knowledge, typically using measures designed for the purpose of each individual study and directly linked to the content of the ECHO sessions. The MPOC-SP is an exisiting measure of delivery of FCC that evaluates FCC broadly rather than the specific content of the trainings. Significant improvements in

MPOC-SP scores provide evidence from an external measure that the ECHO model can improve a targeted construct broadly in addition to improving knowledge or self-efficacy related to the specific session objectives.

Communicating Specific Information (CSI) was the only scale of the MPOC-SP that did not improve signficantly from pre- to -post-test. However, the effect size was medium, indicating that scores did improve somewhat. The number of items on this scale and time frame associated with the MPOC-SP may explain why this finding did not reach a level of statistical significance. The CSI scale contains only three items, meaning that each of these items accounts for one-third of the scale score. As such, failure to improve on any one item can significantly impact the overall differnce score for the scale. In comparison, failure to improve on a single item of the other scales would have less of an impact on that scale's difference score, as the other scales have a range of five to ten items. It is also important to consider the time frame established by the MPOC-SP. The MPOC-SP asks respondents to rate their delivery of FCC over the previous year. Approximately five months elapsed between completion of pretest and posttest, allowing time for clinician behaviors to reasonably change. However, accurate evalaution of the previous year would include substantial length of time before the implementaion of ECHO for BCBAs and thus would include baseline behaviors to an extent. The inclusion of baseline behaviors in the rated time frame possibly confounds the impact of the small number of items, contributing to the lack of statistically significant improvement.

BCBA ratings of satisfaction provide evidence of the acceptability of ECHO for BCBAs among participants. The overwhelming majority of BCBAs indicated that they agreed or strongly agreed with all items on the posttest satisfaction survey. On over half

of the items, all BCBAs agreed or strongly agreed. The remaining items had very small numbers of BCBAs indicating that they were not satisfied (one, two, or five out of 40 total BCBAs). No BCBAs indicated that they strongly disagreed with any of the satisfaction items. This provides supporting evidence that the targeted learners find ECHO for BCBAs to be an acceptable form of training. These findings align with previous ECHO model research, which consistently finds that participants are highly satisfied with ECHO trainings (e.g. Mazurek et al., 2017; Salvador et al., 2020; Root-Elledge et al., 2018; ECHO SCOPE, manuscript in progress). Of note, the training with the highest weekly satisfaction scores was parental stress training. Parental stress was a topic discussed at length in both parent and BCBA focus groups in Phase One, and both groups identified the need for training for BCBAs on parental stress topics.

The posttest item with the lowest level of satisfaction was "I feel like I have expanded my professional network by participating in sessions," with five BCBAs indicating disagreement. It is possible that those who did not agree with this statement were those who did not take full advantage of the interactive aspect of the ECHO model (e.g. presenting a case for discussion, participating in small or large group discussion, utilizing cameras). Inclusion of a measure of active participation in future studies would provide valuable information about the relationship between active participation and satisfaction and improvement.

**Delivery of FCC**

Results of the MPOC-SP scales at pretest answer the secondary research question of the extent to which BCBAs perceive that they deliver FCC. On average, BCBAs reported that they demonstrated interpersonal sensitivity between "to a fairly great

extent" and "to a great extent". They reported that they provide general information "to a moderate extent" and specific information between "to a fairly great extent" and "to a great extent". BCBAs rated themselves as treating people respectfully "to a great extent". This was the first known study to use the MPOC-SP in a sample of BCBAs.

The original validation of the MPOC-SP completed by Woodside and colleagues in 2001 utilized a sample of health professionals working with children with chronic health or developmental problems in ambulatory rehabilitations centers. Providers in this sample represented a large number of disciplines including occupational therapists, physical therapists, social workers, nurses, speech language pathologists, and case managers. Descriptive statistics of the MPOC-SP scales from the current study are similar to results from the overall validation sample, with comparable means and identical relative rating of scales (i.e. order of means from highest to lowest as follows: 1) Treating People Respectfully; 2) Communicating Specific Information; 3) Showing Interpersonal Sensitivity; and 4) Providing General Information). The Woodside study found marked variability of scores across disciplines that aligned with their expectations based on the varying role requirements. They predicted and found evidence to support that developmental therapists (e.g. occupational therapists, speech language pathologists) scored lower on the SIS and TPR scales but higher on the PSI scales than people in roles based primarily on support (e.g. social workers, case mangers). In terms of PGI and TPS, BCBA scores from the current study aligned more closely with those of developmental therapists than those of support positions from the validation sample. However, BCBAs scored somewhere between the two roles on SIS (i.e. higher than developmental therapists but lower than support roles). This is an interesting outcome given that the role

of a BCBA is more closely aligned to that of a developmental therapist than that of a support role. The items of the SIS scale are closely related to the concepts of rapport building and taking family needs into consideration. It is possible that the intensity and involvement of ABA intervention, often involving the presence of the BCBA in the family home, necessitates greater interpersonal sensitivity on the part of the BCBA than developmental therapists from the validation sample, who see clients less frequently and in a clinic setting.

Although BCBAs in the current study on average rated the SIS, CSI, and TRP scales within 0.6 points of each other, the PGI scale was relatively lower, with a difference of almost two points between the highest rated scale (TPR) and lowest rated scale (PGI). Items on the PGI scale focus on providing information to help families connect with the resources they need outside of treatment implemented by the service provider. Example items include "…provide support to help families cope with the impact of their child's chronic condition (e.g. informing parents of assistance programs or counseling how to work with other service providers)" and "…have general information available about different concerns (e.g., financial costs or assistance, genetic counseling, respite care, dating and sexuality)." Low scores on this scale may be a reflection of the exclusive focus on behavior analytic principles in training requirements for BCBAs, leaving BCBAs without expertise to share with parents outside of these principles. This is also consistent with the relatively higher average CSI score, as BCBAs are more knowledgeable about the specifics of behavior analysis. For example, one item of the CSI scale is related to sharing the results of assessments. Assessment is the focus of a large

portion of the BCBA Task List (Behavior Analyst Certification Board, 2017), and as such, BCBAs are better prepared to communicate with parents about this topic.

**Impact of Master's Degree Program Area**

Independent samples t-tests were used to explore differences between BCBAs with a master's degree in behavior analysis and BCBAs with a master's degree in a different area (e.g. psychology, education) in terms of the effectiveness of ECHO for BCBAs and the delivery of FCC. This was the first known study to exam differences of any kind between these two groups of BCBAs. Results indicated that BCBAs with a master's degree in behavior analysis benefited more from ECHO for BCBAs, demonstrating greater improvement in SEQ and MPOC-SP PGI scales than BCBAs with a master's degree in other areas. This provides support for the hypothesis that there would be differences between these groups and elucidates the direction of these differences. In addition to statistically significant improvements in SEQ and PGI scores, BCBAs with a master's degree in behavior analysis also improved to a greater extent than other BCBAs on the SIS, CSI, and TPR scales of the MPOC-SP. Although these scales did not reach the level of statistical significance (a highly stringent threshold due to Bonferroni-corrected alpha), effect sizes were large for each.

In terms of delivery of FCC at pretest, BCBAs with a master's degree in behavior analysis had lower scores on each scale of the MPOC-SP than BCBAs with a master's degree in other areas. Differences between these two groups did not reach statistical significance for any of the scales, although effect sizes ranged from medium (CSI and TPS scales) to large (SIS and PGI scales), with the PGI scale yielding the largest difference between the two groups. This difference between the two groups on the PGI at

pretest may account for the difference between the two groups of BCBAs on change in PGI from pre- to post-test. Because BCBAs with a master's degree in behavior analysis scored relatively lower than other BCBAs at pretest, they had more room for improvement than on other scales where scores were less disparate at pretest.

The varying training requirements of different master's programs likely contribute to these observed differences. As discussed previously, the training requirements for behavior analysis programs focus exclusively on behavior analytic concepts and do not include broader concepts that are related to the provision of FCC, such as cultural competency, parental stress, or collaboration. Each individual program may choose to include such topics in their coursework, but it is not a requirement, and previous research has shown that behavior analytic training programs do not consistently include this type of content (Blydenburg & Diller, 2016; Conners et al., 2019). In comparison, master's programs in the areas of psychology and education (i.e. the most common types of programs in the non-behavior analytic group) may include these broader clinical concepts that go beyond behavior. Master's programs in psychology and education can vary widely in focus and theoretical orientation. Psychology programs include general psychology, counseling psychology, clinical psychology, and many other variations. Master of Education programs include school counseling, clinical mental health counseling, and school psychology. The demographics form used for the purpose of this study did not ask BCBAs to identify their specific training program, and the BACB does not provide demographic information on the master's education of BCBAs. As such, it is difficult to draw specific conclusions about the education of BCBAs with master's degrees outside of behavior analysis. However, it is reasonable to assume that psychology

and education programs include content related to the broad clinical skills that are relevant to each area and inherently go beyond behavior analysis. Exposure to topics beyond the realm of behavior analysis and related to broader areas of clinical skill likely contributes to the trend toward higher MPOC-SP scores found in BCBAs with master's degrees in other areas. BCBAs with non-behavior analysis degrees also had higher SEQ scores at pretest compared to BCBAs with degrees in behavior analysis. These higher pretest scores leave relatively less room for improvement, likely contributing to the smaller difference scores found in this group compared to BCBAs with a degree in behavior analysis. It is important to note however that both groups improved following attendance of ECHO for BCBAs, providing support for the effectiveness of ECHO for BCBAs for both groups.

**Impact of Years of Experience**

Correlations were used to explore the relationship between years of experience in the field of ABA and the effectiveness of ECHO for BCBAs and the delivery of FCC. This was the first known study to exam the role of years of experience with ABA on any BCBA-related characteristics or outcomes. Results indicated that there is not a statistically significant relationship between years of experience with ABA and improvement on SEQ and MPOC-SP scales following attendance of ECHO for BCBAs. There is also not a statistically significant relationship between years of experience and delivery of FCC. These results do not support the hypothesis that years in the field of ABA would be negatively correlated with SEQ and MPOC-SP difference scores and positively correlated with pretest MPOC-SP scores.

These findings can be viewed as a possible refection of the lack of emphasis on FCC in the field of ABA. Initial training for BCBAs does not include topics related to the provision of FCC, nor do typical continuing education opportunities (Behavior Analyst Certification Board, 2022; DiGennaro Reed et al., 2013), contributing to a lack of relationship between years of experience and delivery of FCC and equal room for improvement among BCBAs with relatively more and less years of experience.

An alternative explanation is that BCBAs are gaining skills related to FCC over time, but are also gaining more insight and self-awareness and therefore rating their delivery of FCC more honestly and accurately. In this scenario, it is possible that BCBAs with more years of experience do deliver FCC to a higher extent, but rate themselves accurately and therefore similarly to BCBAs with less experience who overestimate their FCC behaviors. Biased self-assessment is a common issue for clinicians across disciplines (Karpen, 2018). A review of extant literature did not identify any studies exploring the accuracy of self-assessment over time in behavioral health clinicians, mental health clinicians, or related disciplines. Longitudinal studies of self-assessment in other populations (e.g. physicians, students) yielded inconsistent findings (e.g. Brown et al., 2015; Fitzgerald et al., 2003). Future research on the accuracy of self-assessment and its relationship with time and experience in behavioral or mental health clinicians would help clarify the validity of self-assessment measures in this population.

The lack of relationship between years of experience and MPOC-SP scores is particularly interesting when coupled with the effectiveness of ECHO for BCBAs at improving MOC-SP scores. Experience in the field does not seem to improve delivery of FCC by BCBAs, but attendance at trainings targeting FCC does, regardless of years of

experience. Experience alone may not improve the quality of FCC delivered by BCBA; however, a targeted intervention such as ECHO for BCBAs does have the ability to generate improvement in delivery of FCC. When taken together, results of the ECHO for BCBAs support the continued use of this model moving forward.

## Parental Stress and FCC

Parental stress and FCC were explored as part of this study in order to provide the perspective of the recipient of the care provided by BCBAs. Parental stress and perception of FCC were assessed using the CGSQ and MPOC-20 respectively, and the relationship between these two constructs was analyzed.

### *Parent Perception of Receipt of FCC*

Results of the MPOC-20 answer the secondary research question of the extent to which parents perceive that they receive FCC. On average, parents responded that BCBAs met their needs related to enabling and partnership between "to a fairly great extent" and "to a great extent." They reported that BCBAs met their needs related to providing general information "to a fairly great extent" and providing specific information between "to a fairly great extent" and "to a great extent." Parents reported that BCBAs met their needs related to coordinated and comprehensive care between "to a fairly great extent" and "to a great extent" and respectful and supportive care "to a great extent."

Williams and colleagues (2021) used the MPOC-20 to assess the quality of FCC provided to parents of children with ASD receiving services from ABA programs in Ontario Canada. The areas of relative strength and weaknesses identified by the current study align with those found by Williams, with highest scores on the Respectful and

Supportive Care (RSC) scale and lowest scores on the Providing General Information (PGI) scale. However, scores on all scales in the current study were lower than those from the study completed in Canada, with the PGI scale being the most disparate. The two study samples were similar in terms of the age of the child; however, the Williams study did not provide any additional demographic information for parents or children from which to make comparisons. The sample from the Williams study was quite substantial, with 11,490 participants. All participants in the Williams study were receiving services from provincially-funded ABA programs, and healthcare in Canada is universal and publicly funded. Some research has shown that the Canadian healthcare system is more effective than the United States' system on a variety of outcomes related to costs, service provision, and health status of citizens, although many inconsistent findings exist in this area (Guyatt et al., 2007; Ridic et al., 2012). It is possible that differences between the healthcare systems of Canada and the United States contribute to the differing results. Although many studies exploring outcomes for children with ASD include participants from both Canada and the United States (e.g. Kuhlthau et al., 2010), no known studies have compared outcomes between the two counties. Research of this nature would help further elucidate the differences between MPOC-20 scores in this study and the Canadian study.

Comparison of MPOC-20 results with MPOC-SP results from this study should be made with caution, as parent and BCBA participants were not matched, and responses are therefore independent of each other. MPOC-20 and MPOC-SP have three conceptually related scales: the MPOC-20 and MPOC-SP both have general information and specific information scales, and the MPOC-20 has the Respectful and Supportive

Care scale, which is conceptually related to the Treating People Respectfully scale of the MPOC-SP. In this study, the respect scales of the MPOC-20 and MPOC-SP both had the highest average score, indicating that this may be an area of relative strength in the field of ABA. High scores on the respect scales reflect that BCBAs treat parents as equals, as experts on their own children, and as individuals rather than a "typical" parent of any child with ASD. Given that respect and dignity is one of the four core principles of FCC, this is a positive and important finding. Conversely, the providing general information scales of the MPOC-20 and MPOC-SP both had the lowest average score, highlighting an area of relative weakness. As previously discussed, this may be a reflection of the focus on behavior principles in BCBA trainings and the lack of training related to more comprehensive clinical skills. Information sharing is one of the core FCC principles, providing rationale for targeting this area for improvement in the field of ABA. Future studies should include matched samples of parents and BCBAs in order to examine agreement between these two measures and allow for more robust comparisons between parents and BCBAs.

### *Relationship Between FCC and Parental Stress*

Two scales of the MPOC-20 (Providing General Information and Providing Specific Information) were found to be significantly and negatively correlated with the CGSQ Objective Strain subscale and the CGSQ global score. Parents who reported receiving higher levels of FCC with regards to general and specific information sharing reported lower levels of objective strain and overall stress. These findings provide evidence to support the hypothesis that there is a negative correlation between FCC and parental stress in this population.

The validation studies of the original MPOC-56 and subsequent MPOC-20 each used a single-item stress variable. This item asked respondents to rate the extent to which their service provider reduced or increased the amount of stress and worry that the parent experienced using a five-point Likert scale. Statistically significant negative correlations were found between each scale of the MPOC-56 and MPOC-20 and this stress item (King et al., 2004; King et al., 1996). Although all correlations between MPOC-20 and CGSQ scales in the current study were negative, only correlations involving the two information-sharing scales of the MPOC-20 reached the level of statistical significance. This contrasts with the initial validation studies, which found significant correlations for all scales. It is likely that low sample size impacted the results of these correlations and possibly accounts for the difference between the current study and previous studies. The post-hoc power analysis indicated that the study was underpowered for detection of medium or small effect sizes. The effect sizes reported in S. King and S.M. King studies ranged from small to medium. As such, it is possible that the true relationship between stress and each scale of the MPOC-20 is small but statistically significant, and the current study did not have adequate power to detect this relationship. However, statistically significant findings related to the PGI and PSI scales add to the existing literature by using a psychometrically strong full measure of parental stress to demonstrate the relationship between parental stress and FCC.

**Implications**

Taken together, BCBA and parent results of Phase Two of the current study have some important implications. Phase Two demonstrates that the ECHO model can be successfully applied to the field of ABA and used effectively to improve FCC delivery

among BCBAs with high BCBA satisfaction. Participants served a total of 942 clients, indicating that ECHO for BCBAs had the potential to impact almost 1,000 families. The ECHO model should continue to be utilized as a method for providing continuing education to BCBAs in order to reach more families and continue to improve the delivery of FCC.

Results of the MPOC-20 and MPOC-SP highlight areas for improvement in delivery of FCC in ABA. Providing general information was an area of relative weakness identified by both parents and BCBAs, indicating room for improvement. Based on the items included in the PGI scales, ABA agencies would benefit from helping BCBAs to build banks of resources in order to help connect parents with resources in their area that would be helpful for their family's unique needs. This specific need was also identified by BCBAs in Phase One of this study. Additionally, BCBAs should be better equipped to provide evidence-based information related to ASD and ABA to parents. These are relatively easy strategies that ABA agencies can implement without high cost, effort, or time. Given the relationship between FCC and satisfaction with services (King et al., 1996; Casagrande & Ingersoll, 2017; Dunst et al., 2007), implementation of FCC practices serves to benefit ABA agencies as well as the families they serve. Additional suggestions for improving the quality of FCC by targeting the training requirements for BCBAs were presented in the discussion for Phase One of this study.

The negative correlation between parental stress and FCC suggests that BCBAs may have the ability to alleviate parental stress by providing high quality FCC. This is of particular importance in the field of ABA given the impact of parental stress on treatment outcomes (e.g. Osborne et al., 2008; Strauss et al., 2012). ABA agencies should support

BCBAs in improving their delivery of FCC, as this may indirectly result in better outcomes for the clients they serve by means of reducing parental stress.

**Limitations**

There are several limitations to this study that should be considered. Although participants were recruited from a wider range of ABA providers, the total number of represented companies (22) is still relatively small, especially considering the current exponential growth in the treatment market for ASD. The agencies included in this study may not be representative of all agencies in the United States. The potential for self-selection bias is also of concern. BCBAs who chose to participate in ECHO for BCBAs may have placed more value on FCC, recognized their own limitations in delivery of FCC, or been more familiar with FCC concepts. Each of these biases has the ability to limit the external validity of results. It is also important to consider the possible impact of the time frame associated with the MPOC-SP on internal validity The MPOC-SP asks respondents to reflect on the previous year, and pretest and posttest data were collected five months apart. Although the MPOC-SP has been found to be sensitive to change, it is possible that the short time frame between data collection contributed to the observed score differences. Although the current study initially aimed to recruit parents matched to BCBAs participating in ECHO for BCBAs, this was not accomplished. As such, the impact of ECHO for BCBAs on parents was not able to be explored, and agreement between the MPOC-20 and MPOC-SP was not able to be analyzed. Finally, the small sample size of parents limited the power of this study to find significant effects related to parental stress and FCC and increases the likelihood of making a Type II error.

# Chapter 8. Integrated Discussion and Conclusions

Due to its positive impact on family and child outcomes, FCC has become widely recognized as an essential component of care provided to children with disabilities. Services for children with ASD have been slower to embrace the principles of FCC than in other populations, and little is currently known about the state of FCC in ABA. This two-part study aimed to evaluate the current state of FCC in the field of ABA, identify training needs for BCBAs, and develop and evaluate a training model to address these needs.

Results of the parent and BCBA focus groups in Phase One were used to develop the topics, objectives, and didactic content for the eight ECHO model sessions provided in Phase Two. The eight session topics consisted of the diagnostic process, typical development, the transition age, common medical conditions in ASD, comorbid mental health diagnoses, parental stress, trauma-informed care, and interdisciplinary collaboration. Each of these topics either emerged as a theme in parent and/or BCBA focus groups (e.g. comorbid mental health diagnoses) or were specifically identified by BCBAs as a desired training topic (e.g. typical development). The process of completing focus groups prior to developing ECHO for BCBAs served to ensure that the topics covered in sessions were relevant to parents and BCBAs, were areas in which BCBAs actually desired training, and were not unduly influenced by the opinions of the research team regarding important topics. BCBAs were highly satisfied overall with ECHO for BCBAs, and almost all participants reported that they found the training topics to be relevant. The effectiveness of ECHO for BCBAs at improving BCBA self-efficacy and delivery of FCC coupled with the direct relationship between training topics and training

needs identified by parents and BCBAs provide support for the continued use of the ECHO model to target FCC among BCBAs.

The themes identified in Phase One align somewhat with the MPOC-SP and MPOC-20 scores obtained in Phase Two. As discussed in Phase One, the identified themes were directly or indirectly related to the four core concepts of FCC (respect and dignity, information sharing, participation, and collaboration; Institute for Patient- and Family-Centered Care, 2022). The identified themes provide support for the concept of participation and collaboration as areas of relative strength in the field of ABA, while the concepts of respect and dignity and information sharing had more room for improvement. While the scales of the MPOC-SP and MPOC-20 do not directly align with the four pillars of FCC, there is some overlap. For example, information sharing is the basis of two scales of both the MPOC-SP and MPOC-20. Information sharing emerged as an area of relative weakness as demonstrated by the MPOC-SP and MPOC-20 particularly with regard to sharing general information, aligning with many shortcomings related to information sharing identified in the focus groups. Interestingly, several focus group themes demonstrated shortcomings related to respect and dignity, but the respect scales of both the MPOC-SP and MPOC-20 had the highest average score. This disparity may be related to the content of the items on the respect scales. Some of the items appear to better capture the FCC core concept of participation than respect and dignity (e.g. making parents feel like a partner, allowing parents to provide input for treatment goals). Participation is the only core concept of FCC that is not identified as an independent MPOC scale. Focus group themes painted participation as an area of relative strength in the field of ABA. The inclusion of participation-related items on the respect scales of the

MPOC-SP and MPOC-20 may contribute to their high scores, demonstrating more consistency between focus group themes and MPOC scores.

Comparison of CGSQ scores obtained in Phase Two and the parental stress theme identified in parent focus groups also demonstrates some consistency. The Subjective Internalized Strain subscale had the highest average rating among parents. This subscale captures feelings internalized by the parent such as sadness, worry, tiredness, or a sense that the family is being impacted by the child. Within the parental stress theme of the parent focus groups, parents presented numerous examples of worrying about their child, feeling tired and overwhelmed, and experiencing grief related to the diagnosis of ASD. The Subjective Externalized Strain subscale had the lowest average rating among parents and captures negative feelings directed at the child such as anger and resentment. Parents did not provide any examples during focus groups of feeling anger or resentment toward their child, consistent with the low rating of this CGSQ scale.

**Future Directions**

Future studies should include matched pairs of BCBAs and parents in order to evaluate the impact of the ECHO model on the recipient of services in addition to the provider of services. Matched pairs should also be used to evaluate agreement between BCBAs and parents on the MPOC-SP and MPOC-20 or other measure of FCC. The relationship between FCC and parental stress should continue to be evaluated using larger sample sizes. The application of the ECHO model to the field of ABA should continue to be explored. Different training topics could be targeted, and different "spokes" could be included. Behavior techs, BCaBAs, and non-BCBA leadership are possible spokes that could benefit from inclusion in ECHO model trainings.

## Conclusions

Despite the ample evidence of the benefits of FCC and the relationships between FCC, parental stress, and ABA treatment outcomes, training for BCBAs on family-centered topics is severely lacking. The current study sought to contribute to the research base by examining the current state of FCC in ABA and developing a training to improve FCC practices. Phase One of this study served to illuminate the perspectives of parents and BCBAs related to FCC in ABA. Phase Two successfully applied the ECHO model to a new field and profession, improving BCBA self-efficacy and delivery of FCC, and reaching 942 total families. Additionally, Phase Two provided additional evidence of the relationship between FCC and parental stress to expand upon extant findings in the literature. These findings have important implications for the field of ABA, particularly at the agency and field leadership levels. Parents identified several areas in which they would like to see improvement from BCBAs and/or agencies. Given the relationship between FCC and satisfaction with services, ABA agencies would benefit from addressing these areas. The ECHO model should continue to be explored as a method for training BCBAs on FCC topics. Changes to training requirements, program curricula, and the content of the BCBA exam should be considered in order to incorporate clinical competencies related to family-centered topics. Ultimately, change in the field of ABA is necessary from the top down in order to fully embrace and reap the benefits of FCC.

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## Appendix A. Parent Demographics Form for Phase One

What is your child's age (in months and years)? _____

What is your child's sex?

- Male
- Female
- Non-binary/third gender
- Prefer not to answer

What is your child's race?

- American Indian/Alaska Native
- Asian
- Black
- Native Hawaiian or Other Pacific Islander
- White
- Hispanic/Latino
- Other
  - Please specify _____
- Prefer not to say

Has your child been diagnosed by a mental health professional with any of the following? Check all that apply:

- Attention-deficit/hyperactivity disorder (ADHD)
- Anxiety disorder (including Generalized Anxiety Disorder, Social Phobia, Specific Phobia, and Separation Anxiety Disorder)
- Obsessive-compulsive and related disorder (including OCD, trichotillomania (hair-pulling disorder) excoriation disorder (skin picking), hoarding disorder, and body dysmorphic disorder)
- Mood disorder (including Major Depressive Disorder and Bipolar Disorder)
- Trauma-related disorder (including Post-Traumatic Stress Disorder (PTSD), Acute Stress Disorder, and Adjustment Disorder)
- Disruptive disorder (including Opposition Defiant Disorder and Conduct Disorder)
- Other (specify)_____

What is your age (in years)? _____

What is your sex?

- Male
- Female
- Non-binary/third gender
- Prefer not to answer

What is your race?

- American Indian/Alaska Native
- Asian
- Black
- Native Hawaiian or Other Pacific Islander
- White
- Hispanic/Latino
- Other
    - Please specify _____
- Prefer not to say

What is your relationship to the child:

- Mother
- Father
- Other (specify)_____

## Appendix B. BCBA Demographics Form for Phase Two

What is your age (in years)? _____

What is your sex?

- Male
- Female
- Non-binary/third gender
- Prefer not to answer

What is your race?

- American Indian/Alaska Native
- Asian
- Black
- Native Hawaiian or Other Pacific Islander
- White
- Hispanic/Latino
- Other
  - Please specify _____
- Prefer not to say

Who is your employing company?

- Kadiant
- Breakthrough Behavior
- May Institute
- Other (specify)_____

## Appendix C. Parent Interview Guide

**A. Welcome**

a. Thank you for taking the time to join this focus group. We so appreciate your willingness to participate.
b. Introductions – technical assistance
c. Purpose – We want a better idea of what FCC looks like in ABA – how well are the needs, wishes, and values of the family being incorporated into the intervention your children are receiving. So we really need input from parents like you.

**B. Ground Rules:**

a. We want everyone to have a chance to participate. If I haven't heard from you in a while, I may ask you for your input.
b. There are no right or wrong answers. You will each have different opinions and experiences. Speak up even if you have a different opinion to share. We need a wide range of opinions. Be respectful of differing opinions.
c. What is said during the focus group stays here. We ask that you do not share outside of this group what other parents shared. We want everyone to feel comfortable sharing their experience.
d. As a reminder, this session will be audio recorded for transcription.

**C. Questions**

1. Describe the role of your BCBA in your child's ABA intervention.
    a. Does your BCBA directly provide treatment to your child?
    b. Does your BCBA oversee a team of RBTs that provide direct treatment to your child?
    c. Does your BCBA provide parent training?

2. How often do you interact with your BCBA?
    a. How many hours per week do you and/or your child spend with your BCBA? (In person or virtually)
    b. How often does your BCBA communicate with you outside of direct treatment? (e.g. phone calls, email, meetings without your child)

3. How do you feel about your child's BCBA and intervention program?
    a. What do you like about your BCBA?
    b. What do you think your BCBA could do better?
    c. How comfortable do you feel interacting with your BCBA?
    d. How comfortable do you feel expressing your concerns to your BCBA?
    e. How comfortable do you feel asking your BCBA questions?
    f. How easy to understand are the recommendations provided by your BCBA?

4. What is your perception of your BCBA's sensitivity to the preferences, culture, and specific needs of your family?
    a. How well do you think your BCBA understands your family dynamic? Incorporates siblings?
    b. How appropriate do you think the treatment plan/program provided by your BCBA is for your family's needs?
    c. If your child has a comorbid mental health diagnosis (e.g. ADHD, depression, anxiety, PTSD, OCD), how well do you feel that your BCBA addresses this diagnosis in your child's treatment?

5. Does your BCBA ask about your level of stress? Do they demonstrate empathy for you? What does your support system look like, and does your BCBA know what your support system looks like? How does your BCBA impact your stress level or the stress level of your family?

6. Does your BCBA address transition planning with you? (To kindergarten, to high school, to adulthood). Do they talk about long-term goals?

7. What is your perception of your BCBA's collaboration with other providers that work with your child? (e.g. psychiatrist, OT, PT, SLP, counselor, psychologist, teachers, etc.)

8. What do you wish your BCBA knew more about or could learn more about?

## Appendix D. BCBA Interview Guide

**A. Welcome**

a. Thank you for taking the time to join this focus group. We so appreciate your willingness to participate.
b. Introductions – technical assistance
c. Purpose – We want a better idea of what FCC looks like in ABA. So we really need input from BCBAs like you.

**B. Ground Rules:**

a. We want everyone to have a chance to participate. If I haven't heard from you in a while, I may ask you for your input.
b. There are no right or wrong answers. You will each have different opinions and experiences. Speak up even if you have a different opinion to share. We need a wide range of opinions. Be respectful of differing opinions.
c. What is said during the focus group stays here. We ask that you do not share outside of this group what other parents shared. We want everyone to feel comfortable sharing their experience.
d. As a reminder, this session will be audio recorded for transcription.

**C. Questions**

1. How comfortable do you feel when communicating with the parents of the children you serve? (in person, virtually, email, phone, etc.)
    a. What barriers do you face for positive communication with families?
    b. How do you respond to a parent who disagrees with your recommendations or treatment goals?
    c. What kind of training have you received related to interacting with parents?
    d. What kind of support/resources would help improve your level of comfort when communicating with parents?

2. How do you build a relationship with families? When do you start building that relationship? What are the barriers?

3. How do you set the priorities for ABA? Do you collaborate with parents on treatment planning?

4. Parental stress: Do you ask parents about their stress? Do you feel comfortable responding to parental stress/questions/statements? Diagnosis?

5. What do you know about FCC? (Provide definition if no answers provided)
    a. What elements of FCC are important to you as a treatment provider?

b. What kind of training have you received related to FCC?

6. Do you currently work with children with a mental health diagnosis (e.g. ADHD, depression, anxiety, PTSD, OCD, etc.) in addition to ASD? Which mental health diagnoses do you currently work with or have worked with in the past?
    a. How comfortable are you with providing treatment to children with a mental health diagnosis?
    b. Do you incorporate/consider mental health diagnoses when writing treatment plans? How?
    c. What kind of training have you received related to comorbid mental health diagnoses?
    d. What kind of support/resources would help improve your level of comfort with treating children with a comorbid mental health diagnosis?

7. What do you know about trauma-informed care or the impact of trauma on children and families?
    a. What kind of training have you received related to trauma?
    b. Do you incorporate/consider trauma history when writing treatment plans? How?
    c. What kind of support/resources would help improve your level of comfort with treating children who have experienced trauma or whose parents have a significant trauma history?

8. How comfortable do you feel collaborating with other providers that work with your clients? (e.g. psychiatrist, OT, PT, SLP, counselor, psychologist, teachers, etc.)

9. What are areas in which you feel like you haven't been provided adequate training? What are the areas in which you would like more training/support/resources?

## Appendix E. Parent Codebook

**Identified Barriers:** Describing systemic/organizational or personal barriers to treatment or therapeutic alliance identified by the parent. Can include scheduling "red tape" difficulties: insurance, turnover rates, time, clinic/agency policies/rules, billing, authorization. Can include perceived inadequate training of staff/BCBAs. Needs to be explicit.

**Interdisciplinary collaboration:** Describing collaboration between BCBAs/RBTs and other professionals, including teachers, SLPs, OTs

**Family considerations:** Describes the structure/dynamic of the family and relationships within the family. Can include how the BCBA does or does not understand this structure and does or does not incorporate this structure into treatment. Includes references to existing social/family supports in place/available for parents. Includes references to family culture, language, religion, ethnicity. Includes references to the family's knowledge of/experience with/opinion of ASD diagnosis/characteristics or ABA therapy.

**Stigma:** Referring to the stigma surrounding diagnosis of ASD or ABA (reputation or controversy)

**Parental stress and mental health:** Describing stress experienced by the parent. Includes references to BCBA checking in on stress or failing to check in on stress, addressing stress, being aware of stress, providing support, failing to provide support, etc. Includes references to parental mental health.

**Transition and future planning:** Referring to the future of the child. Includes future treatment goals, transitions (school, adulthood, etc.), ending ABA. Includes if the BCBA DOES or DOES NOT discuss the future. Includes examples from previous school transitions.

**Rapport/relationship:** Describes the relationship between the BCBA and parent or child. Includes level of comfort felt by parent related to BCBA. Includes references to professionalism. Includes references to expectations placed on parents, feeling "judged." Includes references to empathy demonstrated by the BCBA toward parent/child.

**Communication:** Describes bidirectional communication between the BCBA and parent. Can include modes of communication, frequency, problems, strengths. Also includes general team communication (BCBA, techs, etc.).

**Treatment goals:** Refers to treatment goals or outcomes, including the process of creating treatment goals or reaching treatment goals. Needs to be explicit.

**Comorbidity:** Referring to any mental health or medical comorbidities for child. Co-occurring conditions.

**Child-centered actions:** Describes the BCBA advocating for, implementing, or taking into consideration what is "best" for the child. Also includes examples of the BCBA not providing child-centered care. Also describes parental expectations as to how child-centered care should be delivered.

**Incorporating others into treatment:** Includes examples of the BCBA including the parent, siblings, or others (e.g. students, peers, friends, other family members) into treatment. Includes parent training. Examples involving incorporating OT/PT/speech should be coded under "Interdisciplinary collaboration."

## Appendix F. BCBA Codebook

**Communication:** Describes bidirectional communication between the BCBA and parent. Includes logistical aspects (e.g. mode of communication, technology, timing, etc.) as well as content of communication. Includes written or verbal communication (e.g. phone calls, emails). Includes references barriers to communication. Includes references to lack of communication. Includes references to BCBA's level of comfort communicating with parents and topics the BCBA is or is not comfortable discussing.

**Rapport/Relationship Building:** Describes the relationship between the BCBA and parent. Includes the process of developing the relationship or strategies for developing the relationship. Includes references to lack of rapport or barriers to rapport. Includes references to rapport between BCBA and child. Includes references to how the intake process impacts rapport.

**Barriers:** Describes barriers to providing clinical services. Includes both systematic barriers (e.g. insurance/medical necessity, billing) and personal barriers (e.g. communication difficulties, rapport). Includes references to work-life balance/burnout/turnover difficulties

**Family Considerations:** Describes the structure/dynamic/unique needs of the family. Includes references to taking the perspective of the family. Includes references to adapting treatment to meet the needs of the family. Includes references to including siblings/grandparents/parents in treatment.

**Parental Stress and Mental Health:** Describes stress or mental health issues/events experienced by the parent. Includes references to BCBAs being aware or unaware of parental stress. Includes references to the BCBA addressing or not addressing parental stress in treatment or during sessions. Includes references to BCBA level of comfort with parental stress. Includes references to stress, diagnoses, or symptoms.

**Diagnosis:** Describes BCBA knowledge or lack of knowledge of the diagnostic process. Includes references BCBAs addressing or not addressing diagnosis during treatment. Includes references to parental adjustment to diagnosis. Includes references to parental knowledge of ABA.

**Treatment Goals:** Describes treatment goals. Includes references to how goals are determined and who contributes to goals. Includes references to any assessments that contribute to setting goals. Includes references to disagreement between the BCBA and parent related to setting goals.

**Training/Education:** Describes the content of training or education received by the BCBA. Includes college education, CEUs, and formal training provided by agencies. Does not include experiences shared by supervisors (code under Supervisor Influence). Does not include gaps in training (code under Training Needs). Do not include references

to attitude (code under Supervisor Influence). Includes references to education received outside of the ABA field.

**Training Needs:** Describes areas of training needs identified by the BCBA. Includes any areas in which the BCBA identifies that they have not received training or would like to receive more training. Includes references to wanting information related to making referrals or providing resources to parents.

**Supervisor Influence:** Describes experiences of the BCBA with supervisors/mentors/upper management/leadership/teachers.. Includes areas/topics in which BCBAs have learned from supervisors. Includes references to the general attitude/perspective of the agency or ABA community. Includes references to BCBA supervising others.

**Interdisciplinary Collaboration:** Describes collaboration between the BCBA and other professionals (e.g. OT, PT, SLP, psychiatrist, psychologist, teacher). Includes references to involvement in schools. Includes references to professionals having a negative/stigmatized/incorrect understanding/opinion of ABA. Includes barriers to collaboration. Includes references to BCBAs acknowledging professional boundaries (e.g. not wanting to overstep).

**Future Planning and Transition Age:** Describes the BCBA's knowledge of the transition period or needs for transition-age clients. Includes references to the BCBA discussing future planning of any kind with the parent (e.g. kindergarten, long term goals, college, ending treatment).

**Comorbidity:** Describes the BCBA's experience with/knowledge of comorbid mental health or medical diagnoses in children with ASD. Includes references to the BCBA's level of comfort with comorbidity and examples of cases. Includes references to mental health or medical symptoms that are not officially diagnosed.

**Trauma:** Describes the BCBA's experiences with treating children with trauma history and knowledge/experience with trauma-informed care. Needs to explicitly refer to "trauma" or "abuse." Includes references to suspected trauma. Includes references to assessing for trauma history during the intake or later in treatment.

## Appendix G. Expert Panel Description

| | Title/Role | Organization |
|---|---|---|
| Andrea Witwer, Ph.D. | Licensed Clinical Psychologist; Director of Training; LEND Associate Director; Associate Professor, Clinical Psychiatry and Behavioral Health/Psychology | The Ohio State University Nisonger Center |
| Vanessa Rodriguez, Ph.D., BCBA-D | Licensed Clinical Psychologist; Associated Assistant Professor, Clinical Psychiatry and Behavioral Health | The Ohio State University Nisonger Center |
| Tracy Guiou, Ph.D., BCBA-D, COBA | Licensed Clinical Psychologist; CEO | Catalpa Health |
| Michelle Roley-Roberts, Ph.D. | Licensed Clinical Psychologist; Assistant Professor, Department of Psychiatry:<br>Graduate Faculty, Department of Neuroscience;<br>Adjunct Professor, Department of Psychology | Creighton University |
| Rohan Patel, M.D. | Developmental Behavioral Pediatrician Fellow | Nationwide Children's Hospital |
| Karen Brothers | Parent; Retired school counselor | |

## Appendix H. Case Narrative Form



**Please complete ALL ITEMS on the form.**
**Thank you.**

| Presentation Information | |
|---|---|
| Presenter's first and last name: | Select to enter first and last name |
| Presenter's phone number: | Select to enter phone number |
| Presenter's email address: | Select to enter email address |
| First proposed date preference: | Select to enter a date. |
| Second proposed date preference: | Select to enter a date. |
| Third proposed date preference: | Select to enter a date. |

### Case Information

1. Please indicate which topic area(s) will be illustrated in the case.

Check all that apply:

| | | | |
|---|---|---|---|
| ☐ | Diagnostic Process and Interpreting Diagnostic Reports | ☐ | Comorbid Mental Health Diagnoses |
| ☐ | ASD Through the Lifespan: Typical Development | ☐ | Parental Stress |
| ☐ | ASD Through the Lifespan: Transition Age | ☐ | Trauma-Informed Care |
| ☐ | Common Medical Conditions in ASD | ☐ | Interdisciplinary Collaboration |
| | | ☐ | Other: |

2. What is the age of the client who is impacted?

3. Describe your primary concerns about this case.

    a. What are common triggers, stressors, and/or factors related to the primary concern(s)?

    b. What strategies, interventions, or other actions have been tried, and how successful have they been?

    c. What is your goal for this case?

4. Please list 2-3 questions about this case you would like answered.

5. What are the strengths, challenges, opportunities, and threats of your case?

6. Comments or additional background narrative.
   What else should the team know in order to provide feedback and recommendations?

## Appendix I. ECHO Session Titles and Objectives

1. **Diagnostic Process and Interpreting Diagnostic Reports – Andrea Witwer/Rohan Patel**
   ***2/18/22***
   a. Understand the process of diagnosis experienced by parents prior to beginning ABA intervention.
   b. Discuss how evaluation reports can be used to inform treatment planning and identify treatment goals.
   c. Identify at least one family-centered strategy for incorporating information from the evaluation report into treatment planning.

   *(Ethics Code 1.05 Practicing Within Scope of Confidence; Ethics Code 2.14 Selecting, Designing, and Implementing Behavior-Change Interventions*; *Task List F-1, F-3, H-2, H-3*)
2. **ASD Through the Lifespan: Typical Development – Andrea Witwer**
   ***3/4/22***
   a. Identify resources available to BCBAs related to typical development for the purpose of guiding treatment goals and supporting parents.
   b. Describe at least on family-centered strategy for considering typical development when making treatment goals.

   *(Task List F-3, H-2, H-3)*
3. **ASD Through the Lifespan – Transition Age – Vanessa Rodriguez**
   ***3/18/22***
   a. Discuss how socially significant treatment goals shift as individuals with ASD approach the transition age.
   b. Describe at least on family-centered strategy for transition planning.

   *(Task List F-3, H-2, H-3)*
4. **Common Medical Conditions in ASD – Rohan Patel**
   ***4/1/22***
   a. Identify common medical conditions that occur in individuals with ASD and discuss how common medical conditions impact the function of behavior and can act as motivating operations.
   b. Describe at least one family-centered strategy for considering medical concerns in treatment planning.

   *(Ethics Code 2.12 Considering Medical Needs; Task List G-2)*
5. **Comorbid Mental Health Diagnoses – Michelle Roley-Roberts/Vanessa Rodriguez**
   ***4/15/22***
   a. Identify common mental health diagnoses in individuals with ASD and discuss how mental health symptoms impact the function of behavior and can act as motivating operations.
   b. Understand when a referral to a different profession may be warranted.

   *(Ethics Code 1.05 Practicing Within Scope of Confidence; Ethics Code 2.14 Selecting, Designing, and Implementing Behavior-Change Interventions; Ethics Code 3.13 Referrals; Task List G-2)*

6. **Parental Stress – Megan Held/Karen Brothers**
   ***4/29/22***
   a. Understand the unique stressors faced by parents of children with ASD.
   b. Describe how parental stress can impact the effectiveness of ABA intervention for individuals with ASD.
   c. Identify at least one family-centered strategy for mitigating the impact of parental stress on intervention effectiveness.

   *(Ethics Code 2.14 Selecting, Designing, and Implementing Behavior-Change Interventions; Task List H-2, H-3)*
7. **Trauma-Informed Care – Michelle Roley-Roberts**
   ***5/13/22***
   a. Define childhood stress and identify the potential ACEs children with ASD may experience.
   b. Discuss how experienced trauma can impact the function of behavior from a biological and environmental perspective.
   c. Describe at least one evidence-based, trauma-informed strategy to respond to trauma-related challenging behavior.

   *(Ethics Code 2.14 Selecting, Designing, and Implementing Behavior-Change Interventions Task List G-2)*
8. **Interdisciplinary Collaboration – Tracy Guiou/Vanessa Rodriguez**
   ***5/27/22***
   a. Understand the importance of consultation with other professionals (e.g. OTs, PTs, SLPs, Psychiatrists, etc.) when appropriate.
   b. Identify strategies for effectively communicating with other professionals.
   c. Describe the role and importance of ABA intervention to other professionals.

   *(Ethics code 3.06 Consulting with Other Providers; Task List A-1, A-5, H-9)*

## Appendix J. BCBA Demographics Form for Phase Two

First name: _____

Last name: _____

Job title: _____

Agency name: _____

What is the name of your direct supervisor? This answer will only be used for the purpose of determining the total number of clients indirectly reached by this training. _____

What is your age (in years)? _____

Race:

- American Indian/Alaska Native
- Asian
- Black
- Native Hawaiian or Other Pacific Islander
- White
- Hispanic/Latino
- Other
  - Please describe: _____
- Prefer not to answer

Sex:

- Female
- Male
- Other
  - Please specify _____
- Prefer not to say

What is your highest level of degree achieved?

- Bachelor's
- Master's
- Doctoral
- Other
  - Please describe: _____

Which of the following certification do you hold?

- BCBA

- BCBA-D

| **If BCBA is chosen, the following questions will be asked:** | **If BCBA-D is chosen, the following questions will be asked:** |
|---|---|
| In which area did you receive your master's level degree?<br>o Behavior analysis<br>o Education<br>o Psychology<br>o Other<br>o Please describe: _____<br><br>Which of the following best describes your path to BCBA certification?<br>o I received my master's degree from a behavior analysis program<br>o I received my master's degree from a program that was not behavior analysis-specific and then completed additional behavior analytic coursework<br>o I received my master's degree and then completed faculty teaching and research in the field of behavior analysis<br>o Other<br>o Please describe: _____<br><br>In what year did you become a BCBA? _____ | In which area did you receive your doctoral degree?<br>o Behavior analysis<br>o Education<br>o Psychology<br>o Other<br>o Please describe: _____<br><br>In what year did you become a BCBA-D? _____ |

Current position at your job:

- Clinical director
- Clinical supervisor
- Other
  - Please describe: _____

Years of experience in current role: _____

Years of experience providing ABA: _____

How many clients do you currently provide services to directly? _____

Do any of your current clients have comorbid mental health diagnoses?

- Yes
- No
- Not sure

Do any of your current clients receive other treatments in addition to ABA (e.g. psychotropic medications, OT, speech, psychotherapy/CBT)?

- Yes
- No
- Not sure

Do any of your current clients/families have a significant trauma history?

- Yes
- No
- Not sure

What is the age of your youngest current client (in years or months)? _____

What is the age of your oldest current client (in years)? _____

Do you currently provide clinical supervision to others?

- Yes
- No

| **-If yes, the following questions will be asked-** |
| --- |
| For whom do you directly provide clinical supervision? (Check all that apply)<br>o RBTs<br>o BCaBAs<br>o BCBAs<br>o Other<br>o Please describe: _____<br><br>How many supervisees do you currently have? _____<br><br>How many clients are served by your supervisees in total? (How many total clients do you provide supervision for?) _____ |

Have you received any previous trainings on family-centered care?

- Yes
- No

Have you received any previous trainings on comorbid mental health diagnoses?

- Yes
- No

Have you received any previous trainings on the impact of trauma or trauma-informed care?

- Yes
- No

## Appendix K. Self-Efficacy Questionnaire

Please rate your current level of confidence in your clinical skills related to the following tasks.

1 = not at all confident
2 = not very confident
3 = slightly confident
4 = fairly confident
5 = very confident
6 = extremely confident/expert

1. Understanding the process of diagnosis experienced by parents prior to beginning ABA intervention.
2. Using diagnostic evaluation reports to inform treatment planning.
3. Finding and using resources related to typical development in children.
4. Using knowledge of typical development when making treatment goals.
5. Understanding how treatment goals should shift as individuals with ASD approach the transition age.
6. Supporting parents with transition planning.
7. Describing common medical conditions in individuals with ASD.
8. Understanding how medical conditions can impact the function of behavior.
9. Incorporating medical concerns into treatment planning.
10. Describing common mental health diagnoses in individuals with ASD.
11. Understanding how mental health symptoms can impact the function of behavior.
12. Knowing when a referral to a mental health professional may be warranted for an individual with ASD.
13. Understanding the unique stressors faced by parents of children with ASD.
14. Checking in on stress levels experienced by parents/caregivers of clients.
15. Identifying sources of trauma experienced by children with ASD.
16. Understanding how trauma can impact the function of behavior.
17. Providing trauma-informed intervention for challenging behavior.
18. Effectively communicating with professionals from fields outside of ABA (e.g. OT, PT, Speech, Psychiatry, Schools, etc.).
19. Describing the role and importance of ABA intervention to others.

## Appendix L. Measure of Processes of Care – Service Provider (MPOC-SP) Items by Factor

(Woodside et al., 2001)

| *Item* | *Factor Loading* |
|---|---|
| In the past year, to what extent did you … | |
| Factor 1: Showing Interpersonal Sensitivity (10 items) | |
| … discuss or explore each family's feelings about having a child with special needs (e.g., their worries about their child's health or function)? | 0.71 |
| … take the time to establish rapport with parents and children? | 0.69 |
| … help each family to secure a stable relationship with at least one service provider who works with the child and parents over a long period of time? | 0.67 |
| … tell parents about options for services or treatments for their child (e.g., equipment, school, therapy)? | 0.66 |
| … suggest treatment and management activities that fit with each family's needs and lifestyle? | 0.61 |
| … offer parents and children positive feedback or encouragement (e.g., in carrying out a home program)? | 0.61 |
| … anticipate parents' concerns by offering information even before they ask? | 0.61 |
| … help parents to feel competent in their roles as parents? | 0.61 |
| … discuss expectations for each child with other service providers to ensure consistency of thought and action? | 0.60 |
| … let parents choose when to receive information and the type of information they wanted? | 0.60 |
| Factor 2: Providing General Information (5 items) | |
| … provide advice on how to get information or to contact other parents (e.g., through a community's resource library, support groups, or the Internet)? | 0.86 |
| … provide opportunities for the entire family, including siblings, to obtain information? | 0.85 |
| … provide support to help families cope with the impact of their child's chronic condition (e.g., informing parents of assistance programs or counseling how to work with other service providers)? | 0.81 |
| … have general information available about different concerns (e.g., financial costs or assistance, genetic counseling, respite care, dating and sexuality)? | 0.79 |
| … promote family-to-family connections for social, informational, or shared experiences? | 0.75 |

| | |
|---|---|
| Factor 3: Communicating Specific Information About the Child (3 items) | |
| … tell parents about the results from test and/or assessments? | 0.74 |
| … tell parents details about their child's services, such as the types, reasons for, and durations of treatment/management? | 0.72 |
| … provide parents with written information about their child's condition, progress, or treatment? | 0.63 |
| Factor 4: Treating People Respectfully (9 items) | |
| … treat each parent as an individual rather than as a "typical" parent of a child with a "problem"? | 0.75 |
| … treat parents as equals rather than just as the parent of a patient (e.g., by not referring to them as "Mom" and "Dad")? | 0.75 |
| … help parents to feel like a partner in their child's care? | 0.72 |
| … make sure parents had a chance to say what was important to them? | 0.70 |
| … accept parents and their family in a nonjudgmental way? | 0.66 |
| … make sure parent had opportunities to explain their treatment goals and needs (for services or equipment)? | 0.65 |
| … treat children and their families as people rather than as "cases" (e.g., by not referring to them by diagnosis, such as "the spastic diplegic")? | 0.63 |
| … answer parents' questions completely? | 0.62 |
| … trust parents as the "experts" on their child? | 0.60 |

*Note*. $N = 324$.

## Appendix M. Posttest Satisfaction Survey and Weekly Session Evaluation

**Posttest Satisfaction Survey**

Please rate the extent to which you agree with each of the following statements related to the ECHO model trainings you attended.

1 = Strongly Disagree
2 = Disagree
3 = Agree
4 = Strongly Agree

1. The trainings were useful.
2. The trainings were relevant.
3. All learning objectives were met.
4. The trainings helped me to improve my clinical skills.
5. I will use the knowledge I have gained from the trainings.
6. I believe I can successfully apply what I've learned to my work.
7. Attending the trainings helped me feel connected to other professionals.
8. I feel like I have expanded my professional network by participating in today's session.
9. Overall, I am satisfied with the ECHO model trainings.

**Weekly Session Evaluation**

Please answer the following questions about your ECHO training session.

Did you attend the session this week?
- o Yes
- o No

Overall, I am satisfied with today's session.
- o Strongly disagree
- o Disagree
- o Agree

- Strongly Agree

I thought the session's content was:
- Too easy
- Just right
- Too complex

The training was useful.
- Strongly disagree
- Disagree
- Agree
- Strongly Agree

The training was relevant.
- Strongly disagree
- Disagree
- Agree
- Strongly Agree

All learning objectives were met.
- Strongly disagree
- Disagree
- Agree
- Strongly Agree

## Appendix N. Parent Demographics Form for Phase Two

First name: _____

Last name: _____

What is your child age (in months and years): _____

What is your child's sex:

- Female
- Male
- Other
  - Please specify _____
- Prefer not to say

What is your child's race:

- American Indian/Alaska Native
- Asian
- Black
- Native Hawaiian or Other Pacific Islander
- White
- Hispanic/Latino
- Other
  - Please describe: _____
- Prefer not to answer

Has your child been diagnosed by a mental health professional with any of the following? Check all that apply:

- Attention-deficit/hyperactivity disorder (ADHD)
- Anxiety disorder (including Generalized Anxiety Disorder, Social Phobia, Specific Phobia, and Separation Anxiety Disorder)
- Obsessive-compulsive and related disorder (including OCD, trichotillomania (hair-pulling disorder) excoriation disorder (skin picking), hoarding disorder, and body dysmorphic disorder)
- Mood disorder (including Major Depressive Disorder and Bipolar Disorder)
- Trauma-related disorder (including Post-Traumatic Stress Disorder (PTSD), Acute Stress Disorder, and Adjustment Disorder)
- Disruptive disorder (including Opposition Defiant Disorder and Conduct Disorder)
- Other (specify)_____

What is your age (in years): _____

What is your race?:

- American Indian/Alaska Native

- Asian
- Black
- Native Hawaiian or Other Pacific Islander
- White
- Hispanic/Latino
- Other
    - Please describe: _____
- Prefer not to answer

What is your sex?:

- Female
- Male
- Other
    - Please specify _____
- Prefer not to say

What is your relationship to the child:

- Mother
- Father
- Other (specify)_____

Primary language spoken in the home:

- English
- Spanish
- Other: _____

Respondent's highest level of education

- Some high school
- High school graduate or GED
- Some college
- Vocational certificate
- Completed 2-year degree
- Completed 4-year degree
- Advanced graduate or professional
    - Please specify: _____
- Other
    - Please specify: _____

Annual Household Income (estimate for last year)

- Less than $20,000
- $20,001-$40,000
- $40,001-$60,000
- $60,001-$90, 000
- More than $90,000

What agency provides your ABA services? _____

How many hours per week of ABA intervention does your child receive?

_____

Which of the following describes the role of the BCBA on your child's ABA intervention team?:

- The BCBA directly provides intervention to my child.
- The BCBA directly provides intervention to my child **AND** provides parent training.
- The BCBA oversees a team of RBTs who provide intervention to my child. (This may include some direct intervention from the BCBA).
- The BCBA oversees a team of RBTs who provide intervention to my child **AND** provides parent training.
- The BCBA provides parent training **ONLY**.

How is your child's ABA intervention funded? (Check all that apply):

- State-funded early intervention services (birth-3 only)
- Private health insurance
- Military healthcare benefits (i.e. TRICARE)
- Medicaid
- Scholarship
- Grants
- United Healthcare Children's Foundation
- Private pay (out-of-pocket)
- Other
  - Please describe _____

Does your child receive any therapies/treatments in addition to ABA? (e.g. speech therapy, occupational therapy, counseling, medication, etc.)

- Yes
- No

## Appendix O. Measure of Process of Care (MPOC-20) Items

(King et al., 2004)

*Item Description*

1. Help you to feel competent as a parent?
2. Provide you with written information about what your child is doing in therapy?
3. Provide a caring atmosphere rather than just give you information?
4. Let you choose when to receive information and the type of information you want?
5. Look at the needs of your "whole" child (e.g., at mental, emotional, and social needs) instead of just at physical needs?
6. Make sure that at least one team member is someone who works with you and your family over a long period of time?
7. Fully explain treatment choices to you?
8. Provide opportunities for you to make decisions about treatment?
9. Provide enough time to talk so you don't feel rushed?
10. Plan together so they are all working in the same direction?
11. Treat you as an equal rather than just as the parent of a patient (e.g., by not referring to you as "Mom" or "Dad")?
12. Give you information about your child that is consistent from person to person?
13. Treat you as an individual rather than as a "typical" parent of a child with a disability?
14. Provide you with written information about your child's progress?
15. Tell you about the results from assessments?
16. Give you information about the types of services offered at the organization or in your community?
17. Have information available about your child's disability (e.g., its causes, how it progresses, future outlook)?
18. Provide opportunities for the entire family to obtain information?
19. Have information available to you in various forms, such as a booklet, kit, video, etc.?
20. Provide advice on how to get information or to contact other parents (e.g., organization's parent resource library)?

## Appendix P. Caregiver Strain Questionnaire

*Please think back over the past 6 months and try to remember how things have been for your family. We are trying to get a picture of how life has been in your household over that time.*

*For each question, please tell me which response (which number) fits best.*

**In the past 6 months, how much of a problem was the following:**

| | | Not at all | A little | Somewhat | Quite a bit | Very much |
|---|---|---|---|---|---|---|
| 1. | Interruption of personal time resulting from your child's emotional or behavioral problem? | 1 | 2 | 3 | 4 | 5 |
| 2. | You missing work or neglecting other duties because of your child's emotional or behavioral problem? | 1 | 2 | 3 | 4 | 5 |
| 3. | Disruption of family routines due to your child's emotional or behavioral problem? | 1 | 2 | 3 | 4 | 5 |
| 4. | Any family member having to do without things because of your child's emotional or behavioral problem? | 1 | 2 | 3 | 4 | 5 |
| 5. | Any family member suffering negative mental or physical health effects as a result of your child's emotional or behavioral problem? | 1 | 2 | 3 | 4 | 5 |
| 6. | Your child getting into trouble with the neighbors, the school, the community, or law enforcement? | 1 | 2 | 3 | 4 | 5 |
| 7. | Financial strain for your family as a result of your child's emotional or behavioral problem? | 1 | 2 | 3 | 4 | 5 |
| 8. | Less attention paid to other family members because of your child's emotional or behavioral problem? | 1 | 2 | 3 | 4 | 5 |
| 9. | Disruption or upset of relationships within the family due to your child's emotional or behavioral problem? | 1 | 2 | 3 | 4 | 5 |
| 10. | Disruption of your family's social activities resulting from your child's emotional or behavioral problem? | 1 | 2 | 3 | 4 | 5 |

*In this section, please continue to look back and try to remember how <u>you</u> have felt during the <u>past 6 months</u>.*

*For each question, please tell me which response (which number) fits best.*

**In the past 6 months:**

| | | Not at all | A little | Somewhat | Quite a bit | Very much |
|---|---|---|---|---|---|---|
| 11. | How isolated did you feel as a result of your child's emotional or behavioral problem? | 1 | 2 | 3 | 4 | 5 |
| 12. | How sad or unhappy did you feel as a result of your child's emotional or behavioral problem? | 1 | 2 | 3 | 4 | 5 |
| 13. | How embarrassed did you feel about your child's emotional or behavioral problem? | 1 | 2 | 3 | 4 | 5 |
| 14. | How well did you relate to your child? | 1 | 2 | 3 | 4 | 5 |
| 15. | How angry did you feel toward your child? | 1 | 2 | 3 | 4 | 5 |
| 16. | How worried did you feel about your child's future? | 1 | 2 | 3 | 4 | 5 |
| 17. | How worried did you feel about your family's future? | 1 | 2 | 3 | 4 | 5 |
| 18. | How guilty did you feel about your child's emotional or behavioral problem? | 1 | 2 | 3 | 4 | 5 |
| 19. | How resentful did you feel toward your child? | 1 | 2 | 3 | 4 | 5 |
| 20. | How tired or strained did you feel as a result of your child's emotional or behavioral problem? | 1 | 2 | 3 | 4 | 5 |
| 21. | In general, how much of a toll has your child's emotional or behavioral problem taken on your family? | 1 | 2 | 3 | 4 | 5 |

## Appendix Q. Tests of Normality, Histograms, and Q-Q Plots for SEQ and MPOC-SP Within-Group Difference Scores

Table 23. Shapiro-Wilk test of normality for SEQ and MPOC-SP difference scores

| Scale | *W* | *p* |
|---|---|---|
| SEQ | 0.98 | 0.80 |
| MPOC-SP Showing Interpersonal Sensitivity | 0.98 | 0.71 |
| MPOC-SP Providing General Information | 0.91 | <.01* |
| MPOC-SP Communicating Specific Information | 0.94 | .046* |
| MPOC-SP Treating People Respectfully | 0.97 | 0.38 |

*p<.05

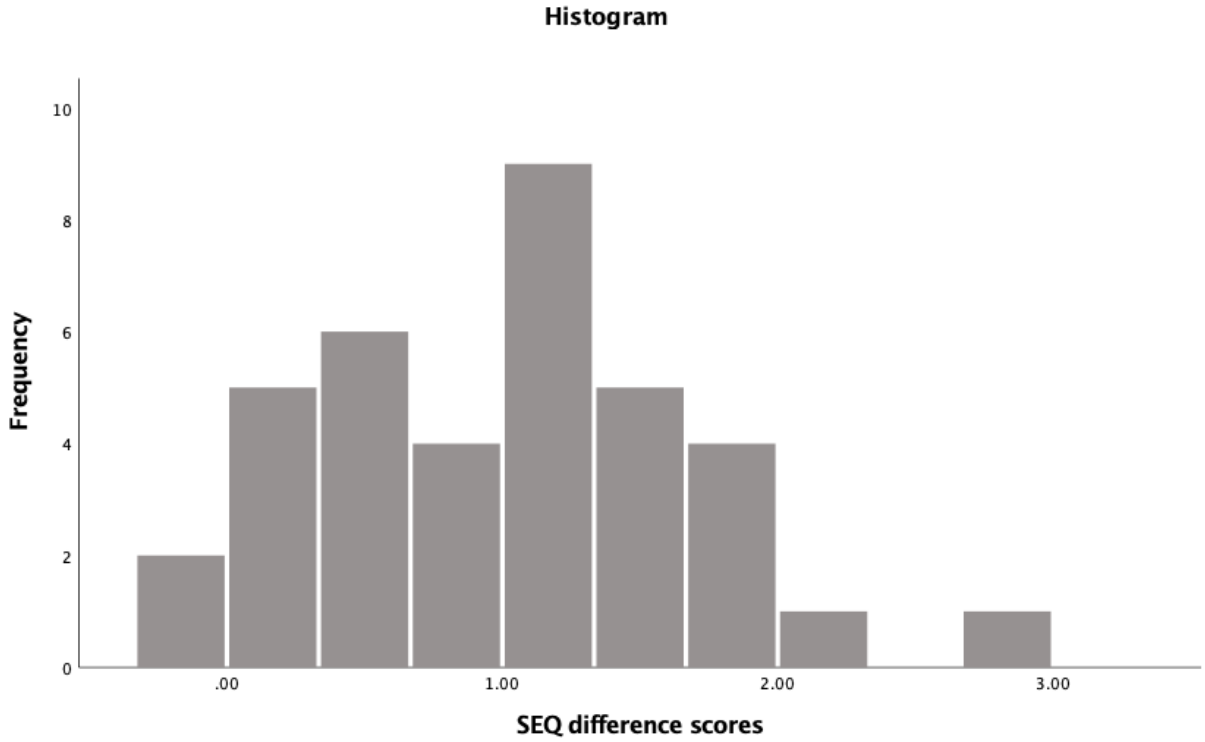


Figure 20. Histogram of within-group SEQ difference scores

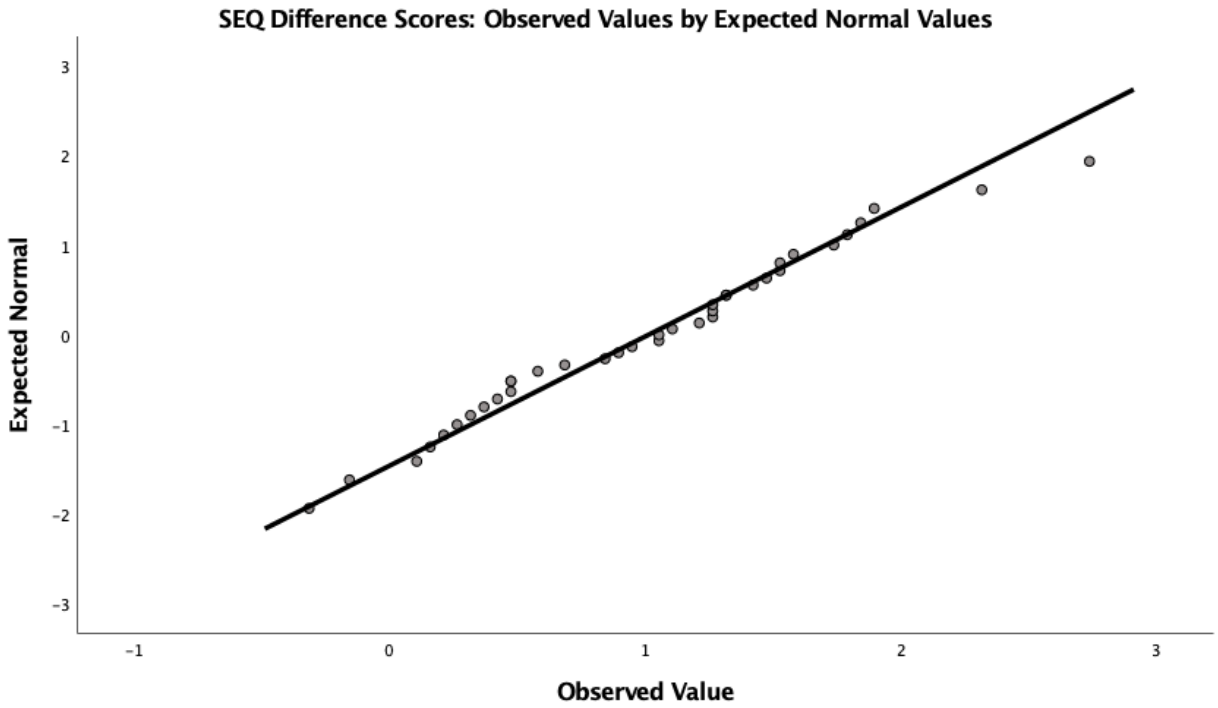


Figure 21. Q-Q plot of observed values by expected normal values of SEQ difference scores

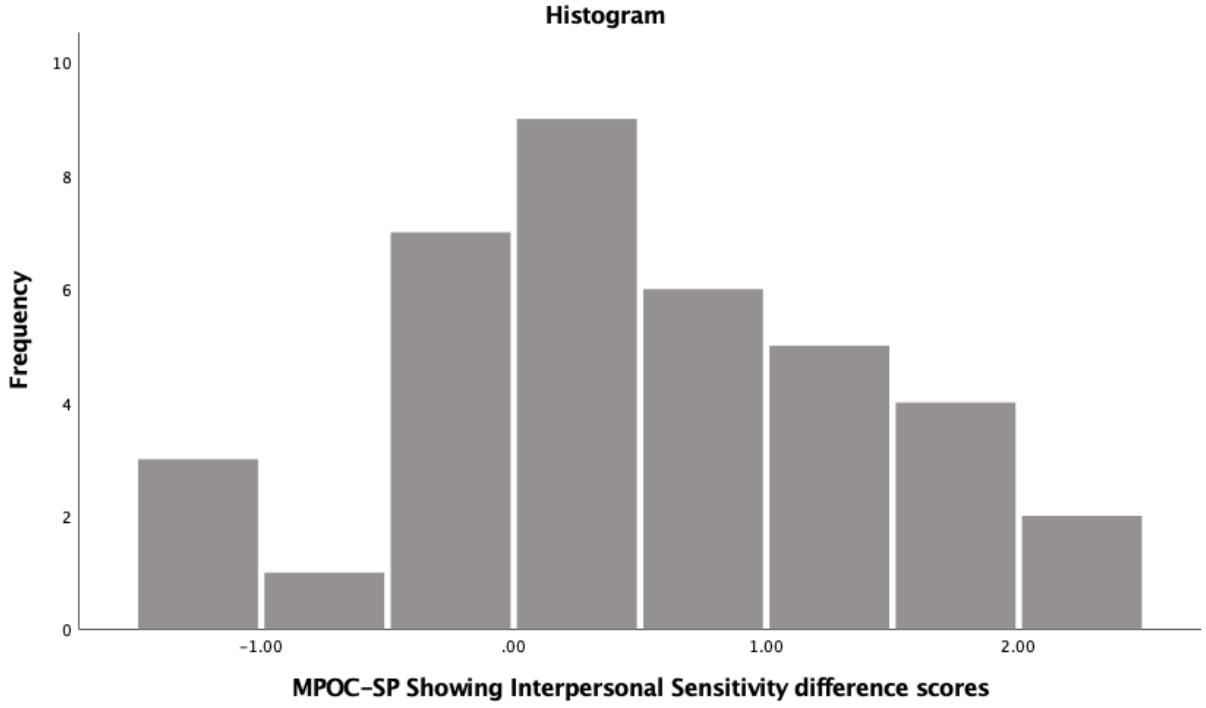


Figure 22. Histogram of within-group MPOC-SP SIS difference scores

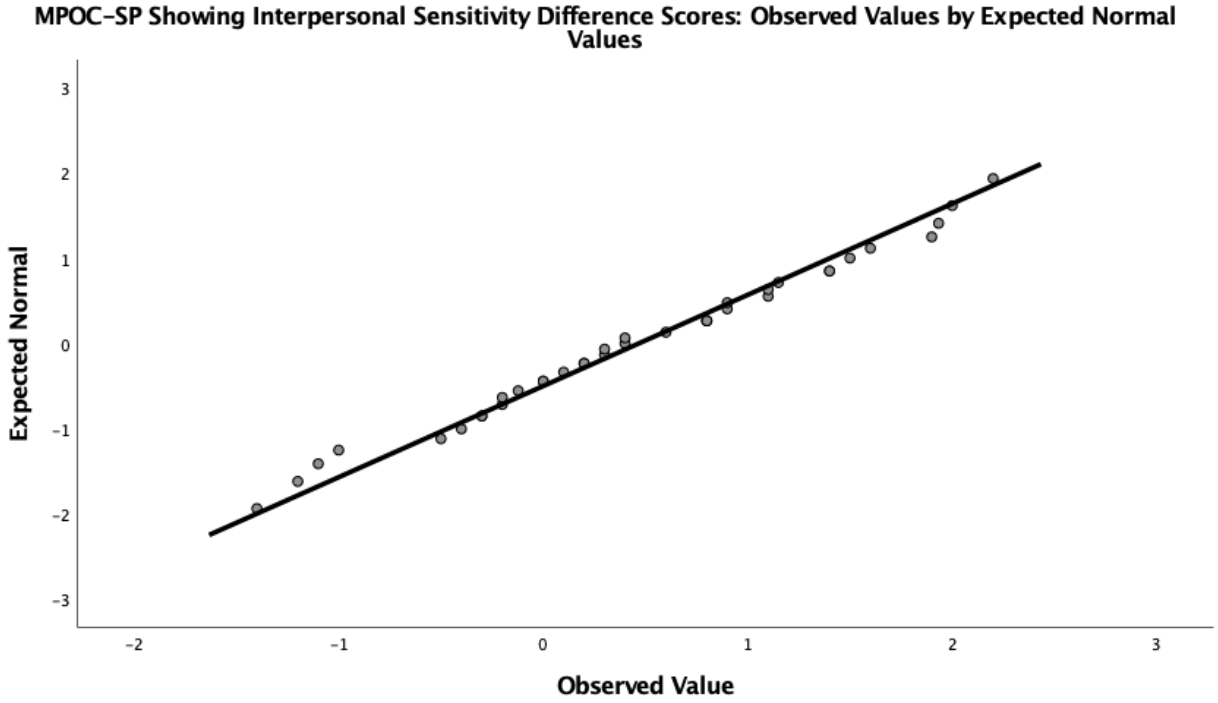


Figure 23. Q-Q plot of observed values by expected normal values for MPOC-SP SIS difference scores

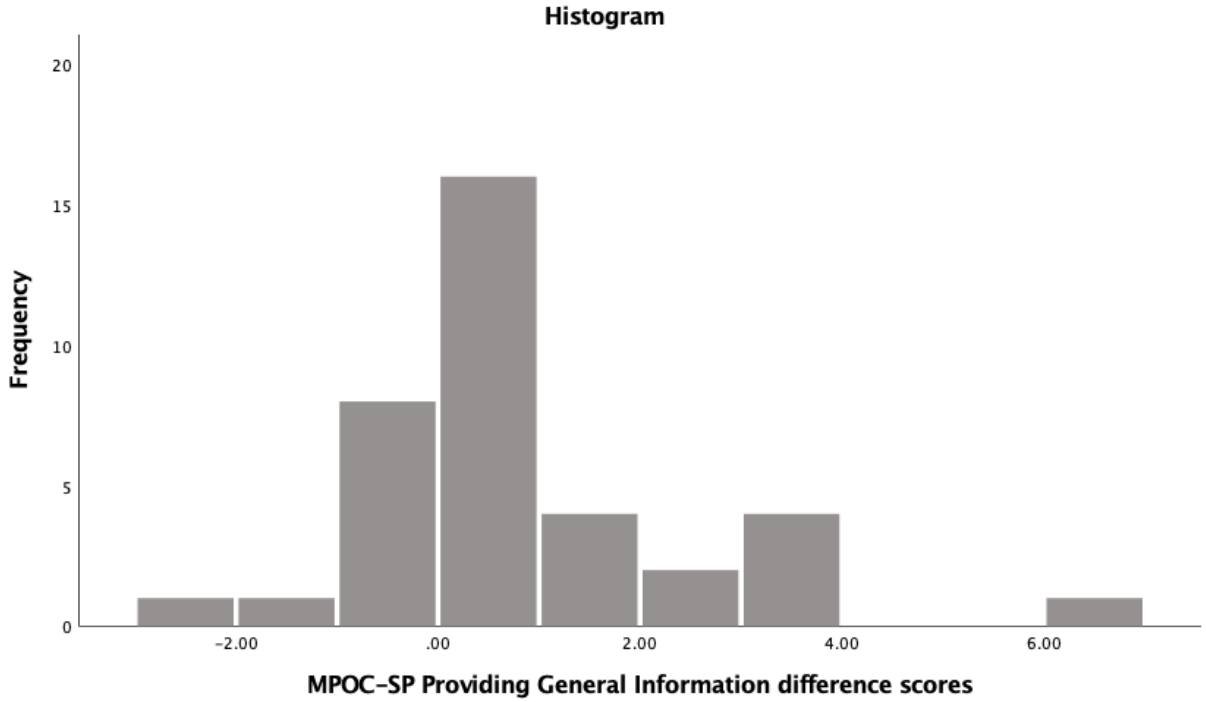


Figure 24. Histogram of within-group MPOC-SP PGI difference scores

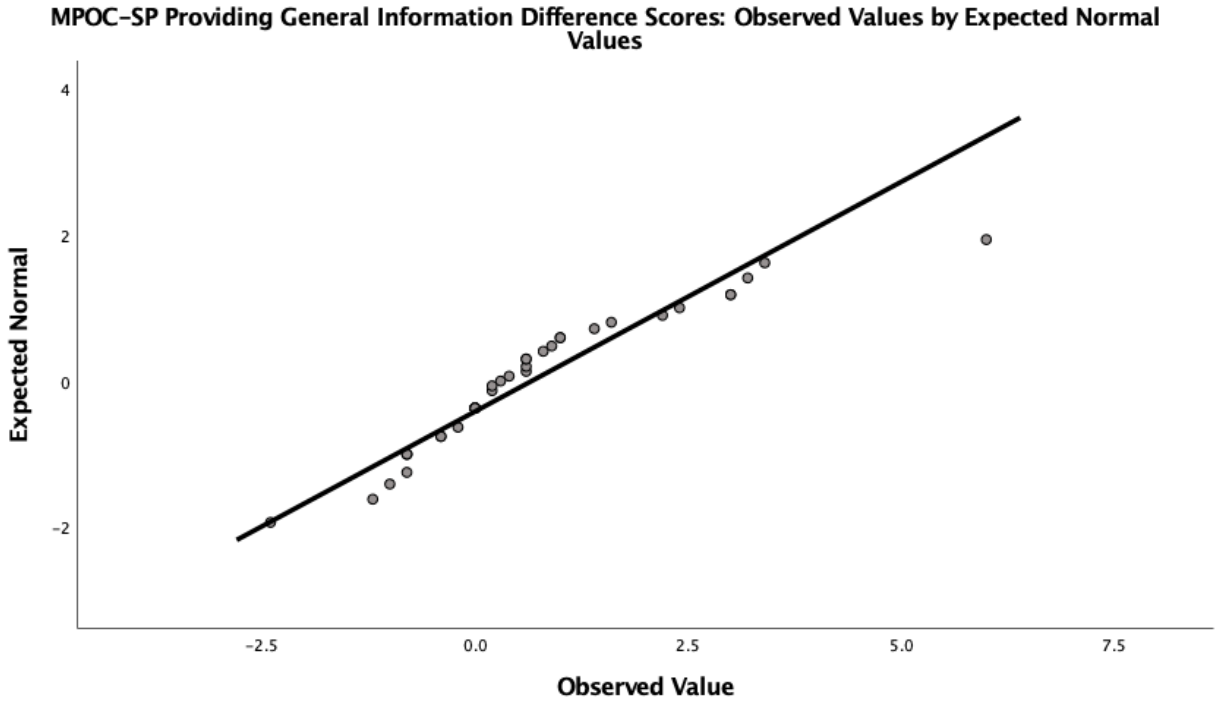


Figure 25. Q-Q plot of observed values by expected normal values for MPOC-SP PGI difference scores

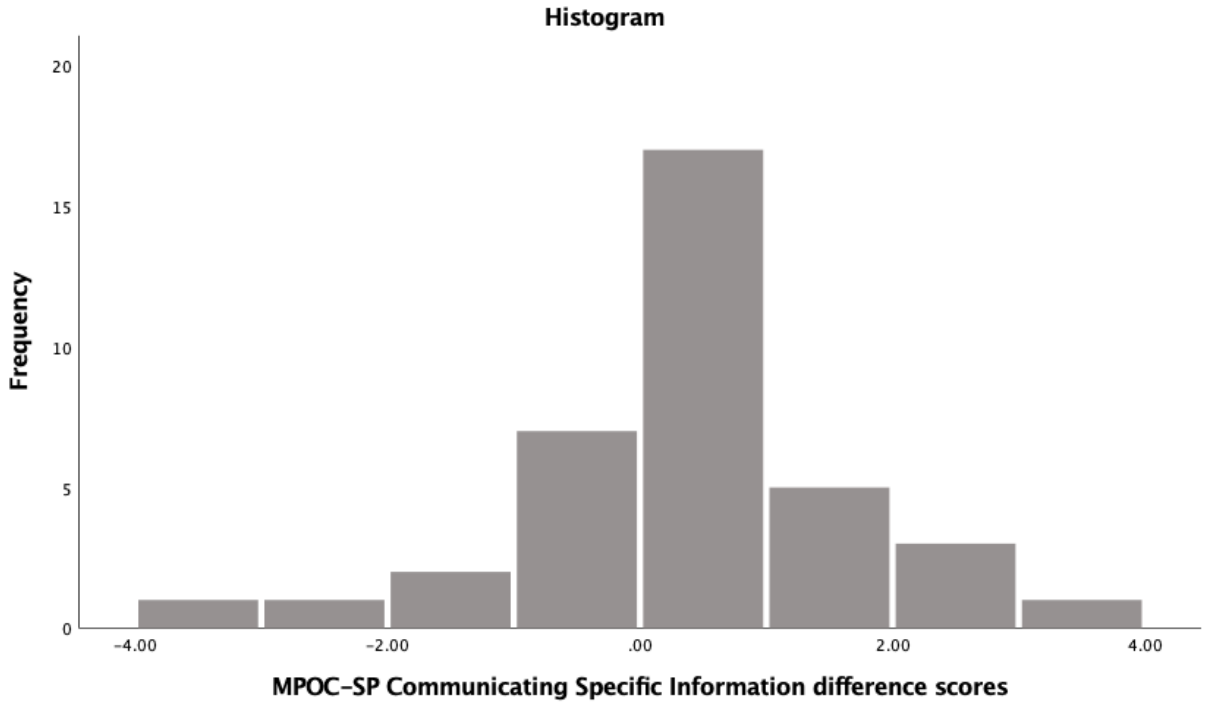


Figure 26. Histogram of within-group MPOC-SP CSI difference scores

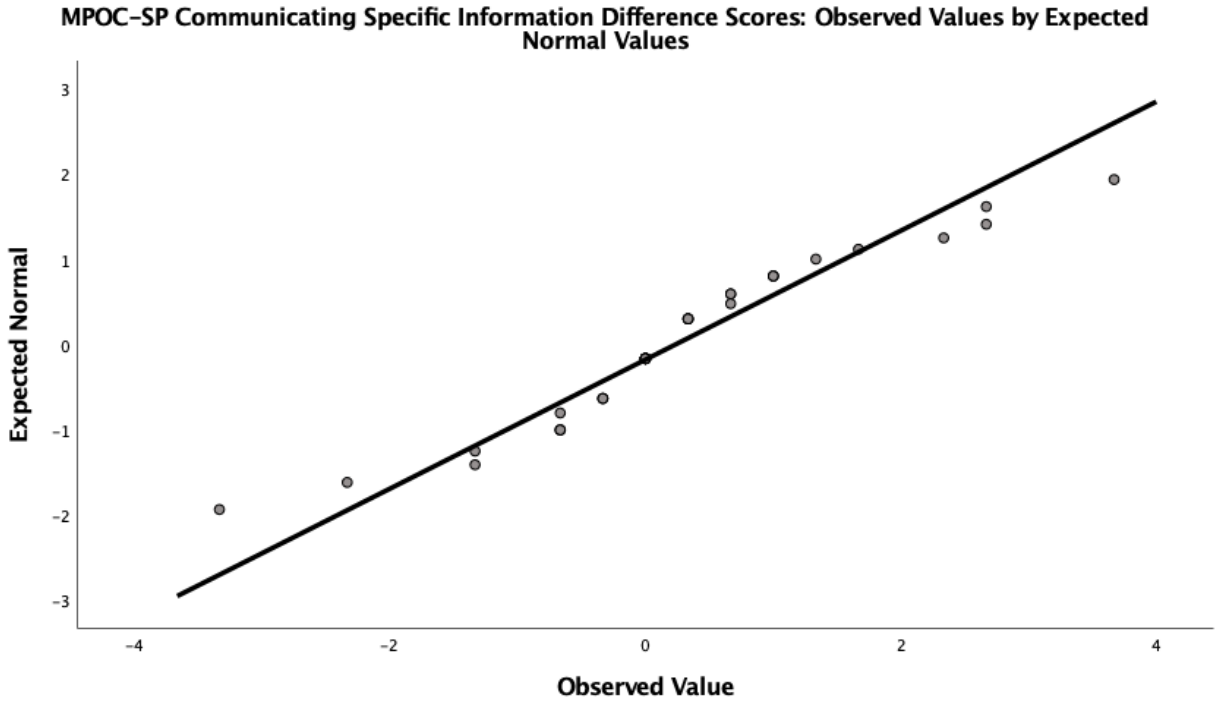


Figure 27. Q-Q plot of observed values by expected normal values for MPOC-SP CSI difference scores

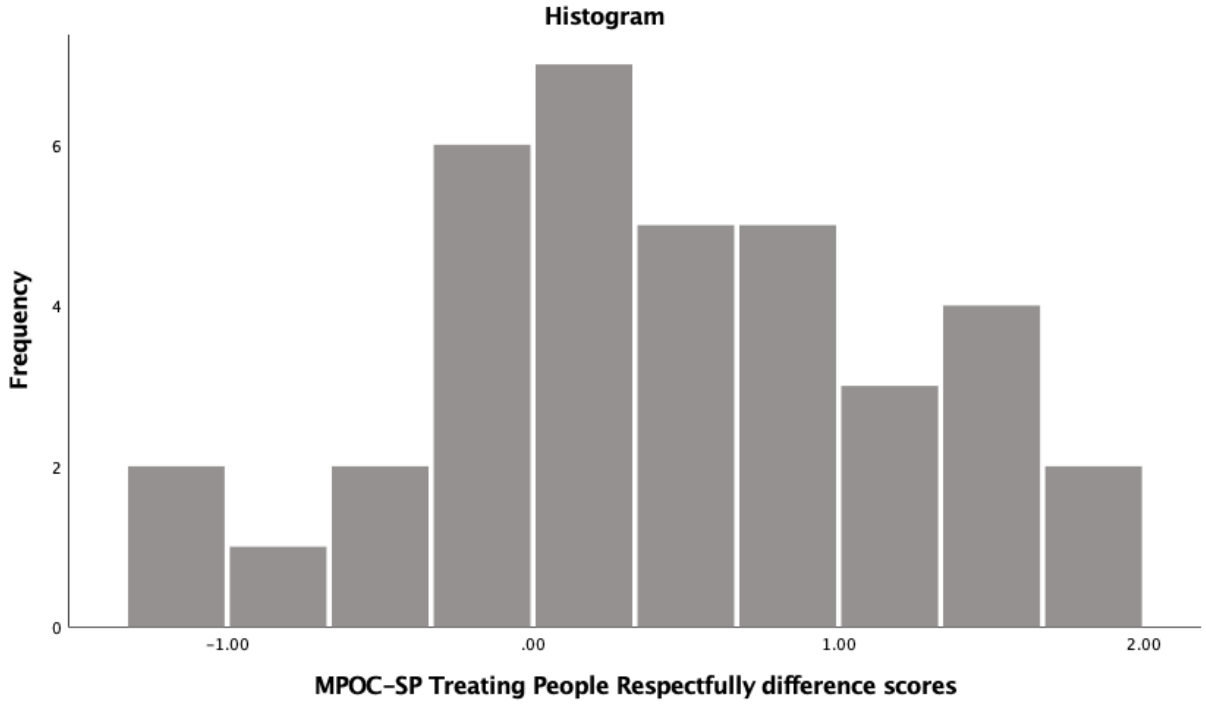


Figure 28. Histogram of within-group MPOC-SP TPS difference scores

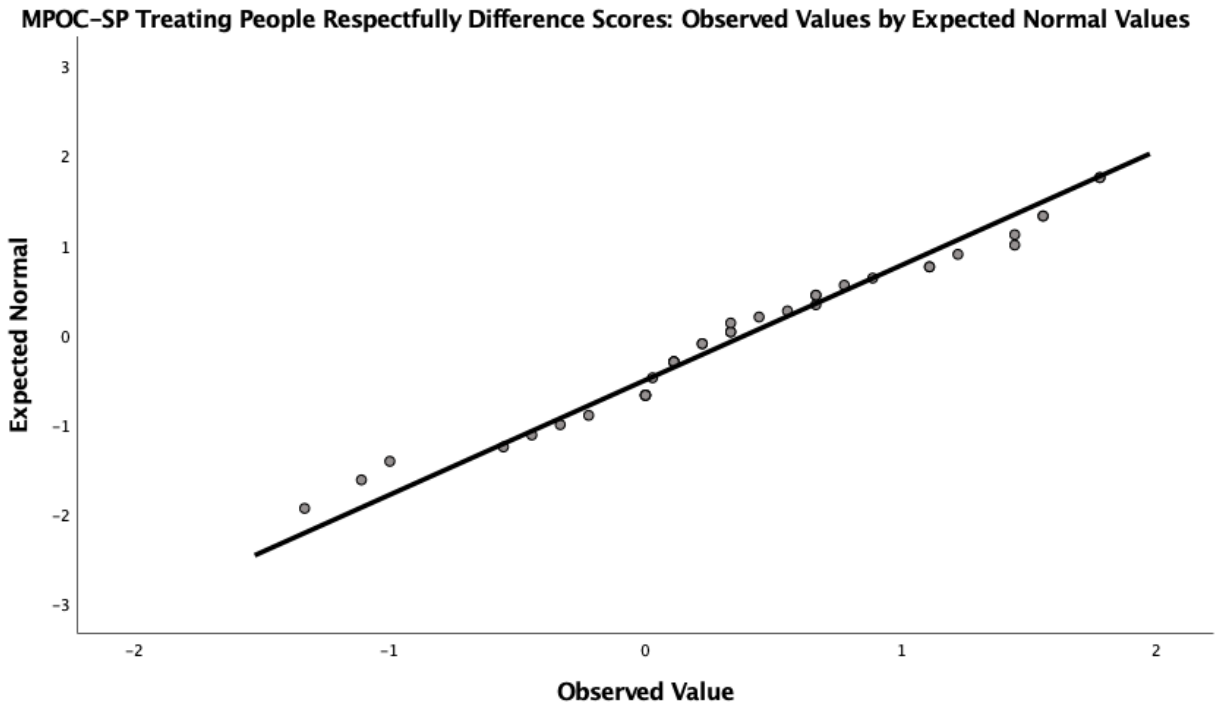


Figure 29. Q-Q plot of observed values by expected values for MPOC-SP TPS difference scores

## Appendix R. Tests of Normality, Levene's Test for Equality of Variances, Histograms, and Normal Q-Q Plots for SEQ and MPOC-SP Difference Scores by Degree Area

Table 24. Shapiro-Wilk test of normality for SEQ and MPOC-SP difference scores from pre- to- post-test by degree area

| **Scale** | Behavior Analysis | | Other | |
|---|---|---|---|---|
| | *W* | *p* | *W* | *p* |
| SEQ | 0.98 | .933 | 0.98 | .937 |
| MPOC-SP Showing Interpersonal Sensitivity | 0.93 | .181 | 0.96 | .499 |
| MPOC-SP Providing General Information | 0.94 | .264 | 0.87 | .011* |
| MPOC-SP Communicating Specific Information | 0.94 | .268 | 0.85 | .005* |
| MPOC-SP Treating People Respectfully | 0.95 | .526 | 0.97 | .695 |

*p<.05

Table 25. Levene's test for equality of variances for SEQ and MPOC-SP difference scores from pre- to- post-test

| Scale | *F* | *p* |
|---|---|---|
| SEQ | 0.58 | .450 |
| MPOC-SP Showing Interpersonal Sensitivity | 0.21 | .647 |
| MPOC-SP Providing General Information | 4.80 | .035* |
| MPOC-SP Communicating Specific Information | 0.01 | .944 |
| MPOC-SP Treating People Respectfully | 0.18 | .672 |

*p<.05

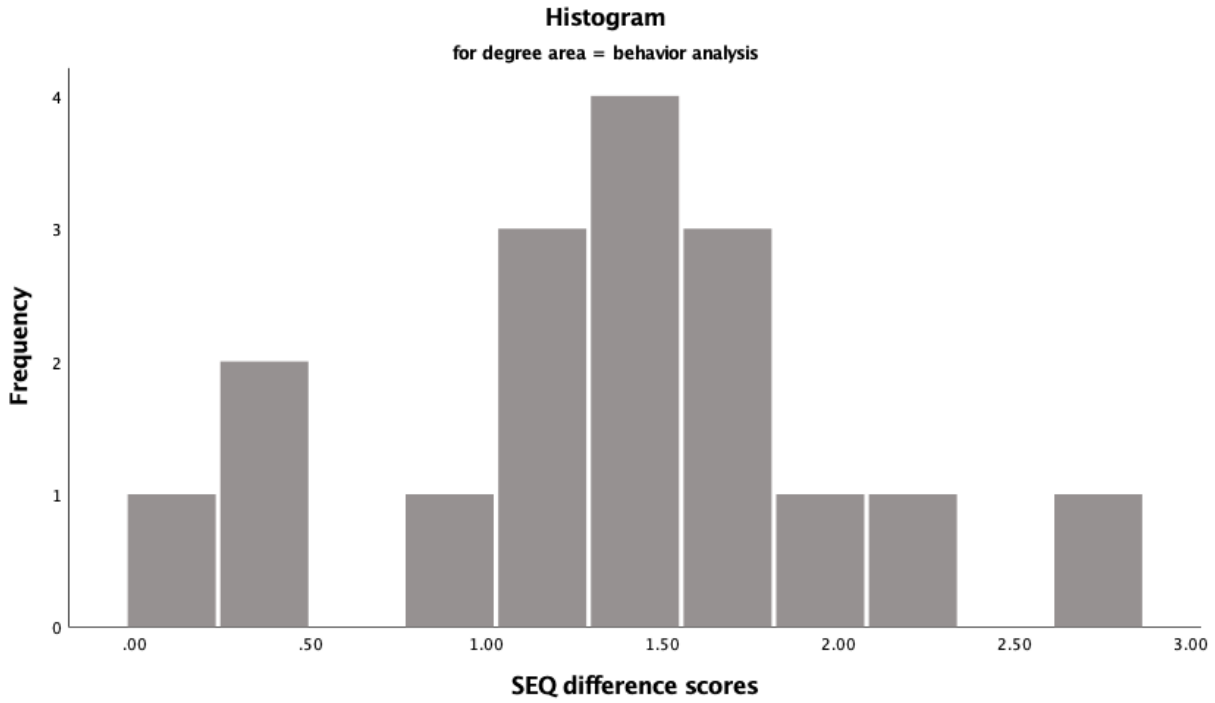


Figure 30. Histogram of SEQ difference scores in behavior analysis group

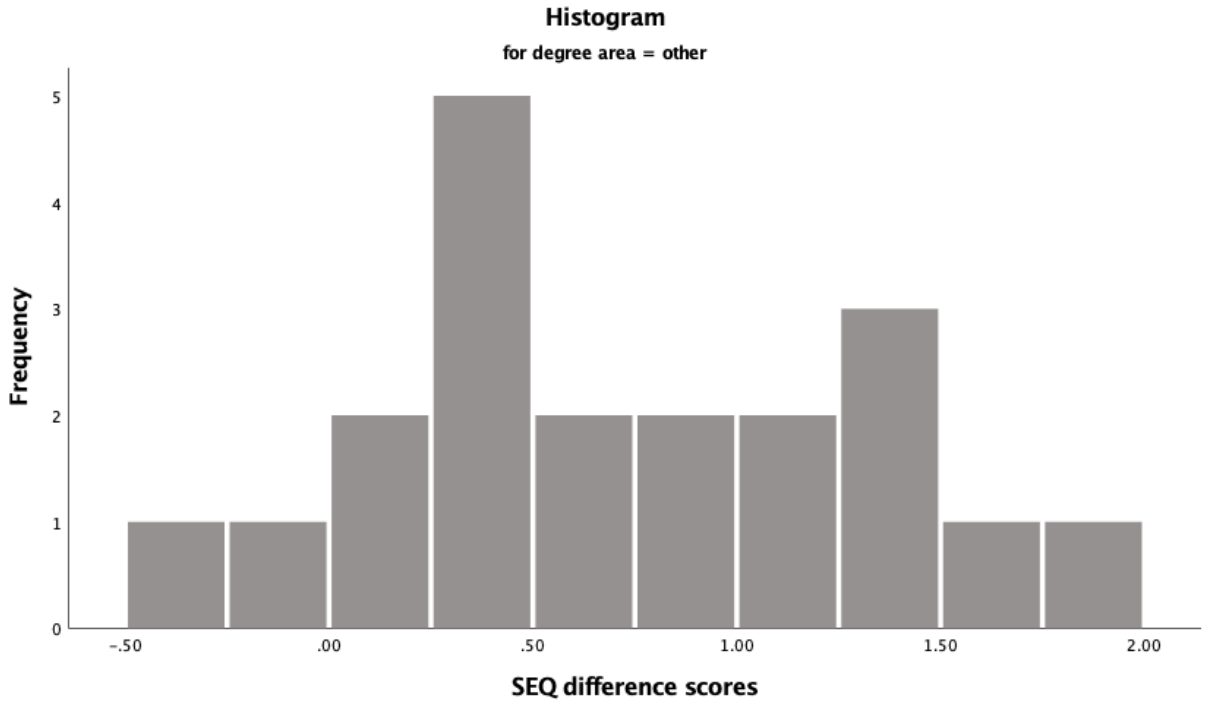


Figure 31. Histogram of SEQ difference scores in other group

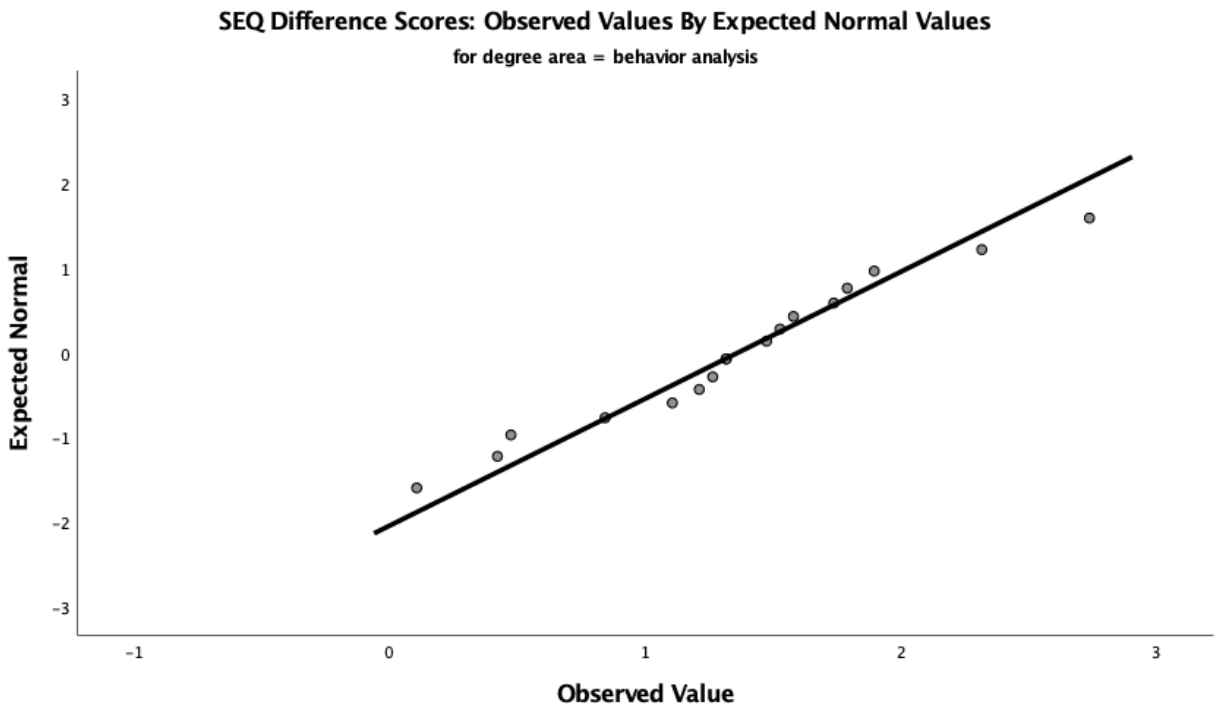


Figure 32. Normal Q-Q plot of SEQ difference scores in behavior analysis group

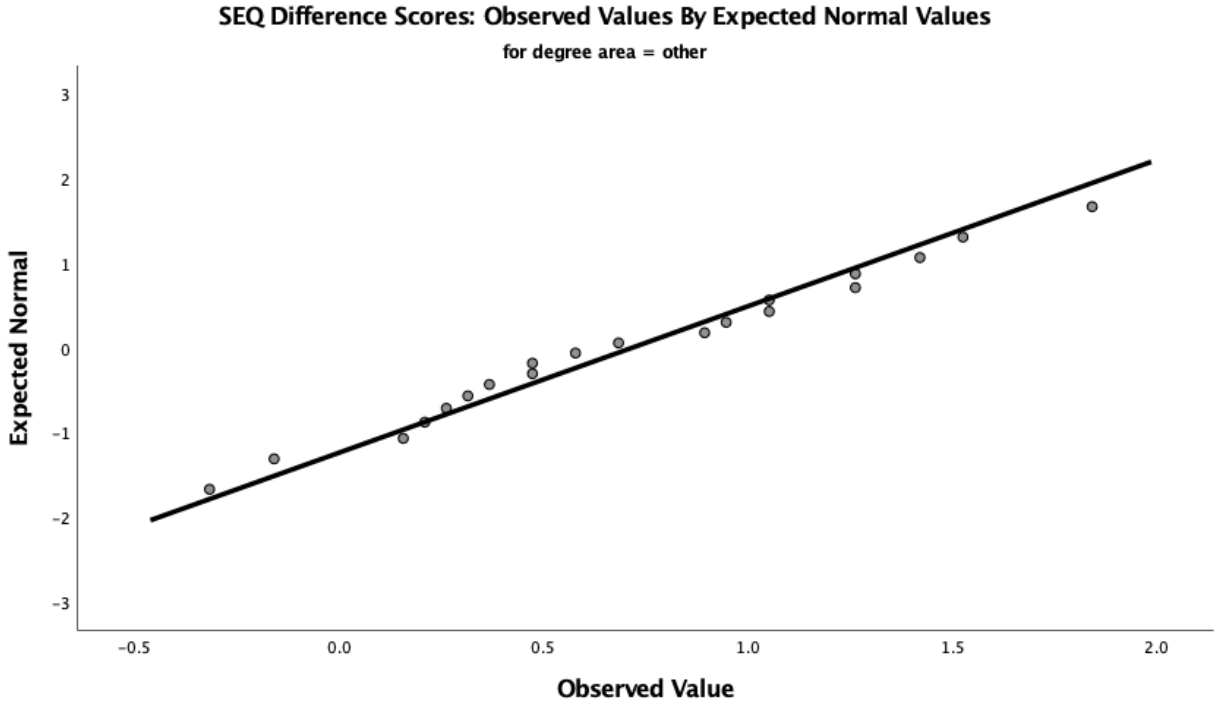


Figure 33. Normal Q-Q plot of SEQ difference scores in other group

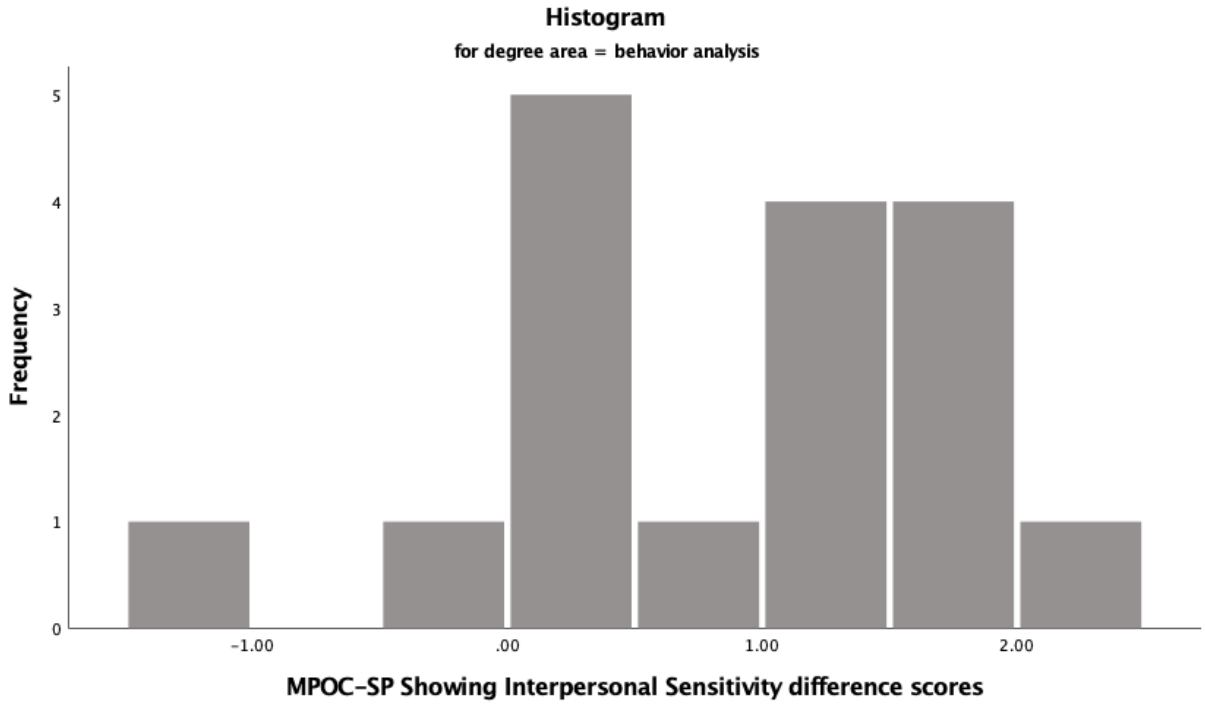


Figure 34. Histogram of MPOC-SP SIS difference scores in behavior analysis group

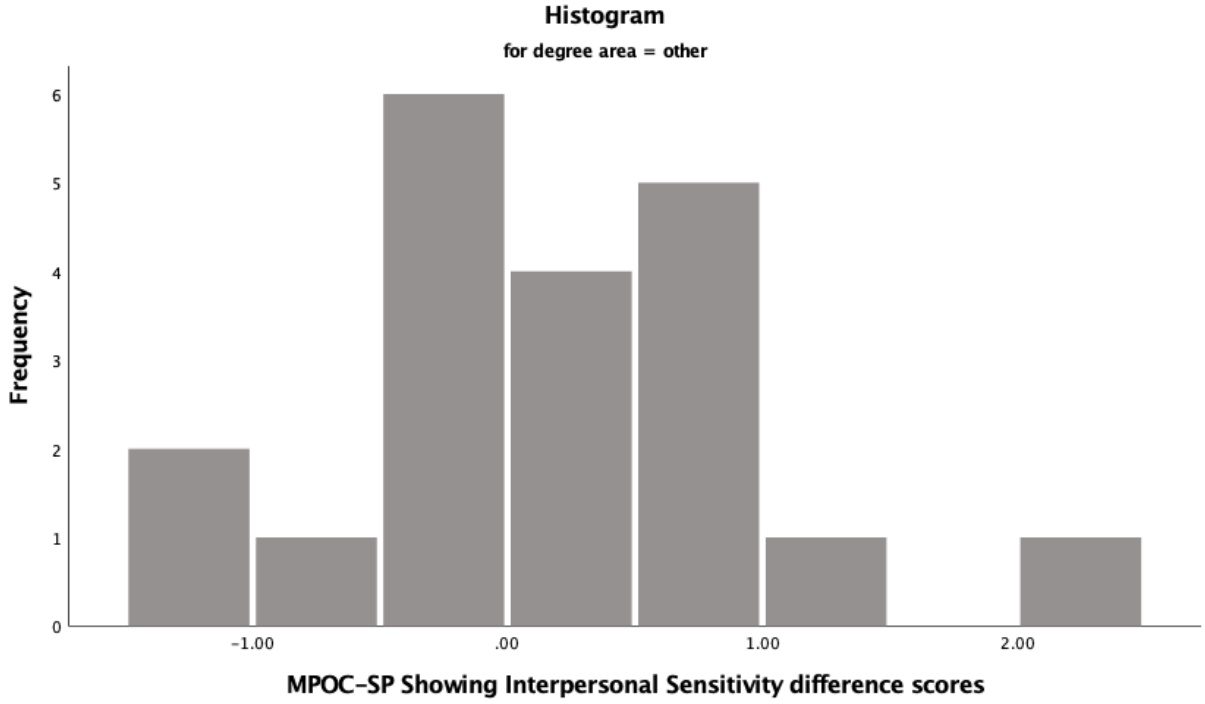


Figure 35. Histogram of MPOC-SP SIS difference scores in other group

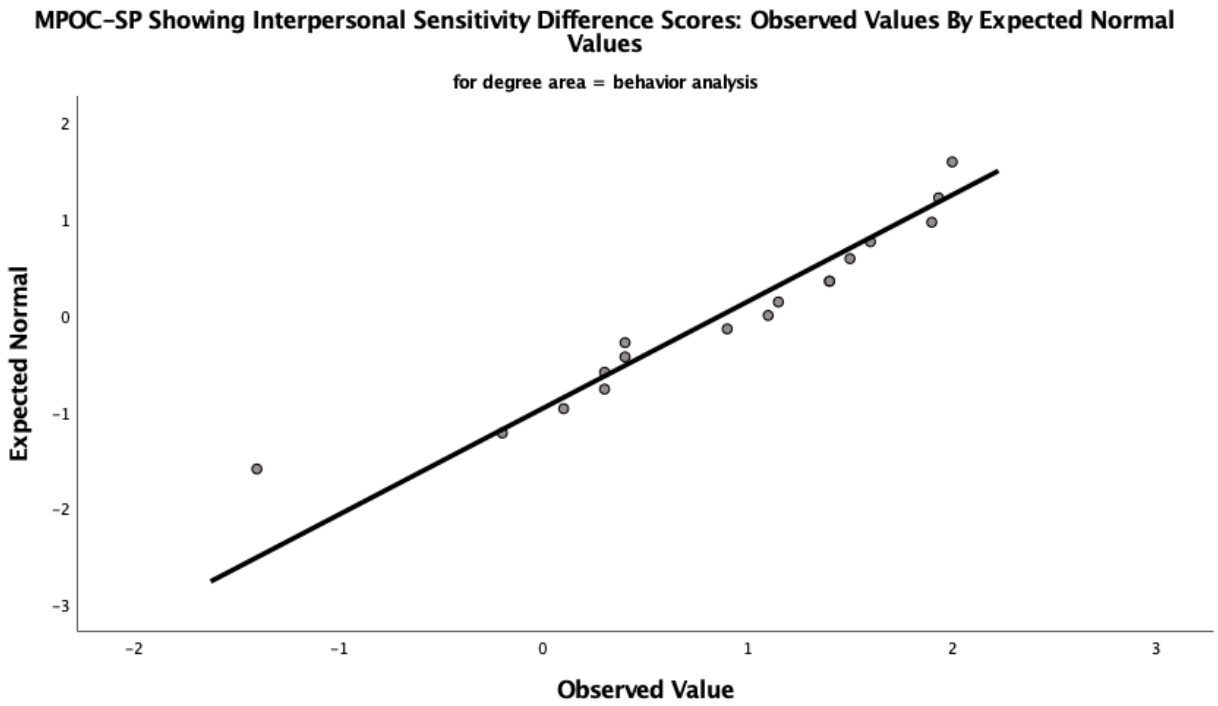


Figure 36. Normal Q-Q plot of MPOC-SP SIS difference scores in behavior analysis group

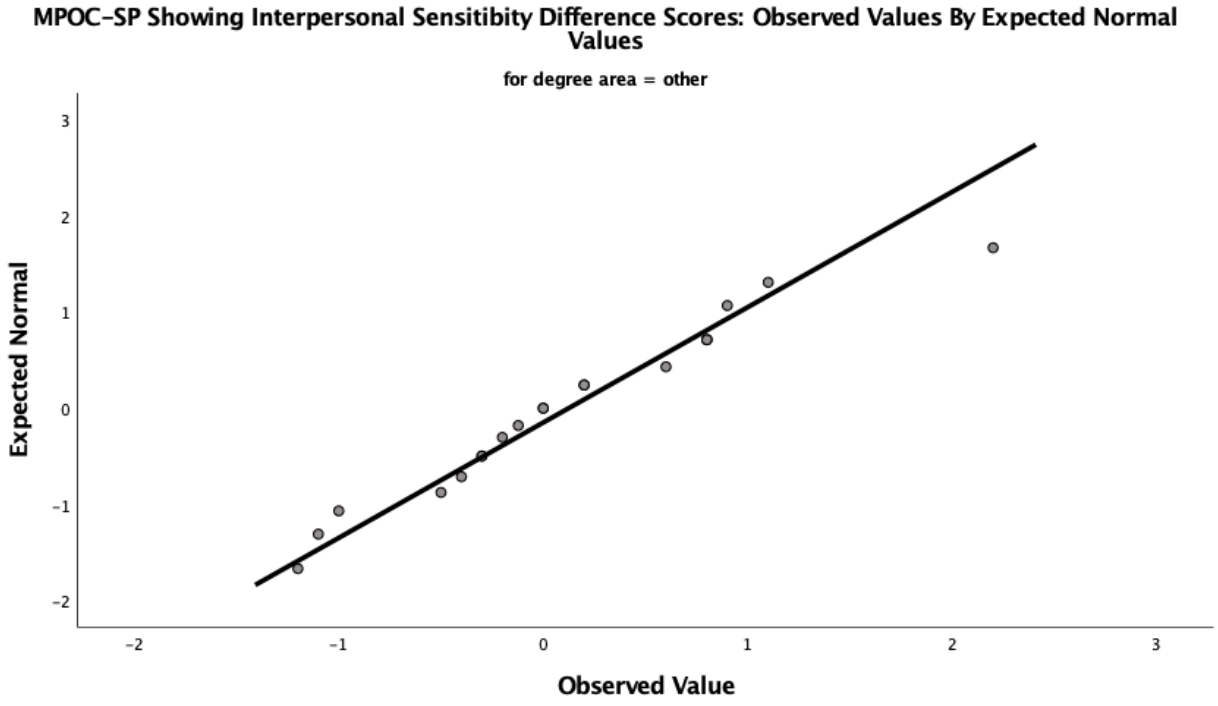


Figure 37. Normal Q-Q plot of MPOC-SP SIS difference scores in other group

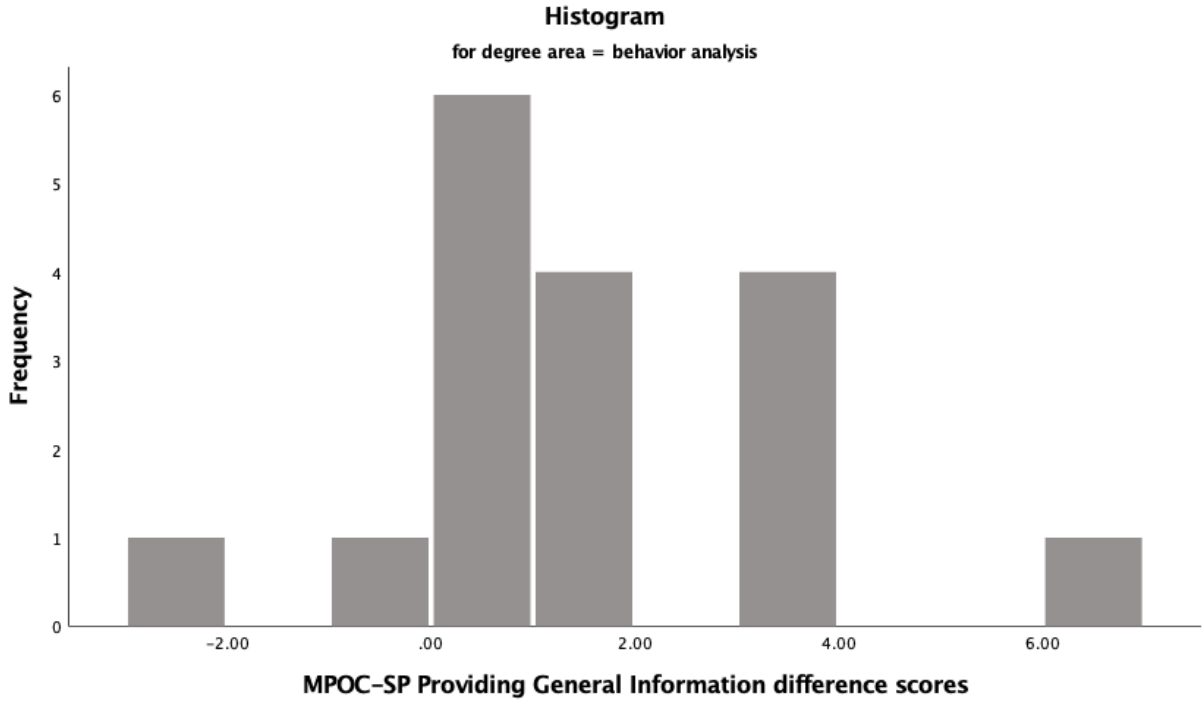


Figure 38. Histogram of MPOC-SP PGI difference scores in behavior analysis group

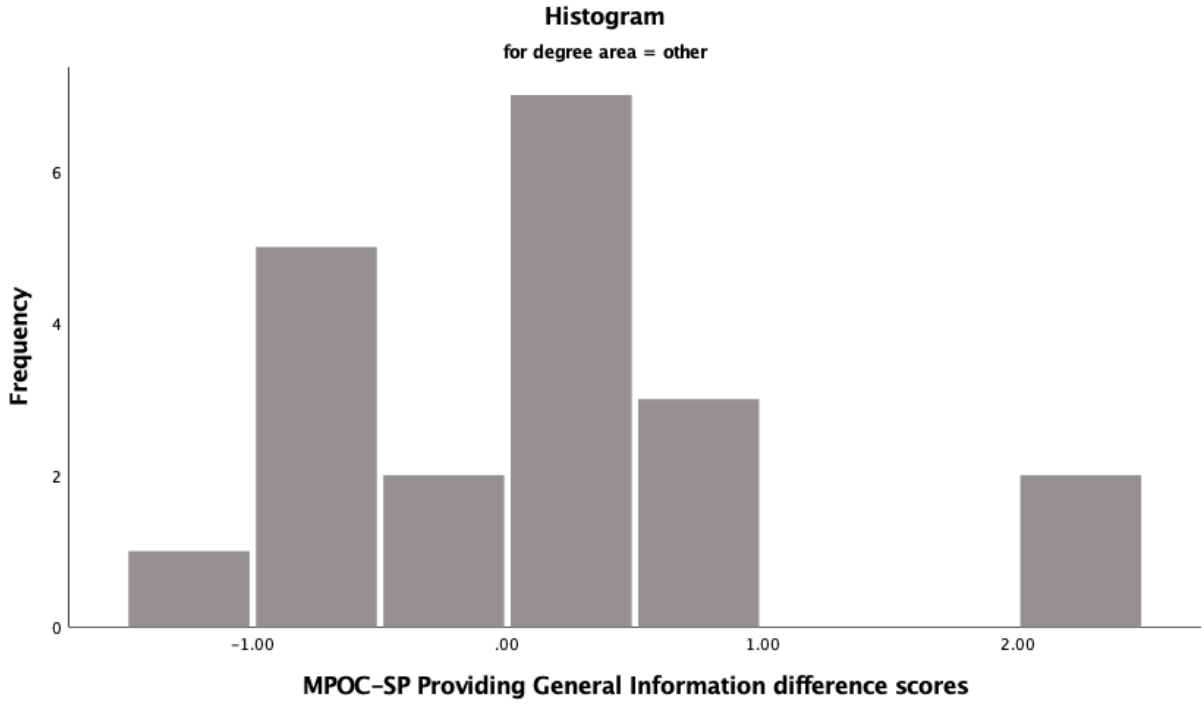


Figure 39. Histogram of MPOC-SP PGI difference scores in other group

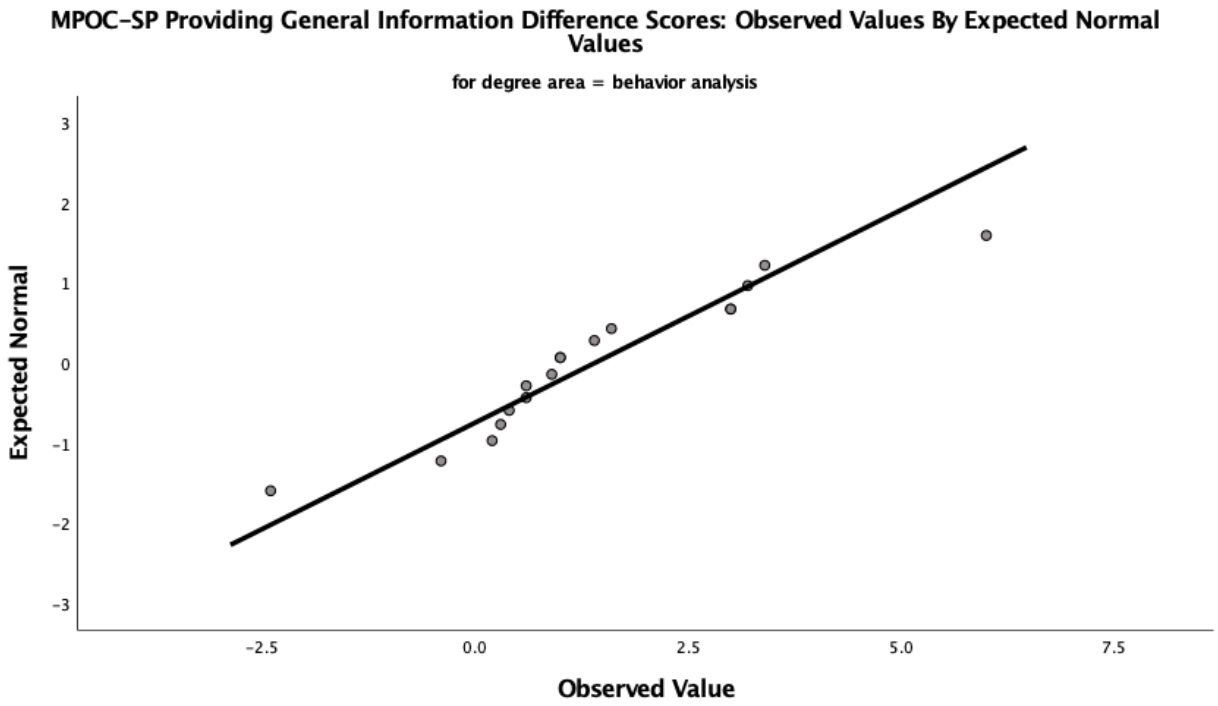


Figure 40. Normal Q-Q plot of MPOC-SP PGI difference scores in behavior analysis group

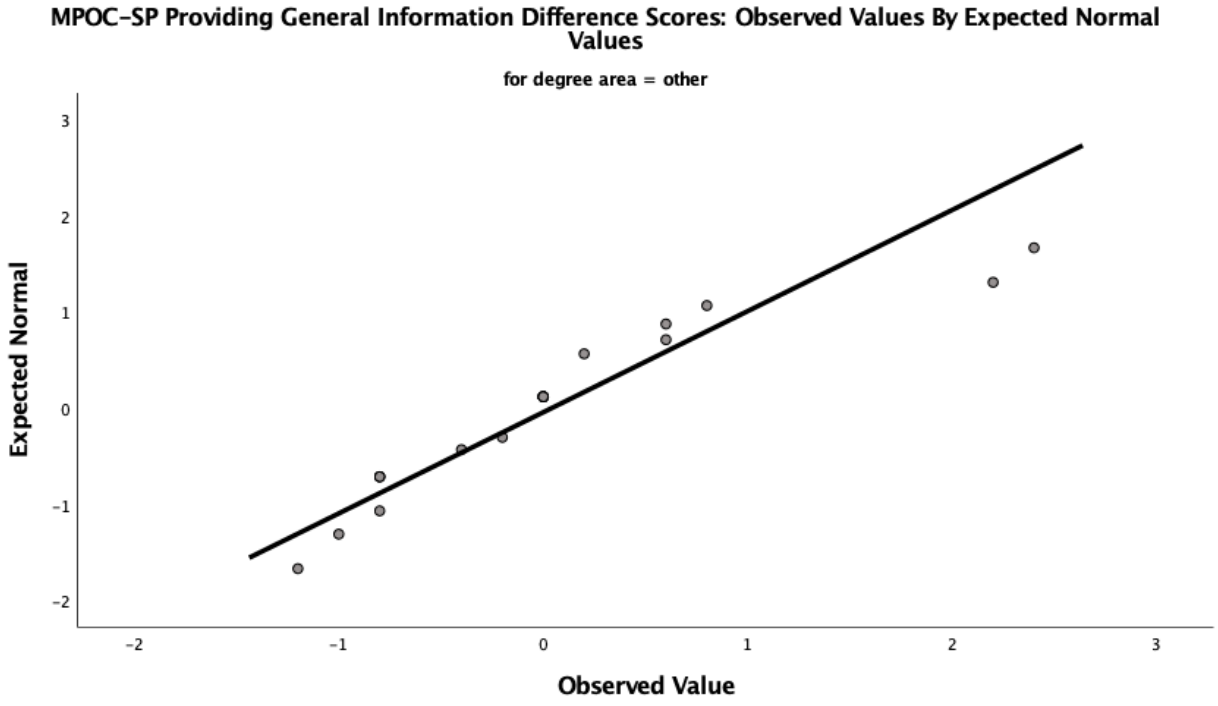


Figure 41. Normal Q-Q plot of MPOC-SP PGI difference scores in other group

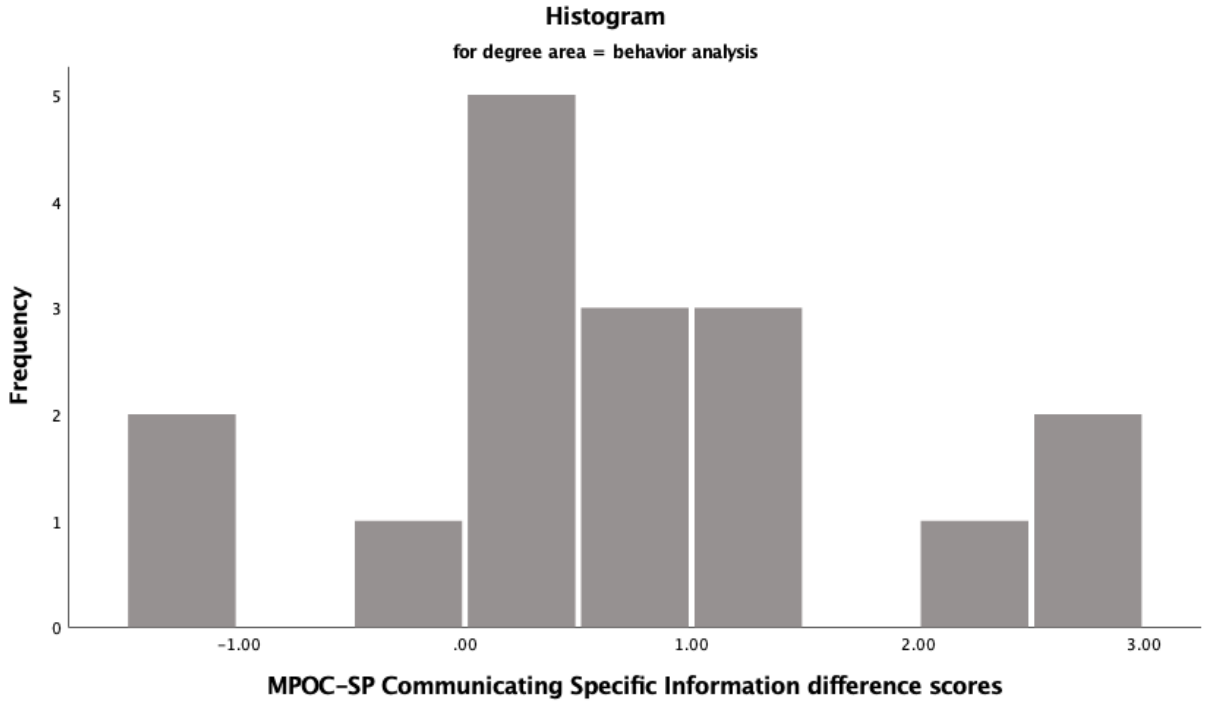


Figure 42. Histogram of MPOC-SP CSI difference scores in behavior analysis group

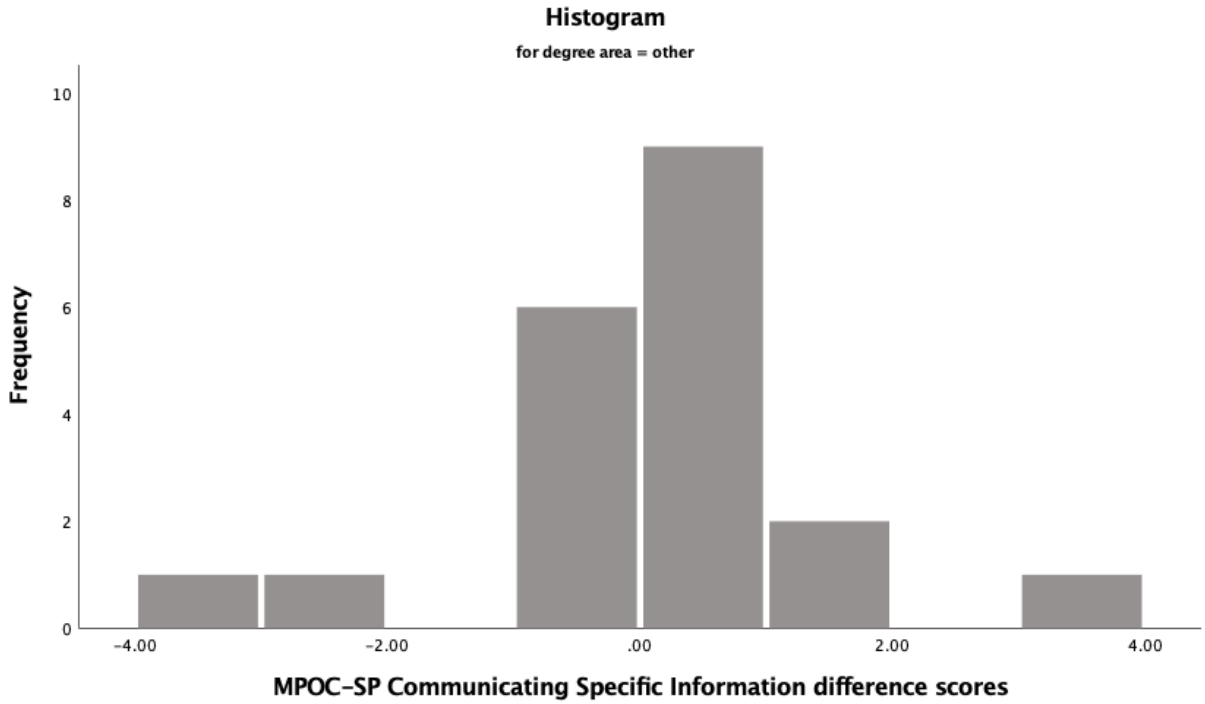


Figure 43. Histogram of MPOC-SP CSI difference scores in other group

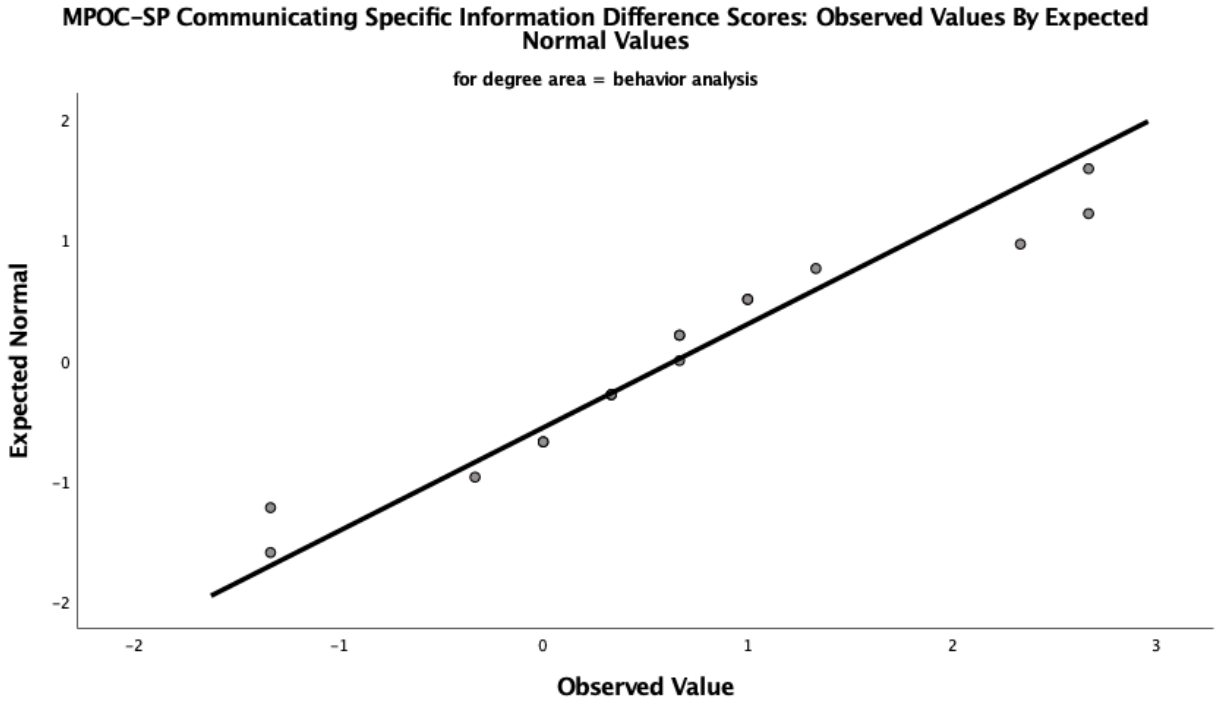


Figure 44. Normal Q-Q plot of MPOC-SP CSI difference scores in behavior analysis group

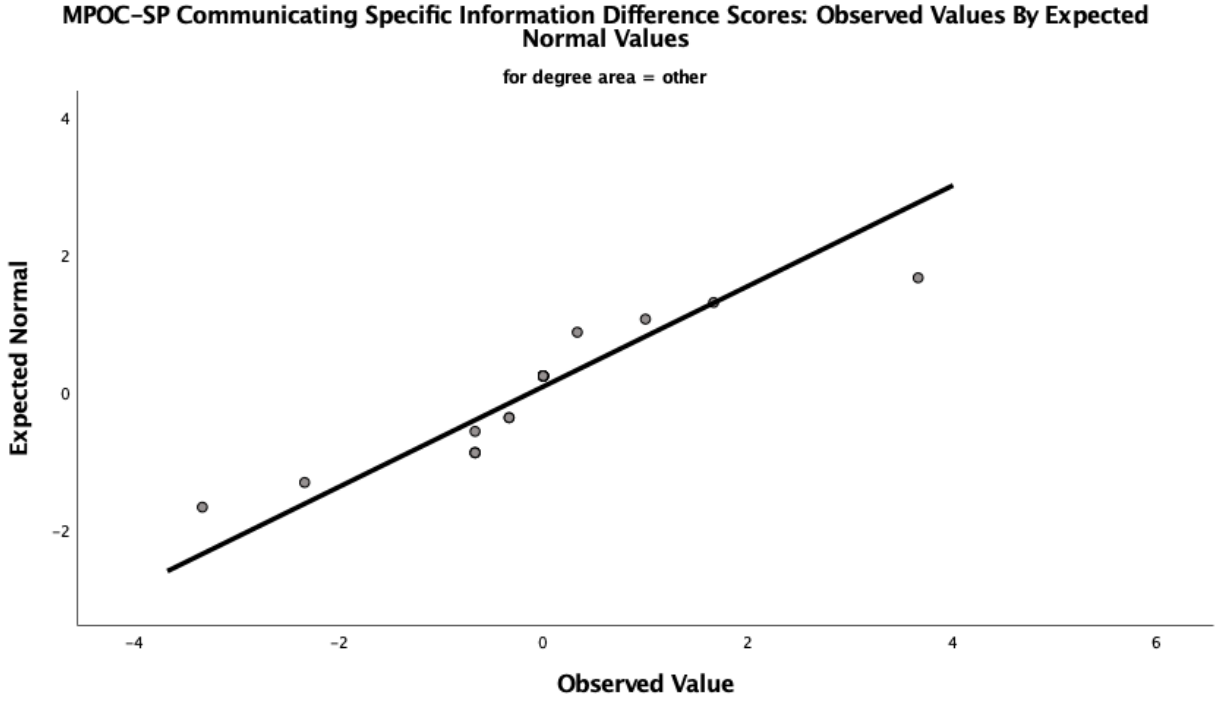

Figure 45. Normal Q-Q plot of MPOC-SP CSI difference scores in other group

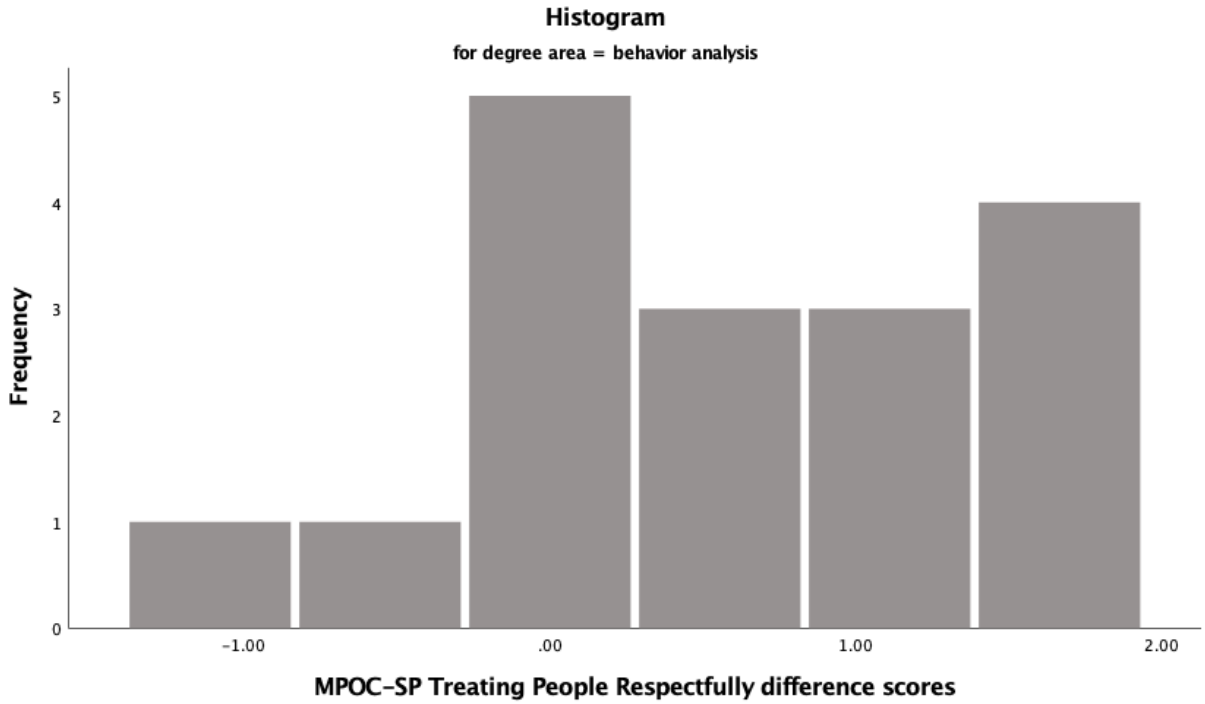


Figure 46. Histogram of MPOC-SP TPR difference scores in behavior analysis group

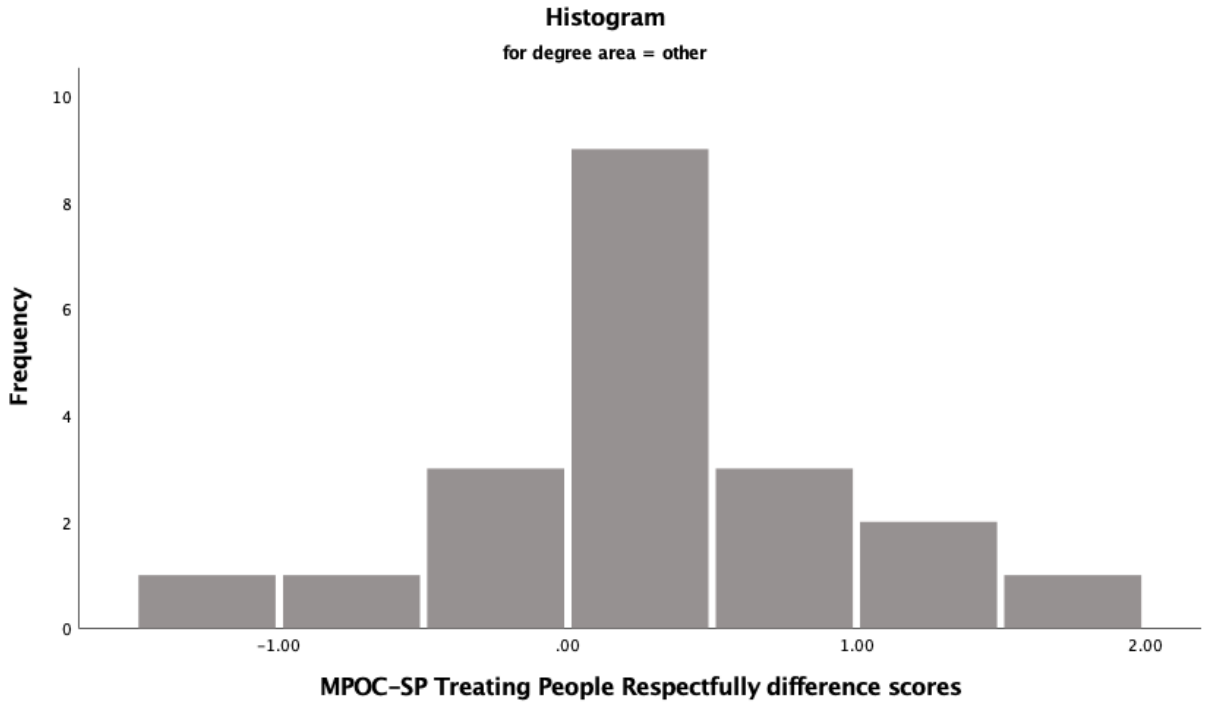


Figure 47. Histogram of MPOC-SP TPR difference scores in other group

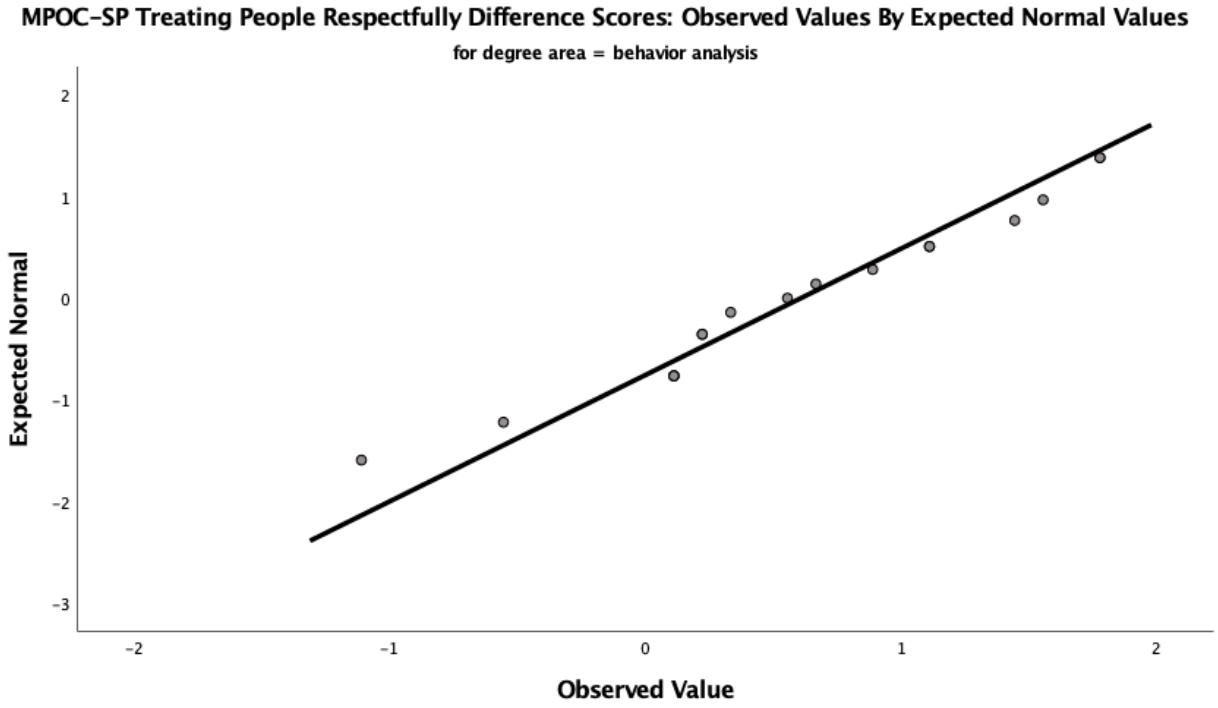


Figure 48. Normal Q-Q plot of MPOC-SP TPR difference scores in behavior analysis group

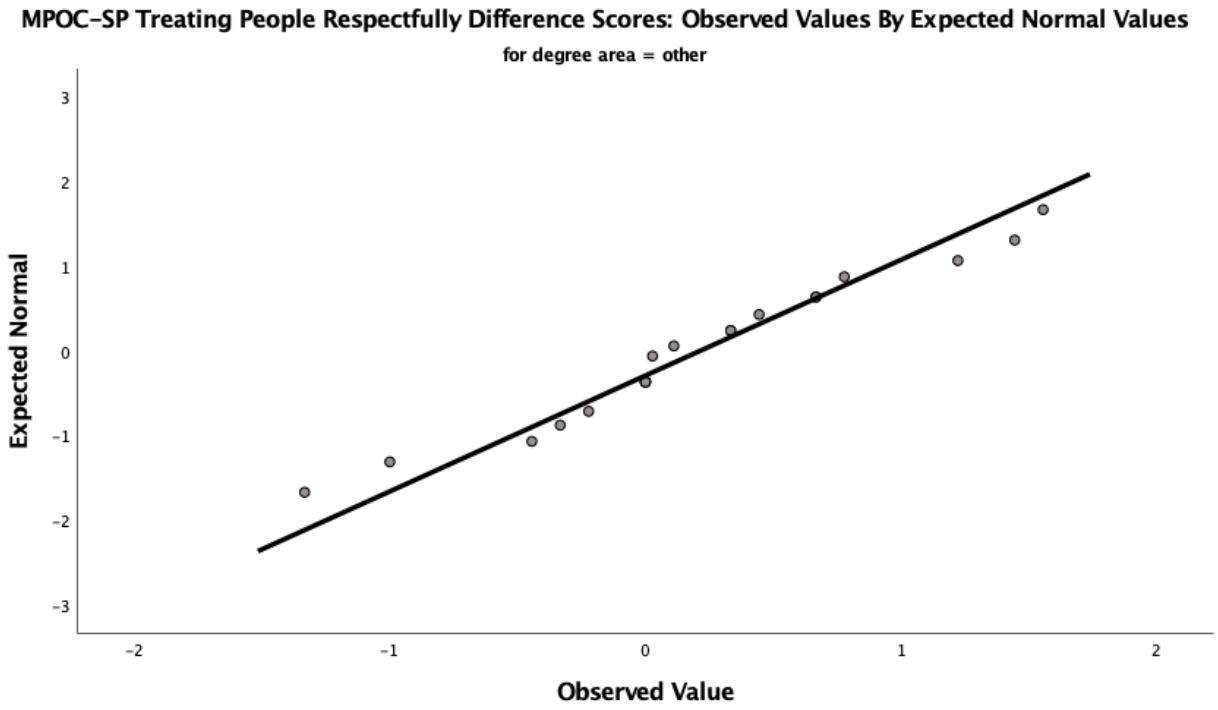


Figure 49. Normal Q-Q plot of MPOC-SP TPR difference scores in other group

## Appendix S. Scatterplots of Years of Experience by SEQ and MPOC-SP Difference Scores

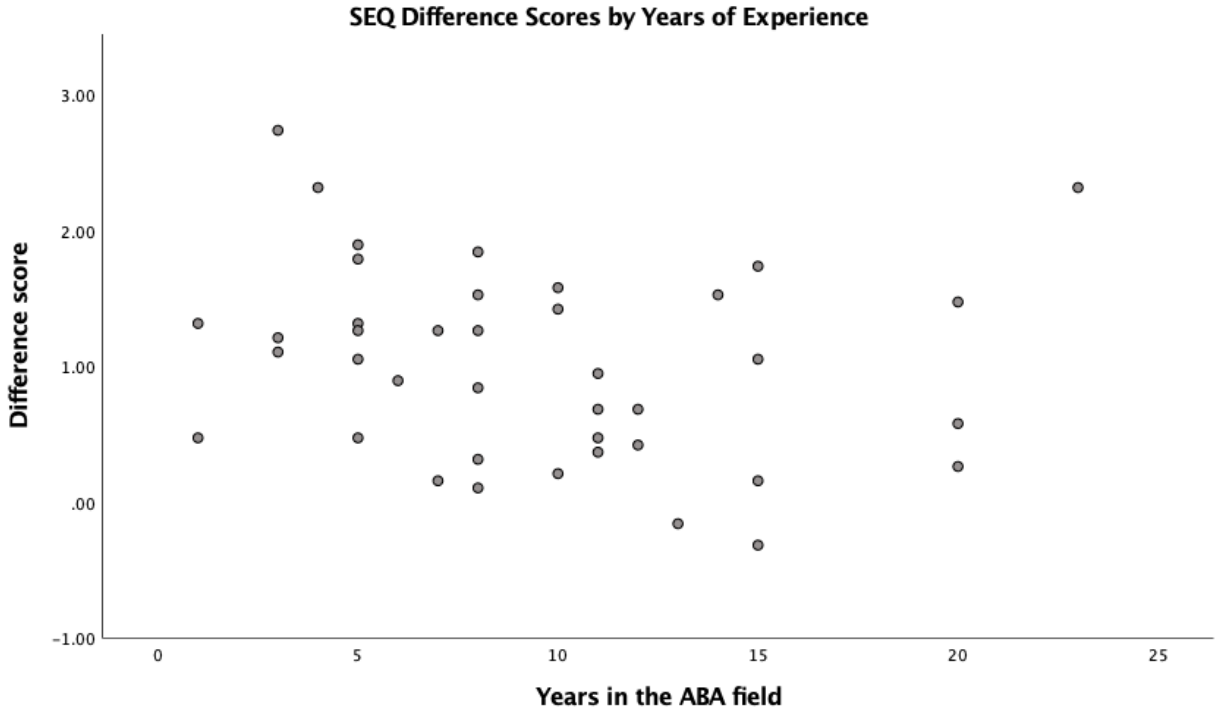


Figure 50. Scatterplot of years of experience by SEQ difference scores

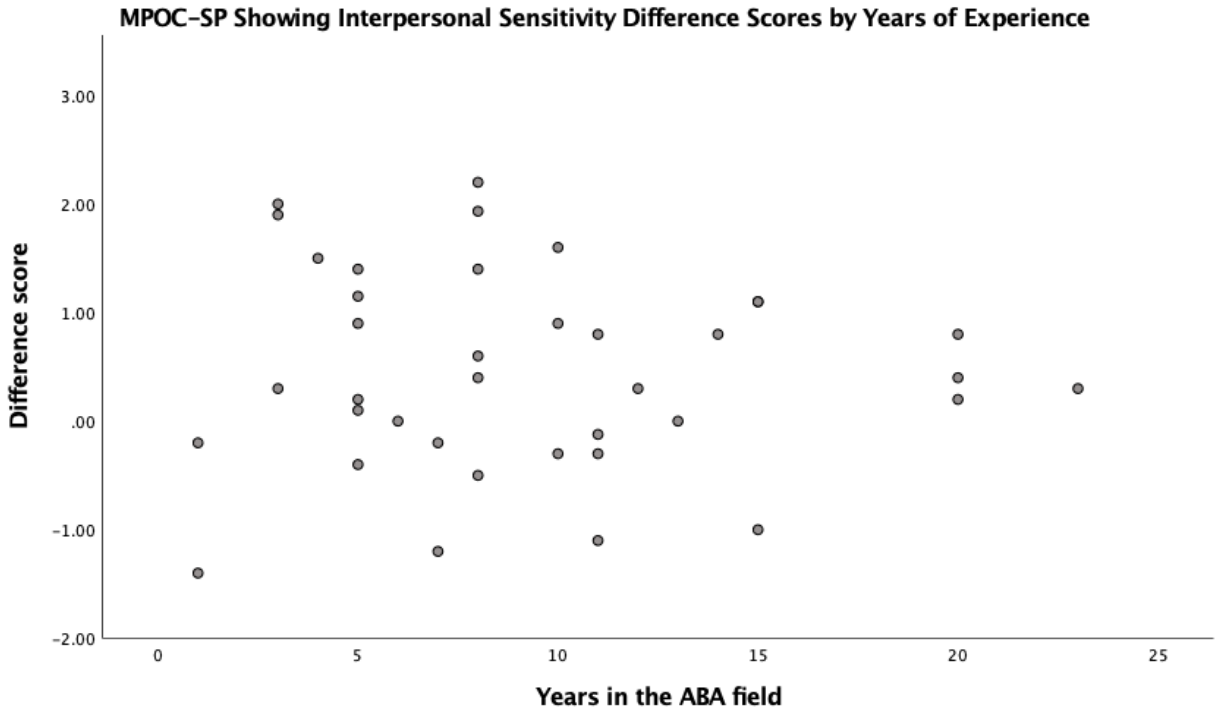


Figure 51. Scatterplot of years of experience by MPOC-SP Showing Interpersonal Sensitivity difference Scores

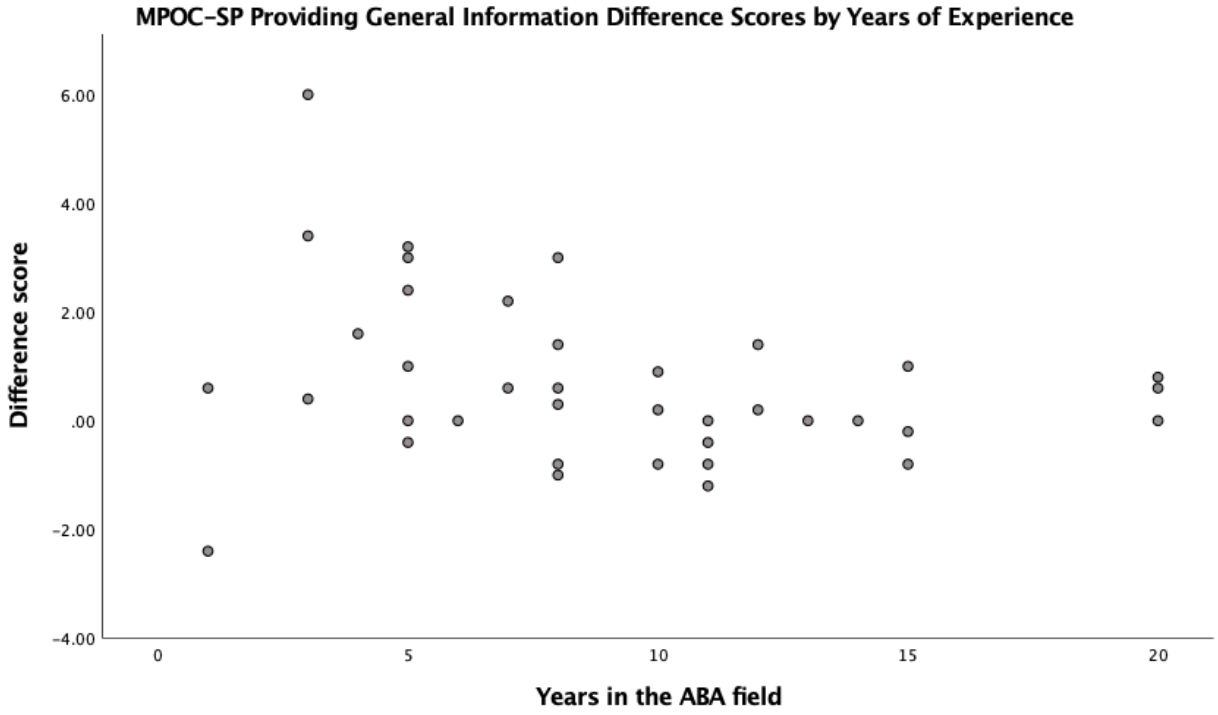


Figure 52. Scatterplot of years of experience by MPOC-SP Providing General Information difference scores

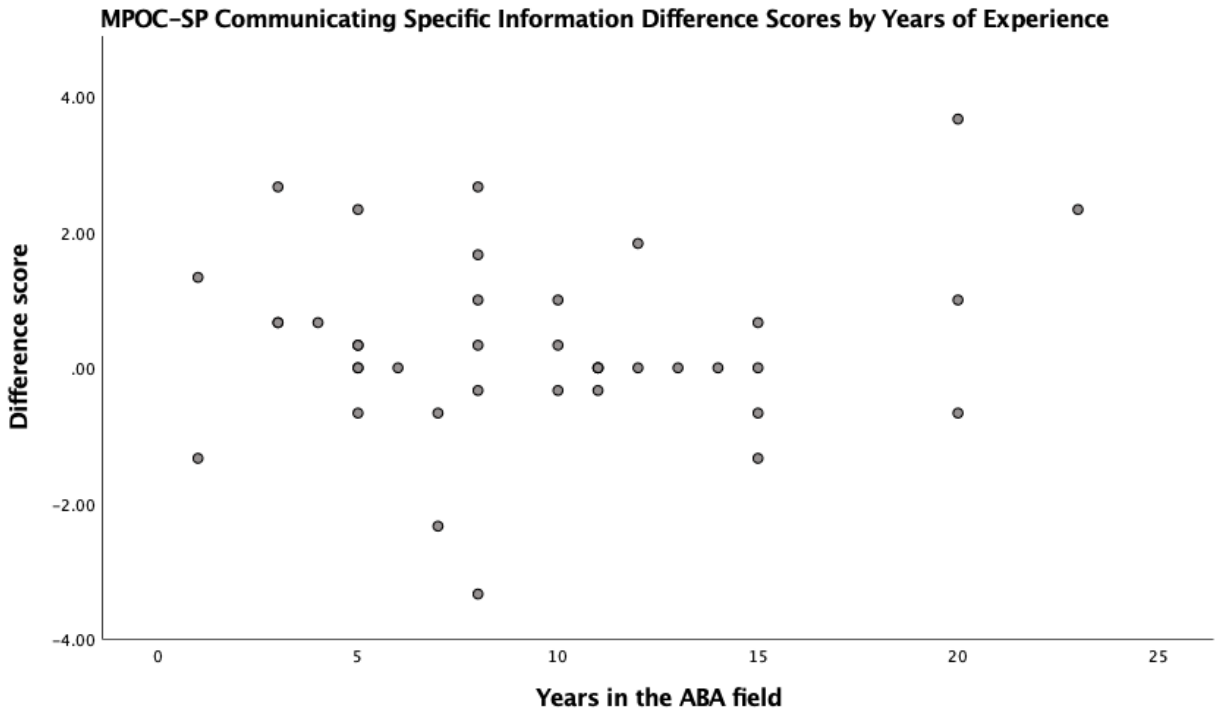


Figure 53. Scatterplot of years of experience by MPOC-SP Communicating Specific Information difference scores

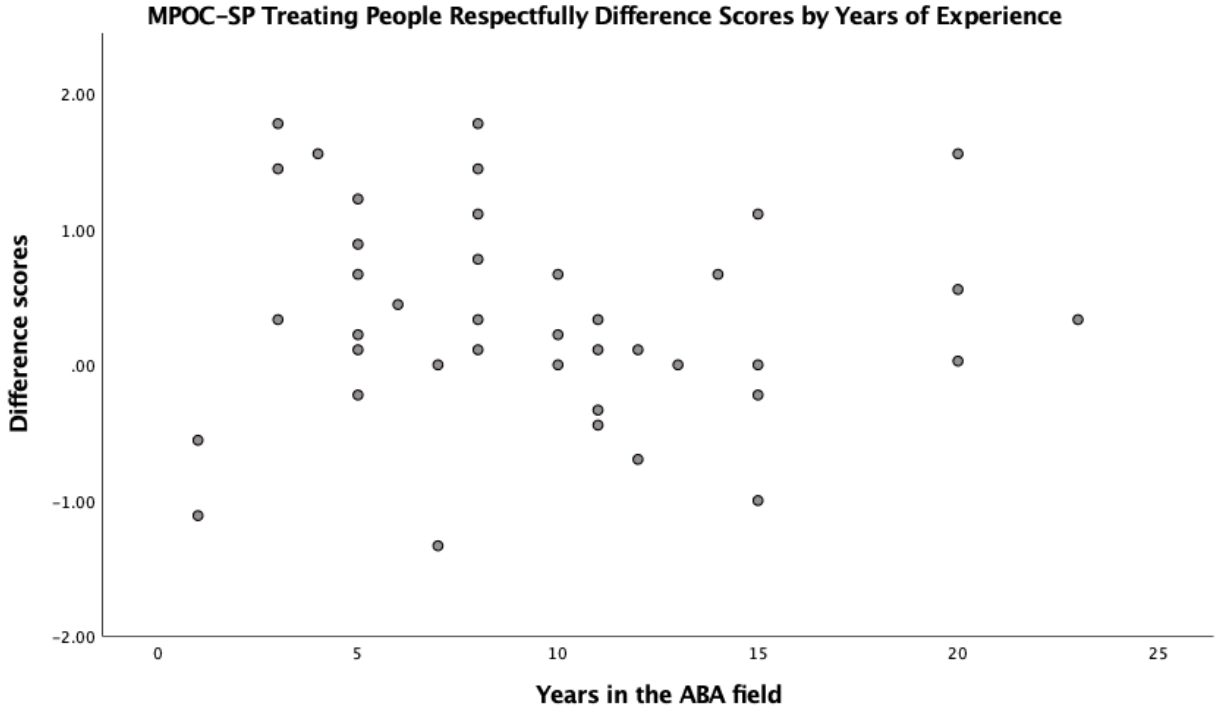


Figure 54. Scatterplot of years of experience by MPOC-SP Treating People Respectfully difference scores

## Appendix T. Tests of Normality, Levene's Test for Equality of Variances, Histograms, and Normal Q-Q Plots for SEQ and MPOC-SP Pretest Scores by Degree Area

Table 26. Shapiro-Wilk test of normality for pre-test MPOC-SP scales by degree area

| **Scale** | Behavior Analysis | | Other | |
|---|---|---|---|---|
| | *W* | *p* | *W* | *p* |
| MPOC-SP Showing Interpersonal Sensitivity | 0.96 | .560 | 0.94 | .166 |
| MPOC-SP Providing General Information | 0.91 | .059 | .91 | .042* |
| MPOC-SP Communicating Specific Information | 0.94 | .195 | 0.91 | .029* |
| MPOC-SP Treating People Respectfully | 0.97 | .681 | 0.94 | .143 |

*p<.05

Table 27. Levene's test for equality of variances for pre-test MPOC-SP scales

| Scale | *F* | *p* |
|---|---|---|
| MPOC-SP Showing Interpersonal Sensitivity | 0.03 | .859 |
| MPOC-SP Providing General Information | 1.51 | .226 |
| MPOC-SP Communicating Specific Information | 0.10 | .754 |
| MPOC-SP Treating People Respectfully | 0.15 | .699 |

*p<.05

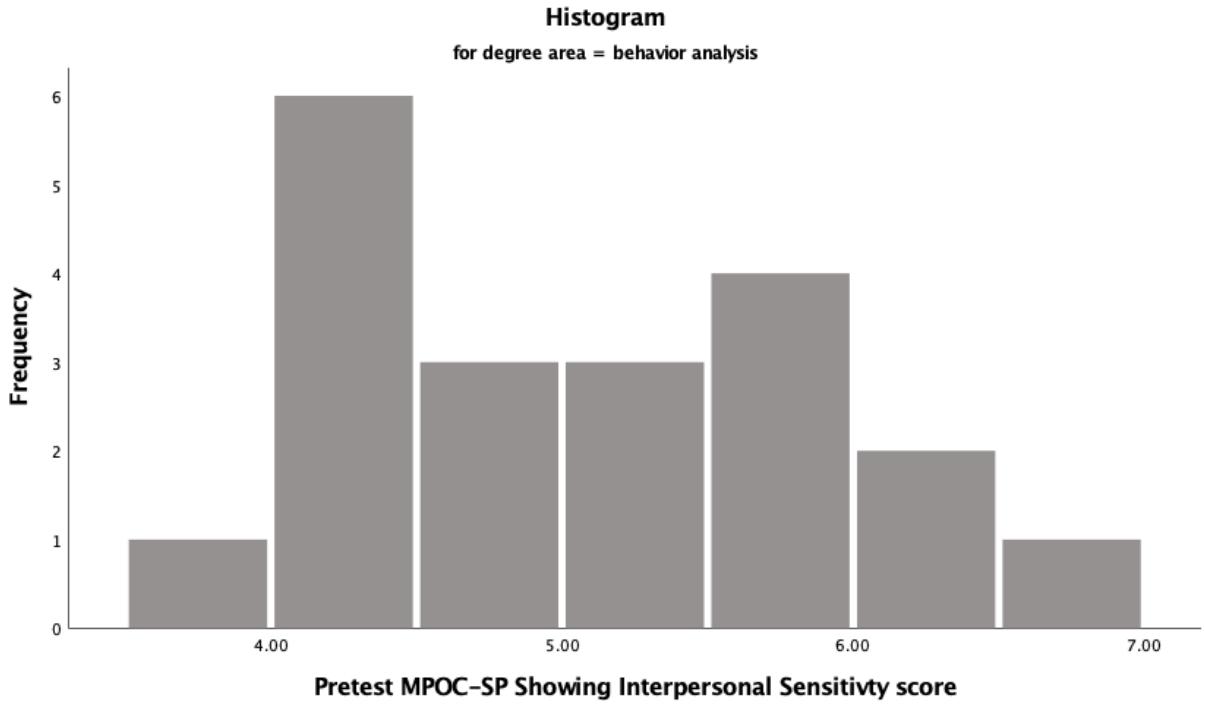


Figure 55. Histogram of pretest MPOC-SP SIS scores in behavior analysis group

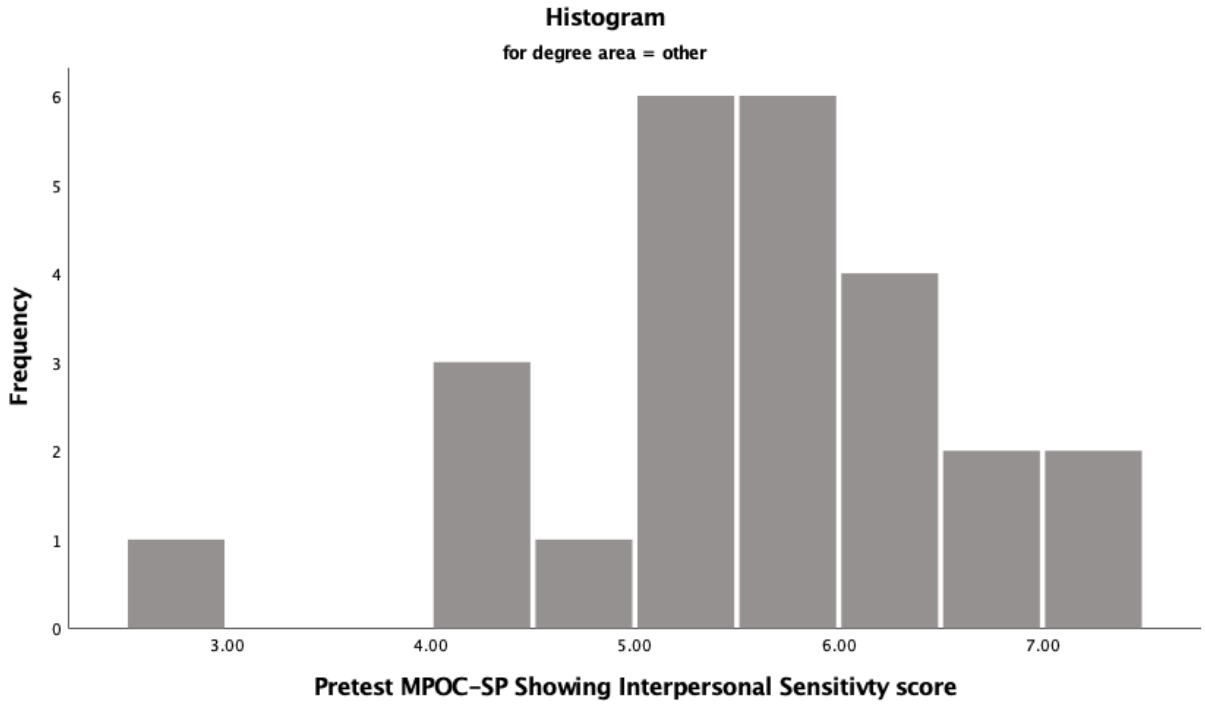


Figure 56. Histogram of pretest MPOC-SP SIS scores in other group

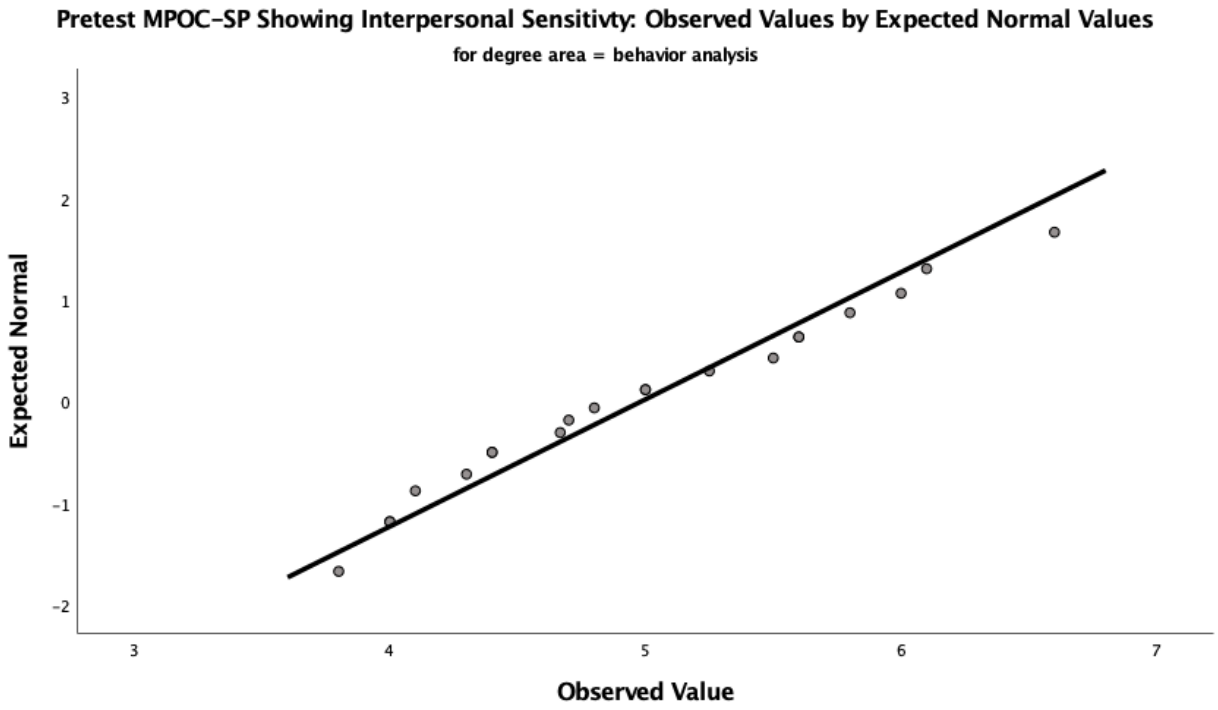


Figure 57. Normal Q-Q plot of Pretest MPOC-SP SIS scores in behavior analysis group

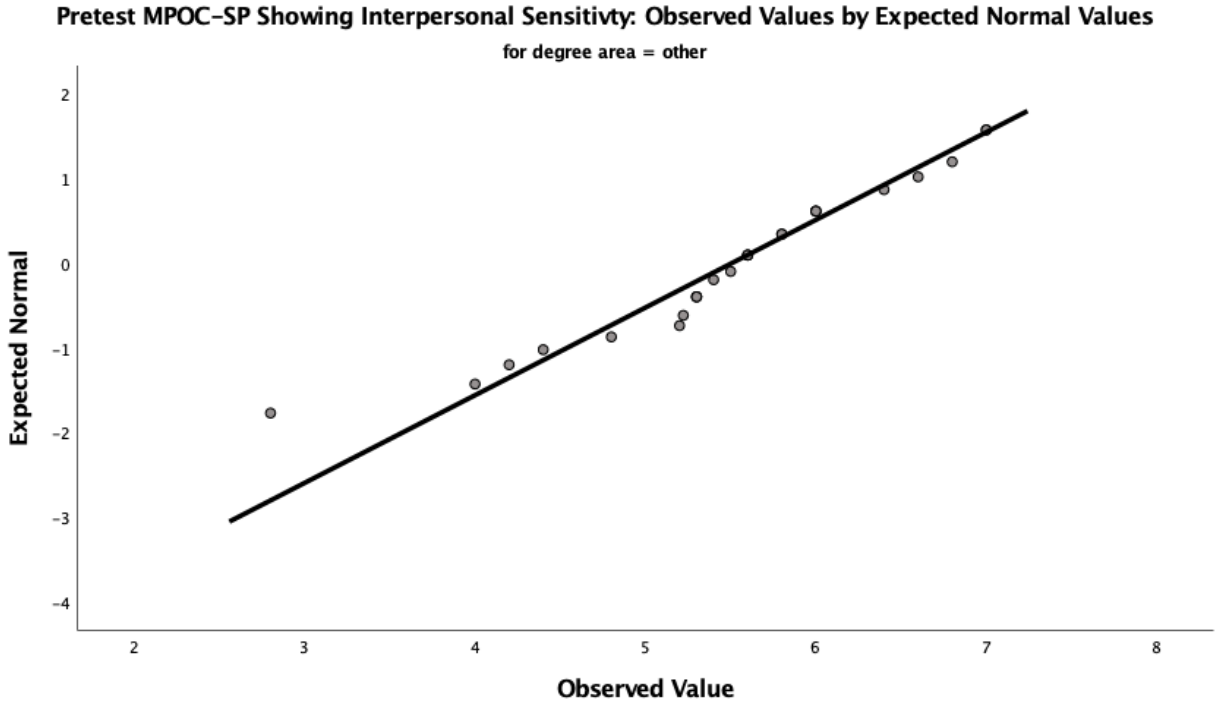


Figure 58. Normal Q-Q plot of Pretest MPOC-SP SIS scores in other group

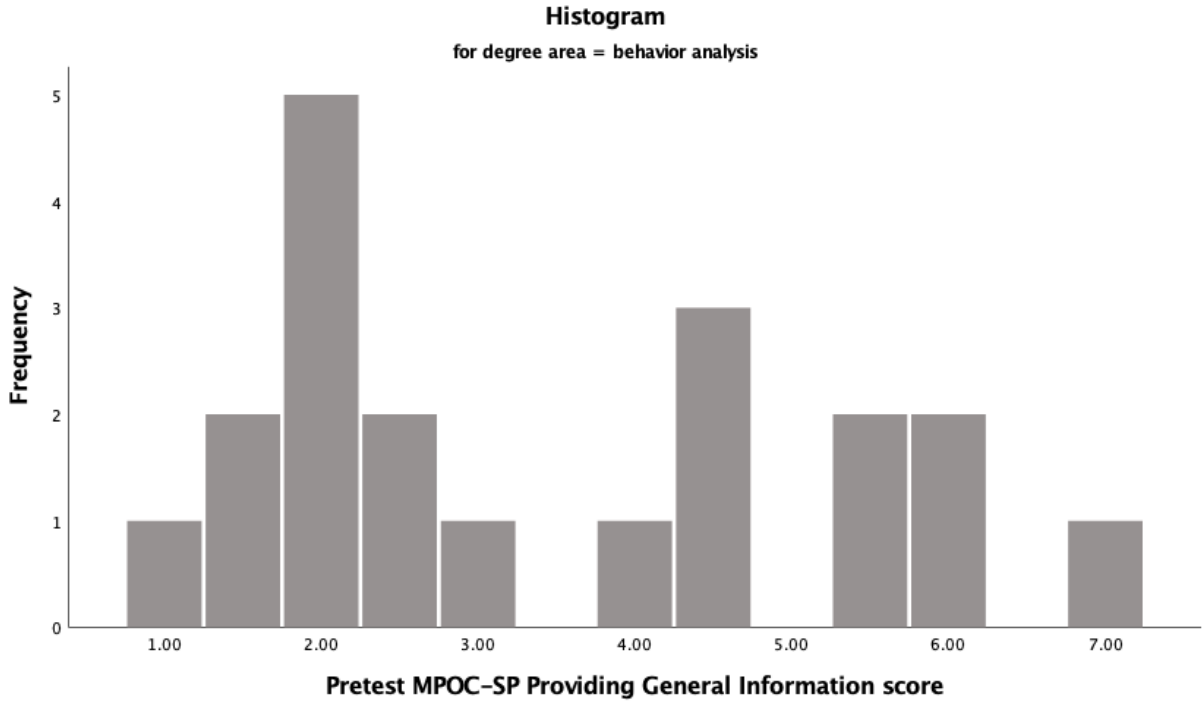


Figure 59. Histogram of pretest MPOC-SP PGI scores in behavior analysis group

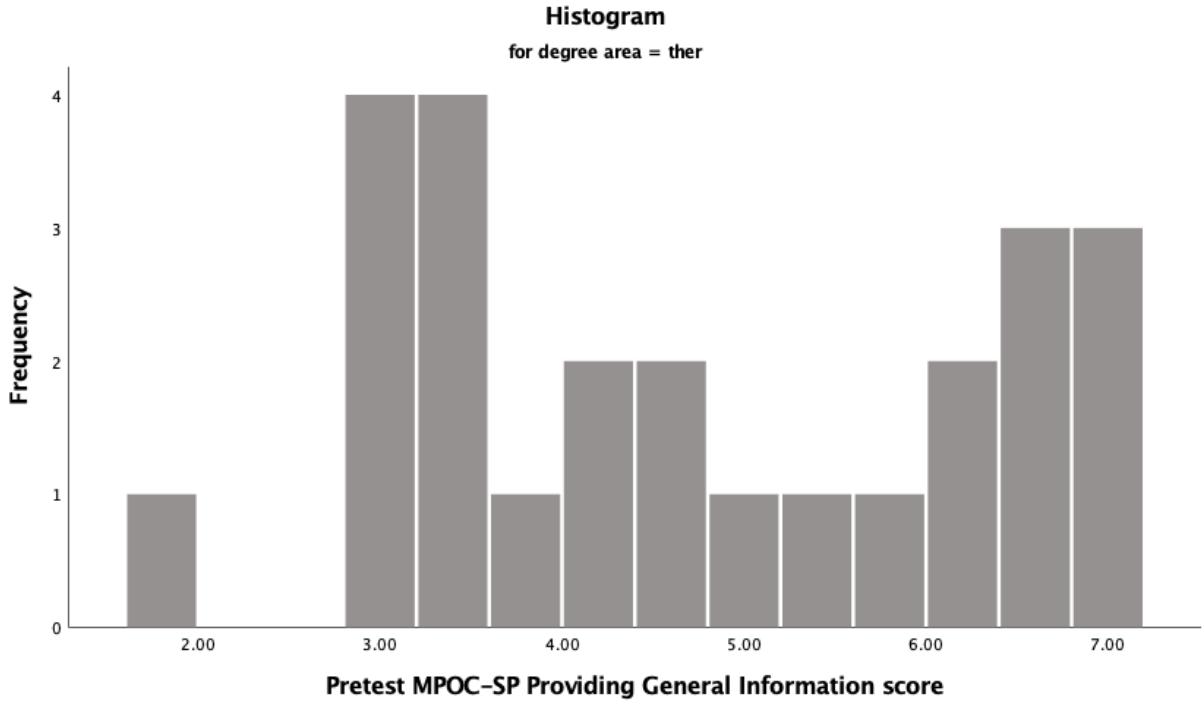


Figure 60. Histogram of pretest MPOC-SP PGI scores in other group

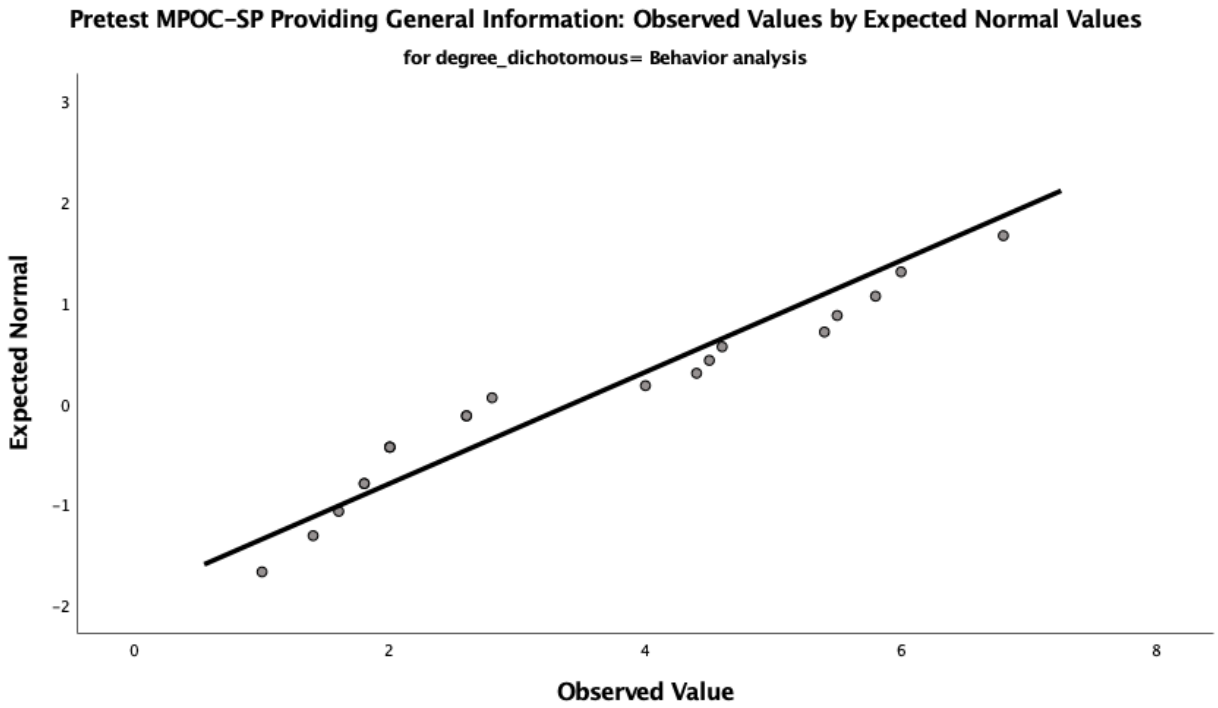


Figure 61. Normal Q-Q plot of Pretest MPOC-SP PGI scores in behavior analysis group

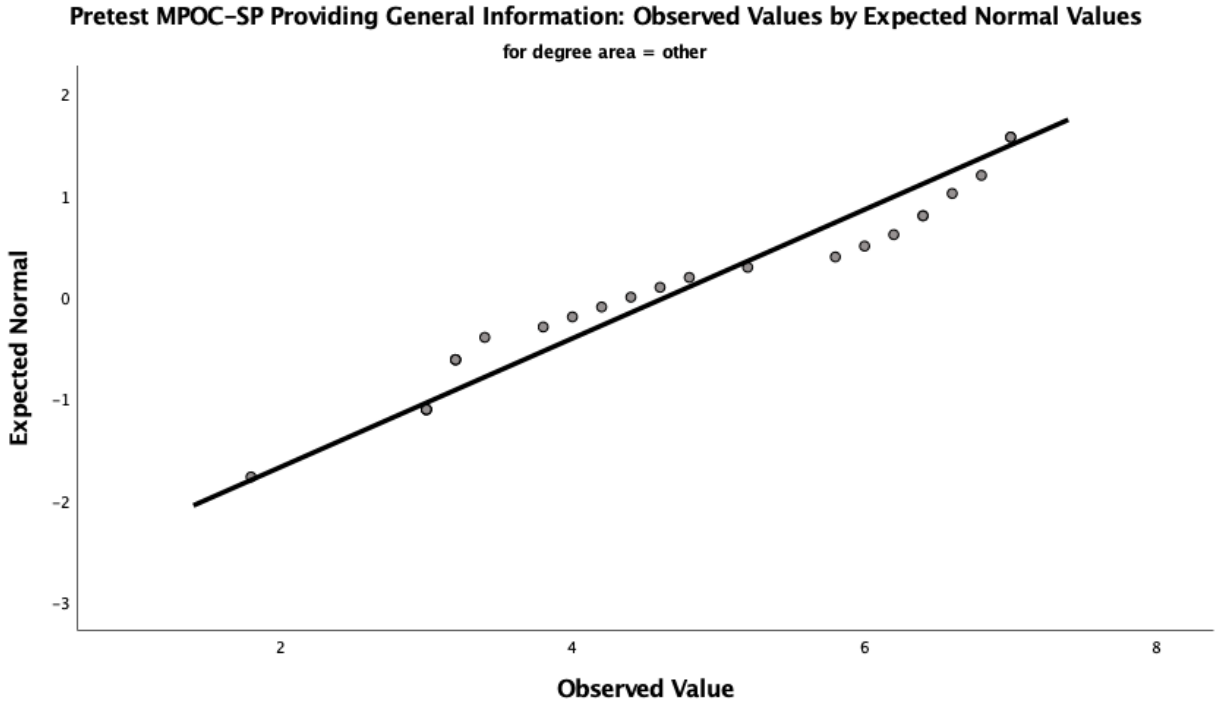


Figure 62. Normal Q-Q plot of Pretest MPOC-SP PGI scores in other group

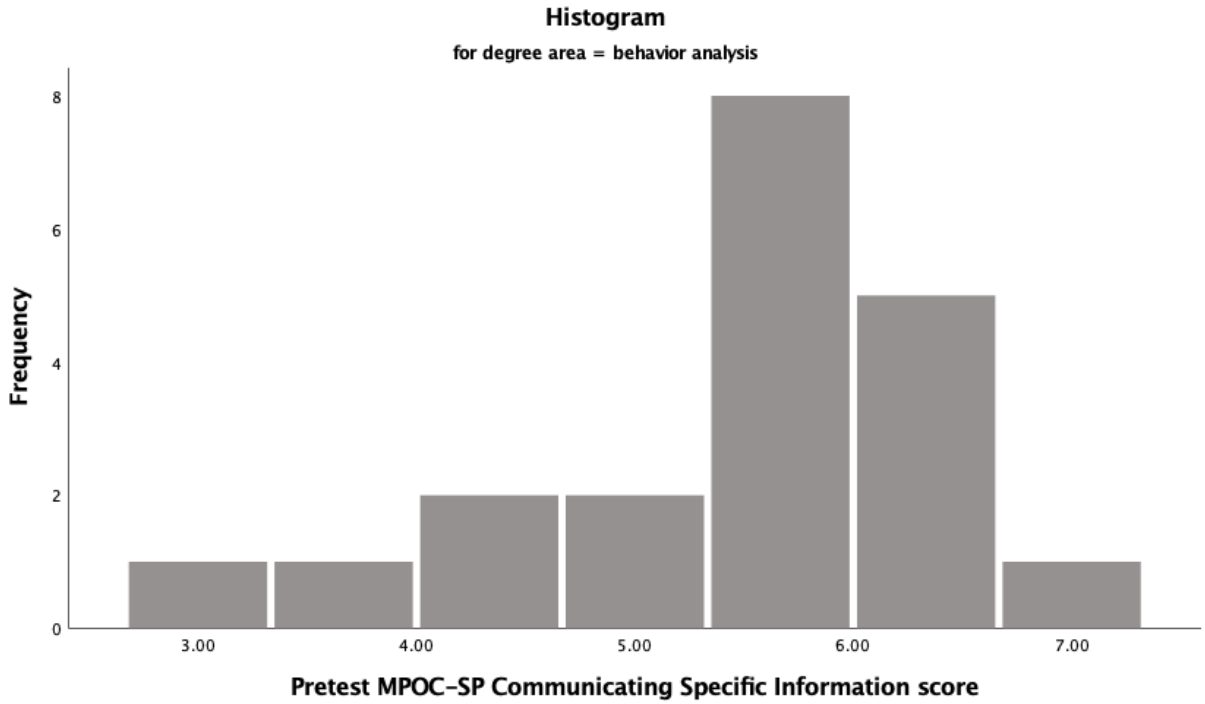


Figure 63. Histogram of pretest MPOC-SP CSI scores in behavior analysis group

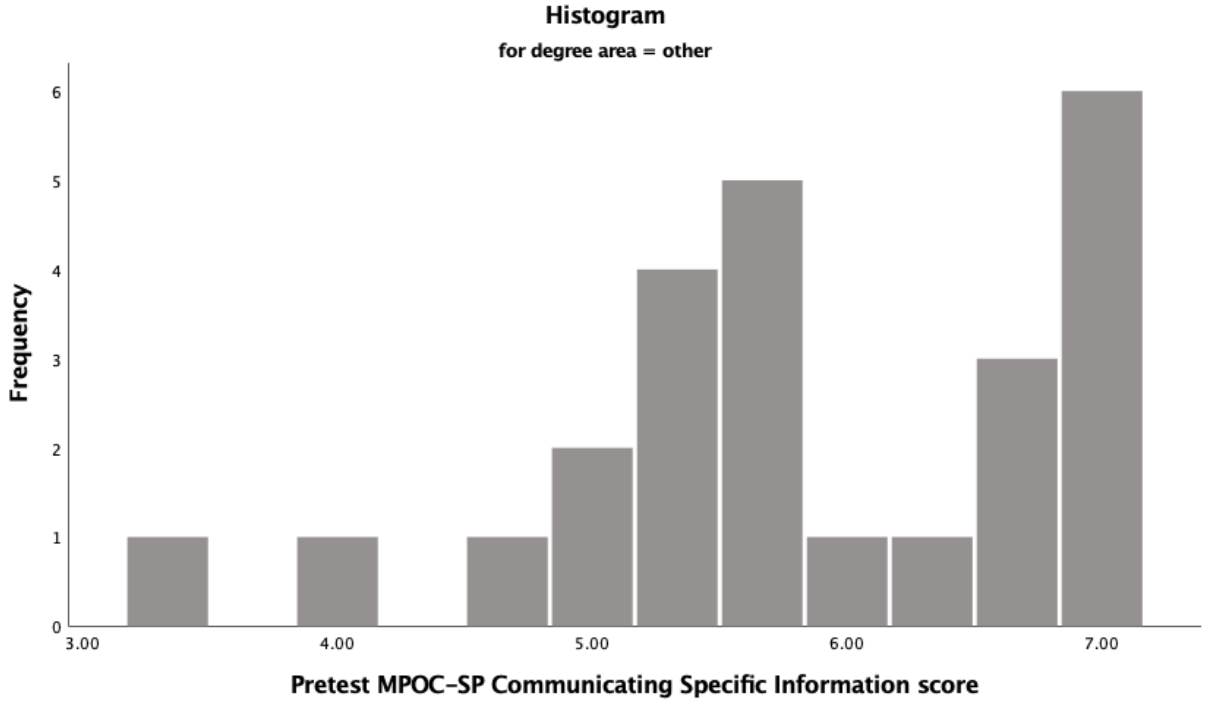


Figure 64. Histogram of pretest MPOC-SP CSI scores in other group

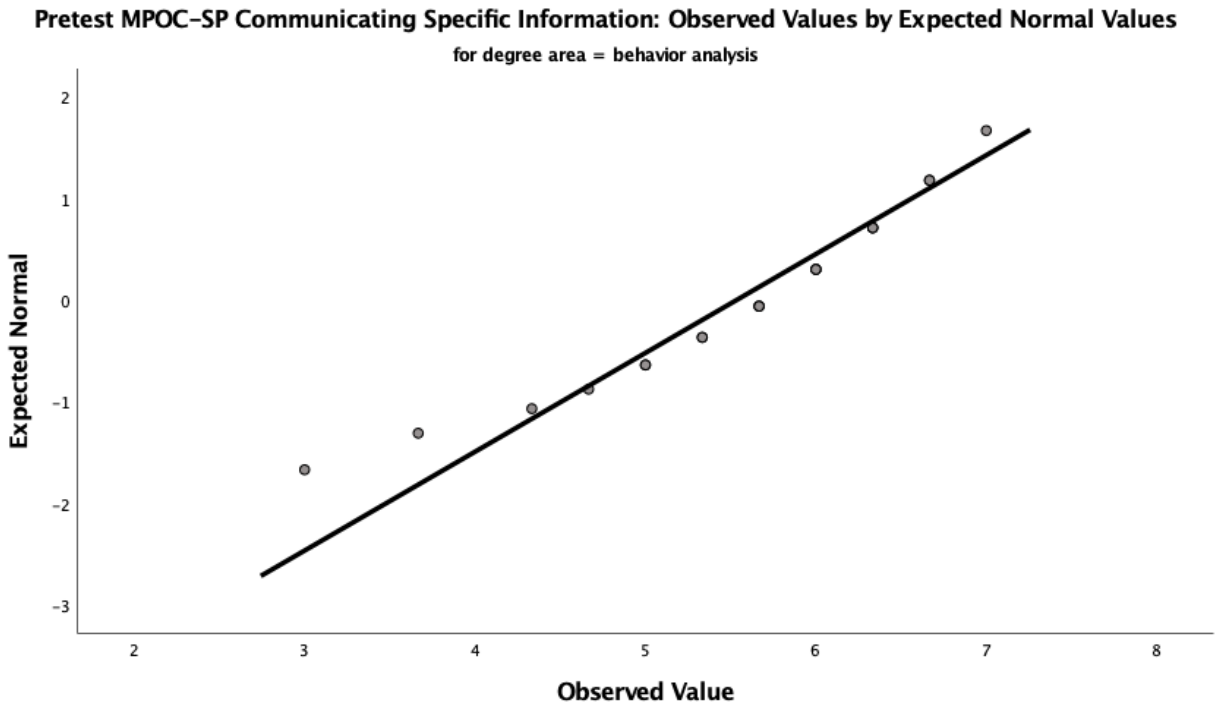


Figure 65. Normal Q-Q plot of Pretest MPOC-SP CSI scores in behavior analysis group

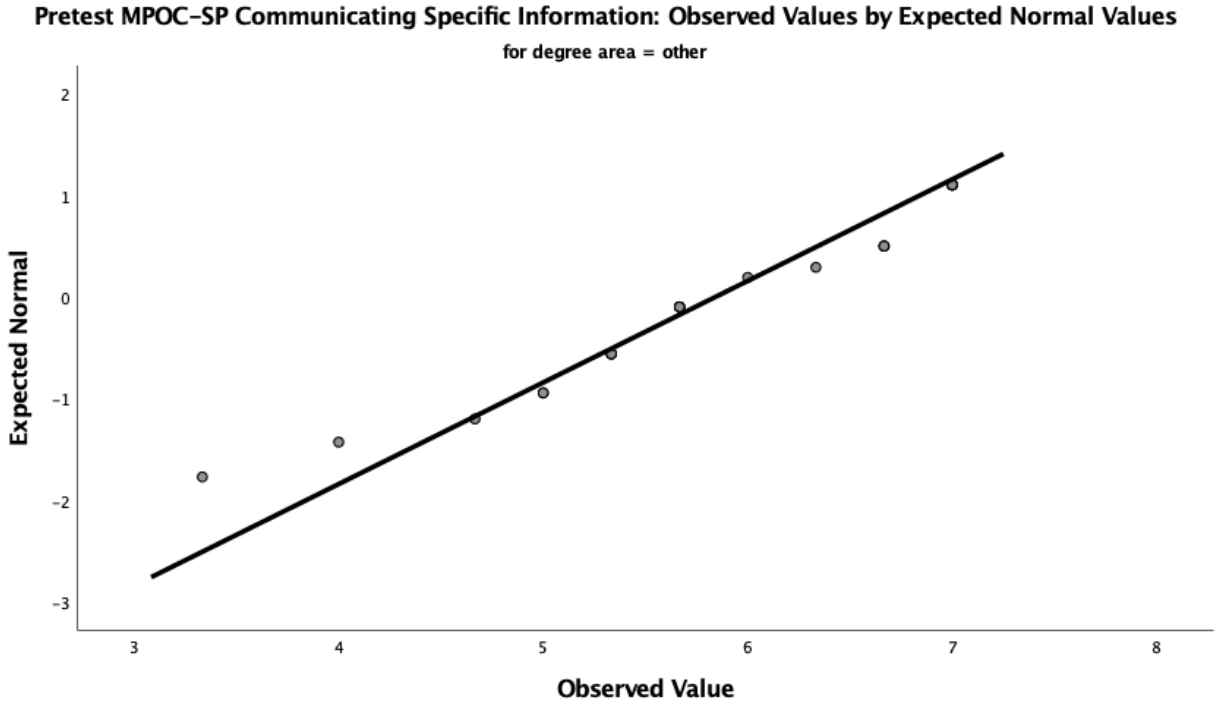


Figure 66. Normal Q-Q plot of Pretest MPOC-SP CSI scores in behavior analysis group

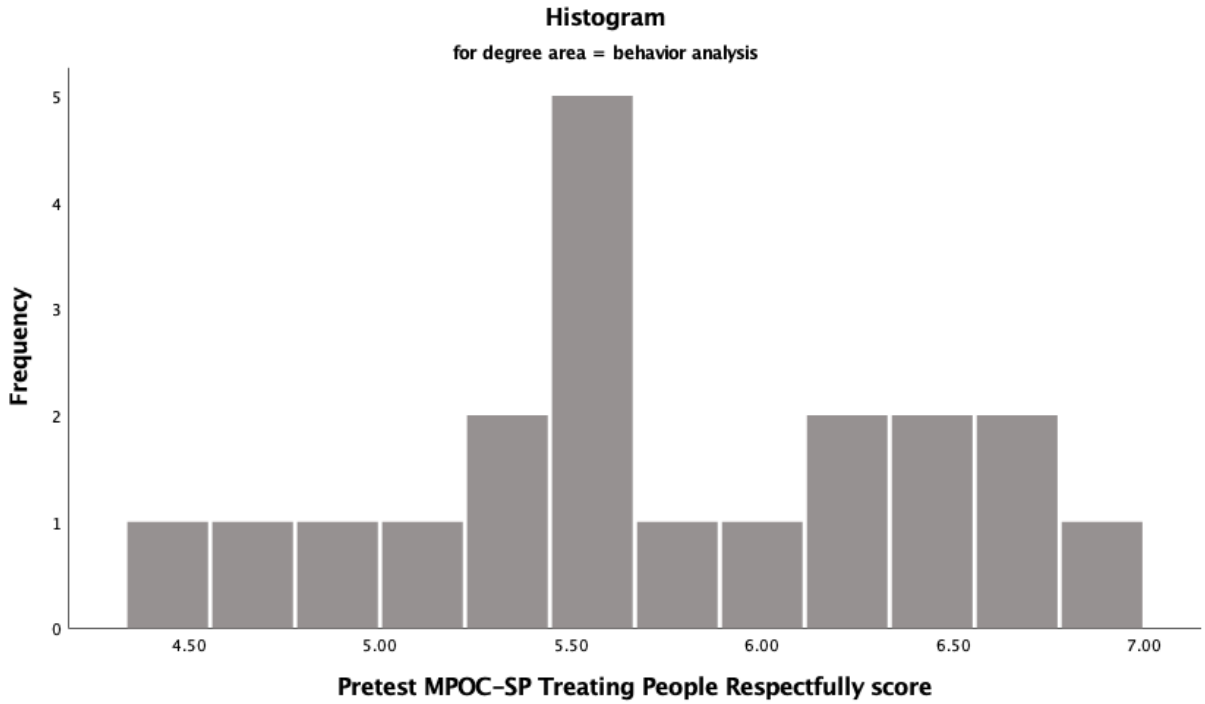


Figure 67. Histogram of pretest MPOC-SP TPR scores in behavior analysis group

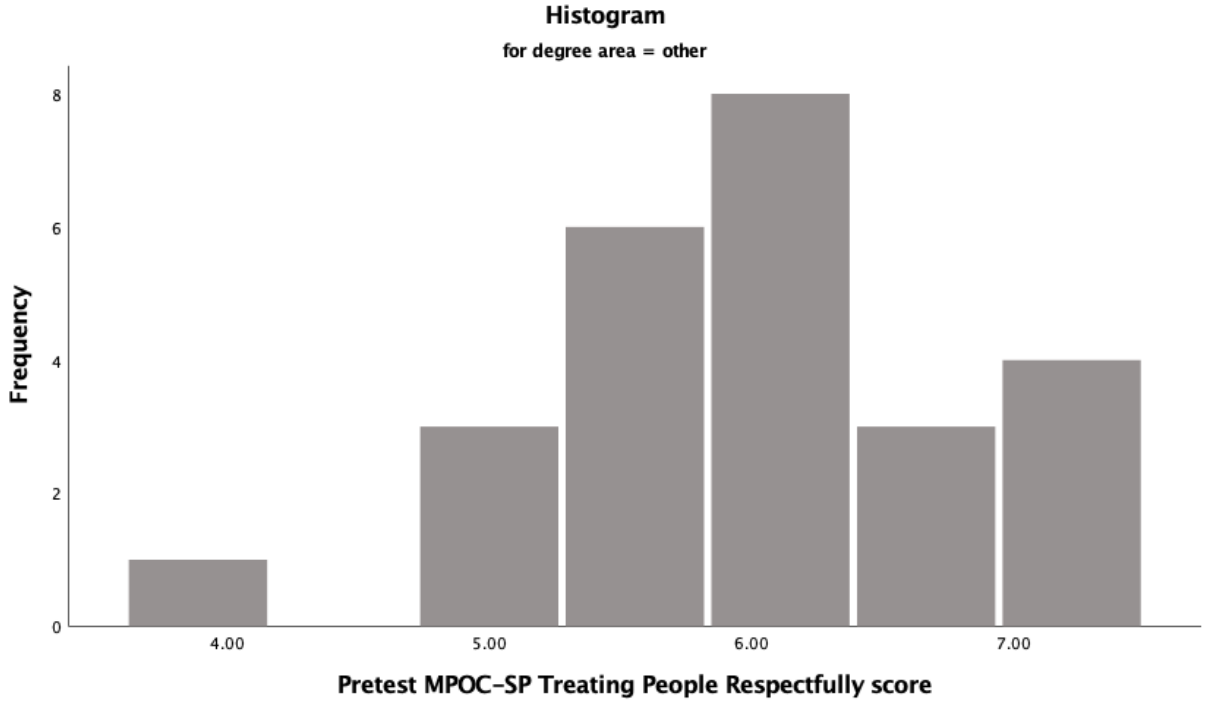


Figure 68. Histogram of pretest MPOC-SP TPR scores in other group

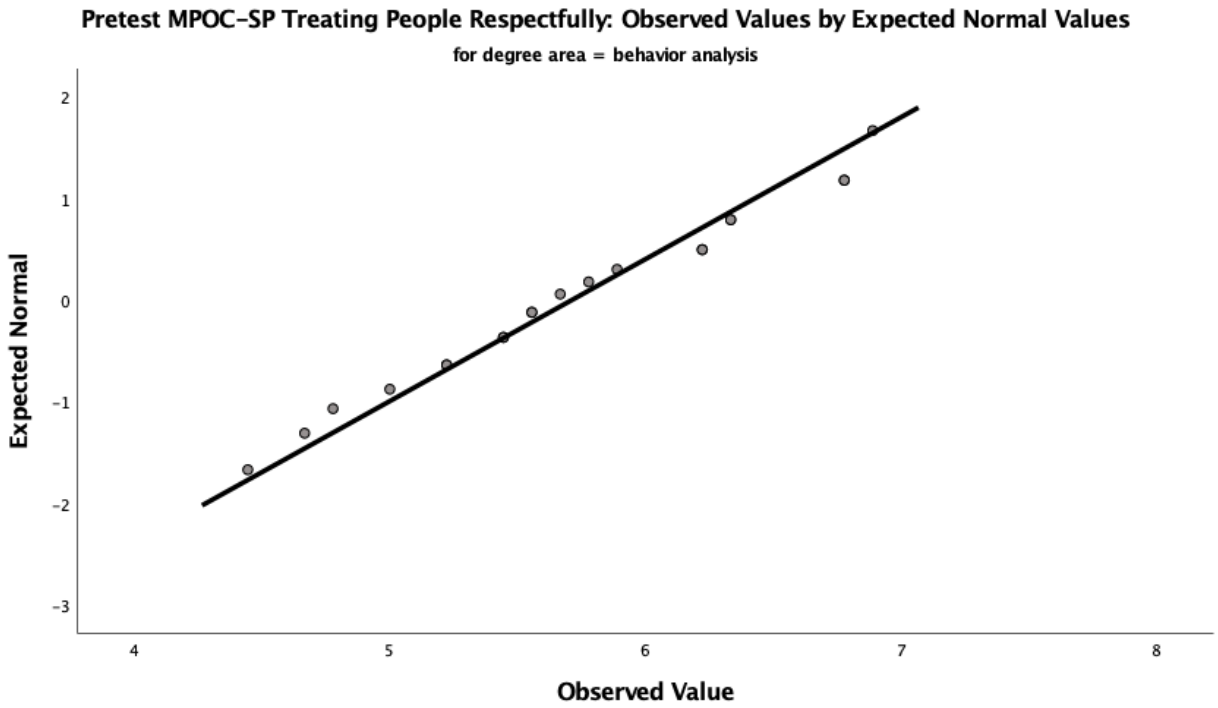


Figure 69. Normal Q-Q plot of Pretest MPOC-SP TPR scores in behavior analysis group

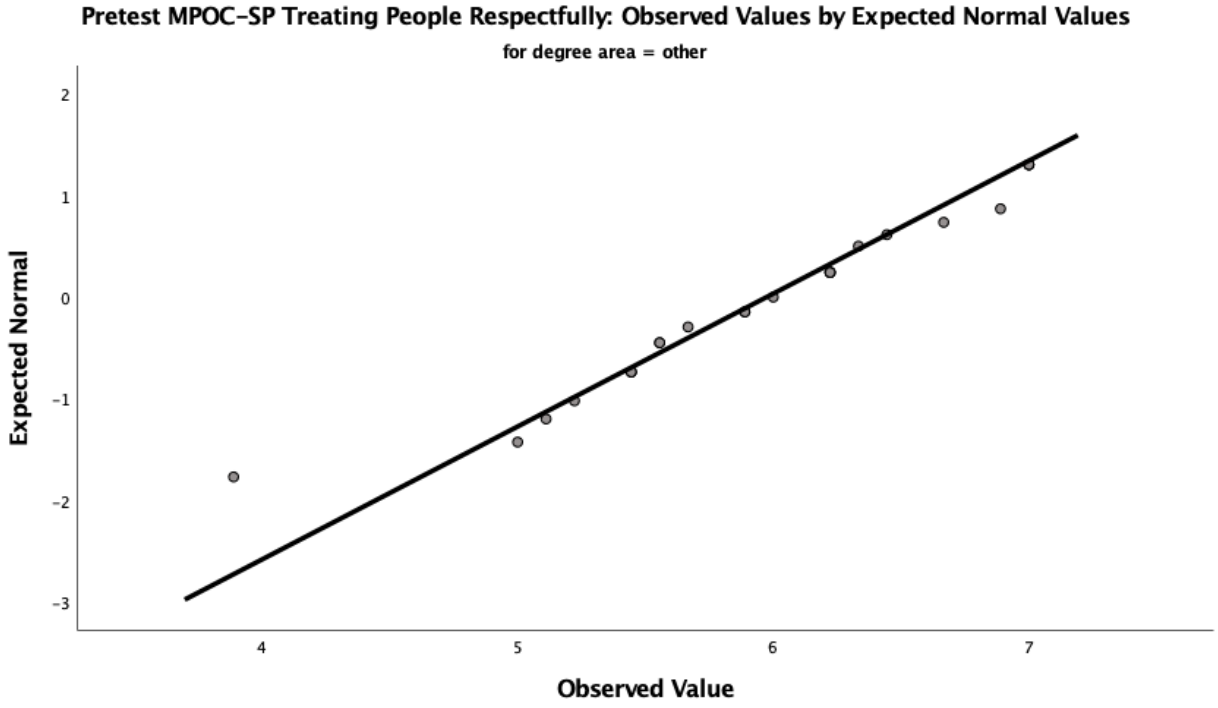


Figure 70. Normal Q-Q plot of Pretest MPOC-SP TPR scores in other group

## Appendix U. Scatterplots of Years of Experience by Pretest MPOC-SP Scores

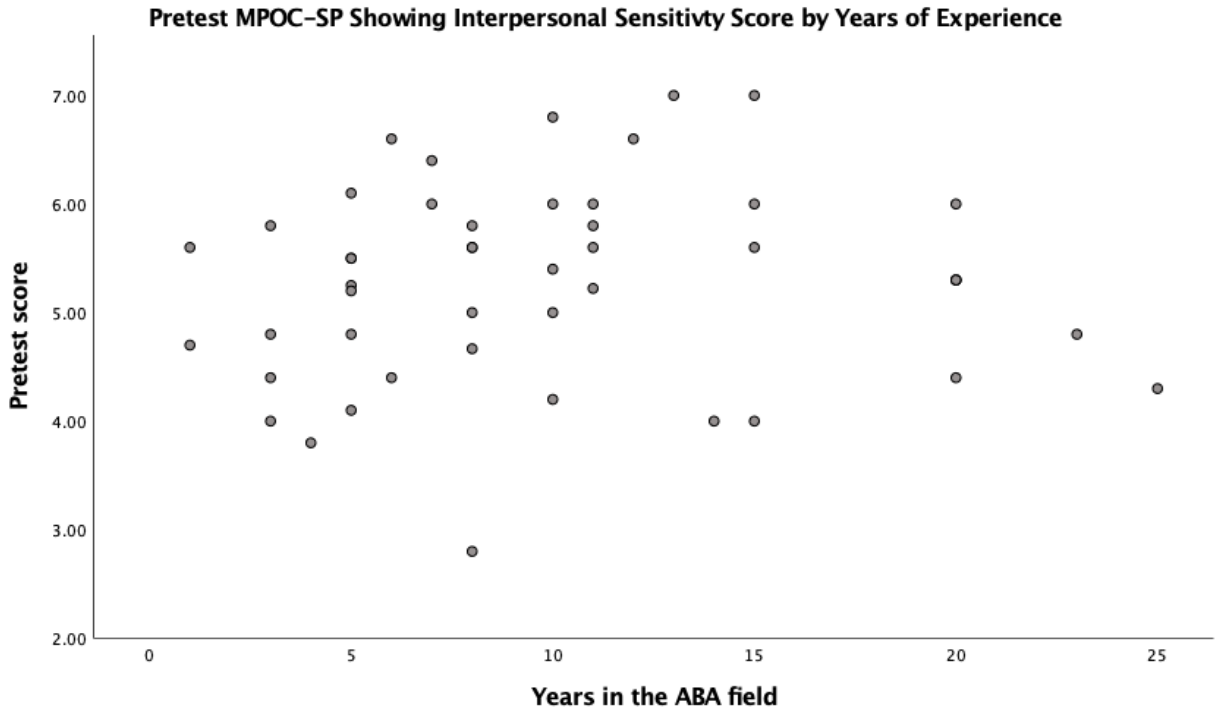


Figure 71. Scatterplot of years of experience by pretest MPOC-SP Showing Interpersonal Sensitivity scores

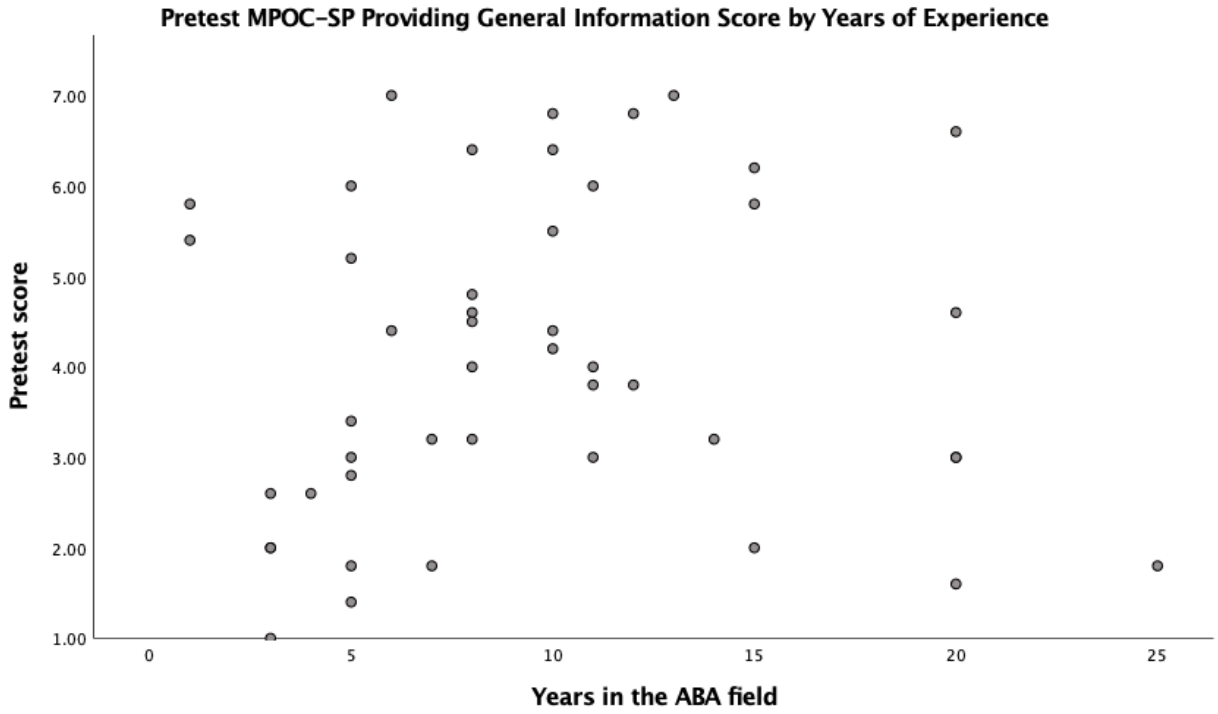


Figure 72. Scatterplot of years of experience by pretest MPOC-SP Providing General Information scores

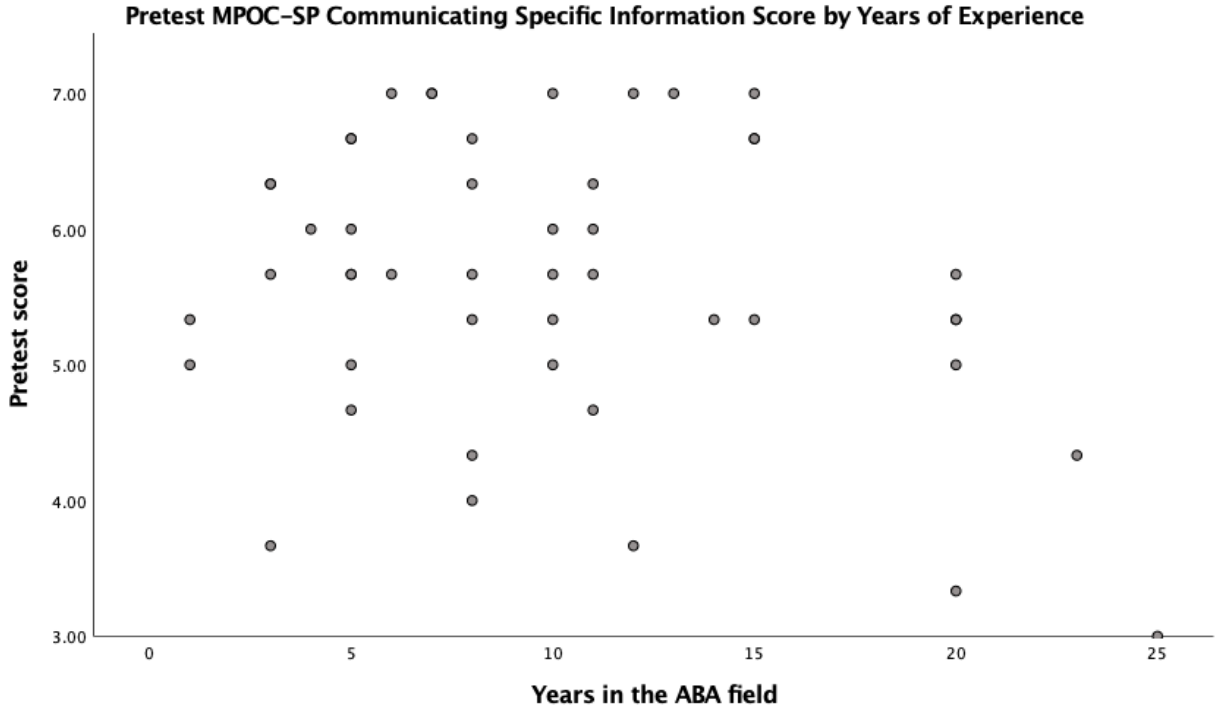


Figure 73. Scatterplot of years of experience by pretest MPOC-SP Communicating Specific Information scores

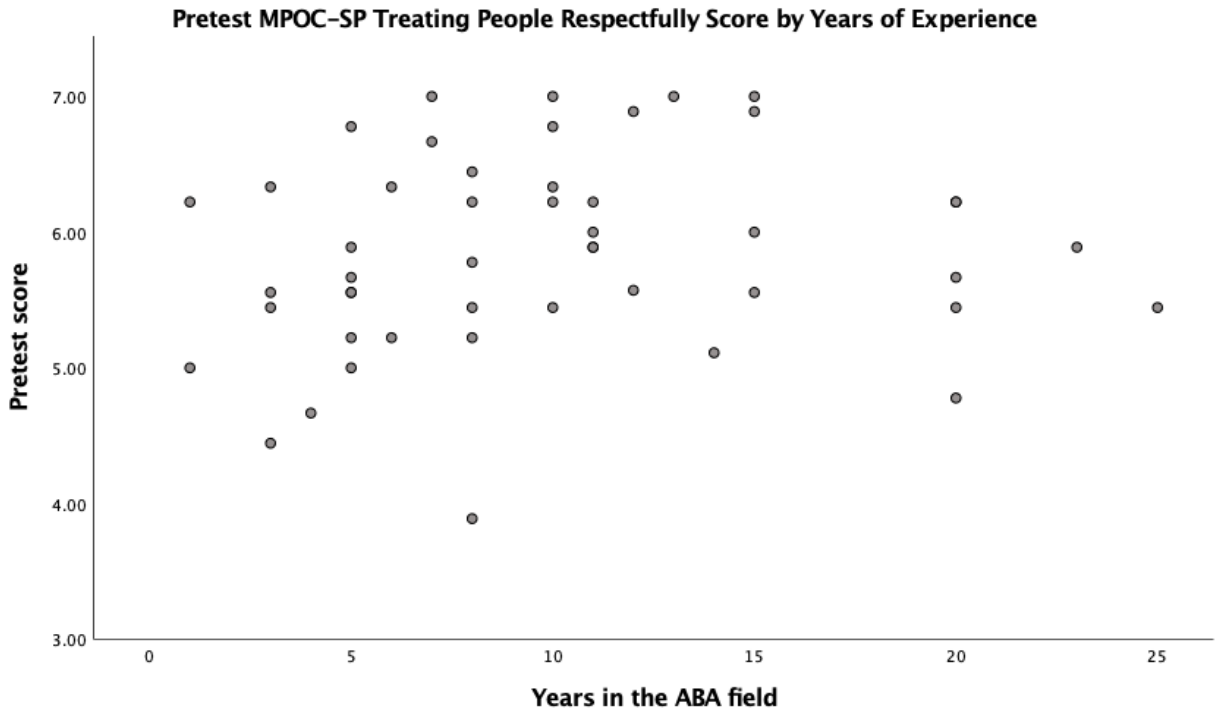


Figure 74. Scatterplot of years of experience by pretest MPOC-SP Treating People Respectfully scores

## Appendix V. Results of Weekly Satisfaction Surveys

Table 28. Results of weekly satisfaction surveys

| | *Overall, I am satisfied with today's session* | | | | *I thought the session's content was:* | | | *The training was useful* | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Strongly agree | Agree | Disagree | Strongly disagree | Too easy | Just right | Too complex | Strongly agree | Agree | Disagree | Strongly disagree |
| Week One | 45.0% | 55.0% | 0% | 0% | 15.4% | 84.6% | 0% | 35.0% | 57.5% | 6.3% | 0% |
| Week Two | 59.5% | 38.1% | 0% | 2.4% | 4.8% | 95.2% | 0% | 42.9% | 54.8% | 2.5% | 0% |
| Week Three | 48.6% | 51.4% | 0% | 0% | 16.2% | 83.8% | 0% | 35.1% | 62.2% | 2.7% | 0% |
| Week Four | 51.4% | 45.7% | 0% | 2.9% | 8.6% | 91.4% | 0% | 35.3% | 58.8% | 5.9% | 0% |
| Week Five | 42.9% | 45.7% | 8.6% | 2.9% | 14.3% | 85.7% | 0% | 40.0% | 51.4% | 5.7% | 2.9% |
| Week Six | 60.6% | 36.4% | 3.0% | 0% | 9.1% | 90.9% | 0% | 54.5% | 42.4% | 0% | 3.0% |
| Week Seven | 46.9% | 50.0% | 0% | 3.1% | 3.2% | 96.8% | 0% | 40.6% | 56.3% | 0% | 3.1% |
| Week Eight | 36.7% | 56.7% | 0% | 6.7% | 3.3% | 96.7% | 0% | 33.3% | 63.3% | 0% | 3.3% |

| | *The training was relevant* | | | | *All learning objectives were met* | | | |
|---|---|---|---|---|---|---|---|---|
| | Strongly agree | Agree | Disagree | Strongly disagree | Strongly agree | Agree | Disagree | Strongly disagree |
| Week One | 45.0% | 52.5% | 2.5% | 0% | 47.5% | 52.5% | 0% | 0% |
| Week Two | 45.2% | 52.4% | 2.4% | 0% | 57.1% | 42.9% | 0% | 0% |
| Week Three | 51.4% | 48.6% | 0% | 0% | 43.2% | 56.8% | 0% | 0% |
| Week Four | 45.7% | 51.4% | 3.9% | 0% | 45.7% | 54.3% | 0% | 0% |
| Week Five | 39.4% | 57.6% | 3.0% | 0% | 40.0% | 57.1% | 2.9% | 0% |
| Week Six | 60.6% | 36.4% | 0% | 3.0% | 60.6% | 39.4% | 0% | 0% |
| Week Seven | 46.9% | 50.0% | 0% | 3.1% | 37.5% | 59.4% | 0% | 3.1% |
| Week Eight | 46.7% | 50.0% | 0% | 3.3% | 46.7% | 50.0% | 0% | 3.3% |

## Appendix W. Scatterplots of CGSQ Scores by MPOC-20 Scores

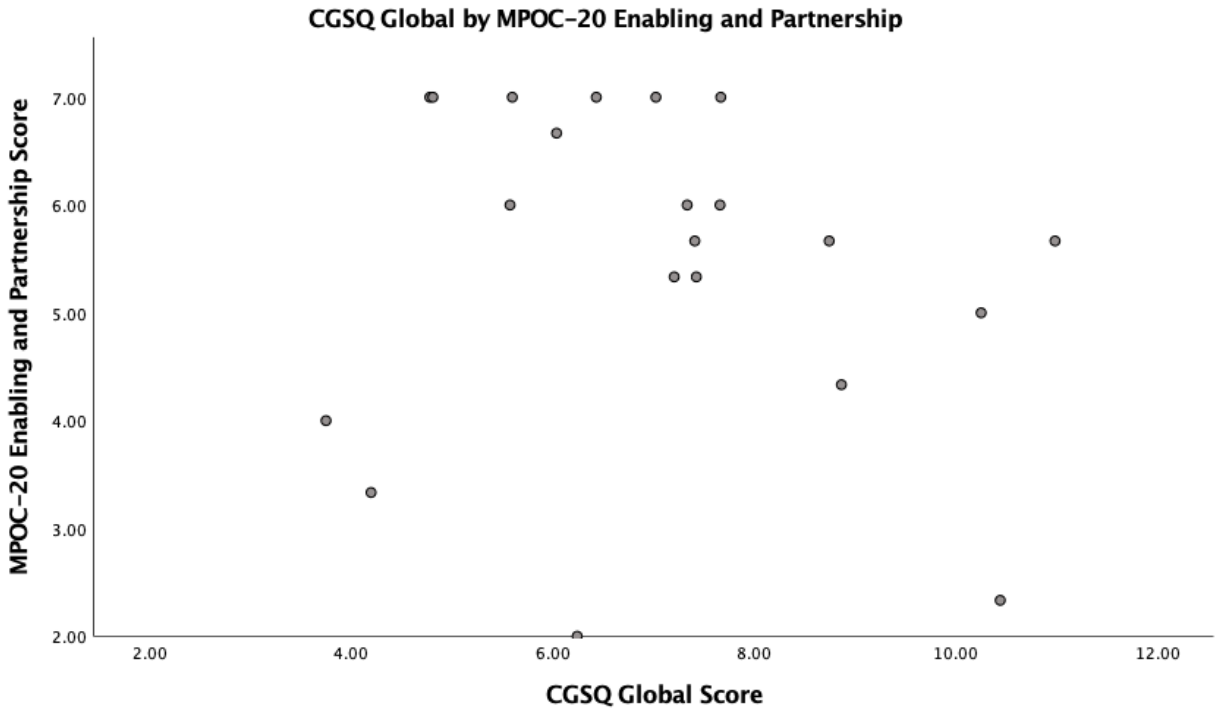


Figure 75. Scatterplot of CGSQ global scores by MPOC-20 EP scores

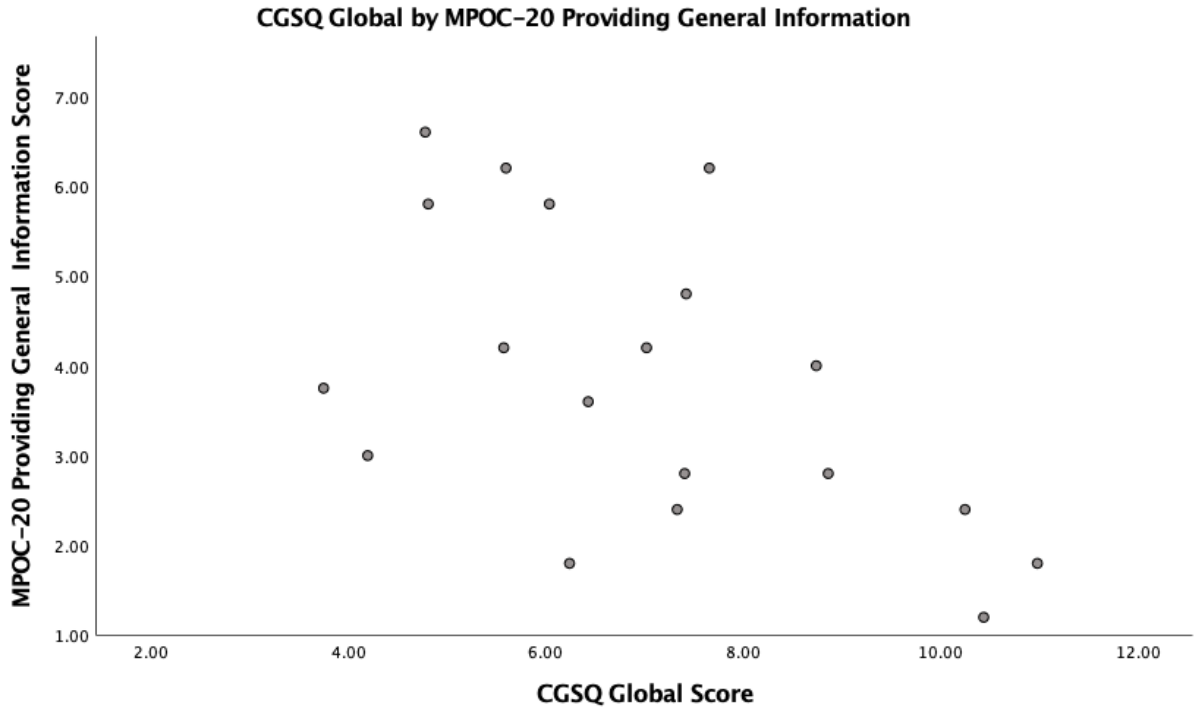

Figure 76. Scatterplot of CGSQ global scores by MPOC-20 PGI scores

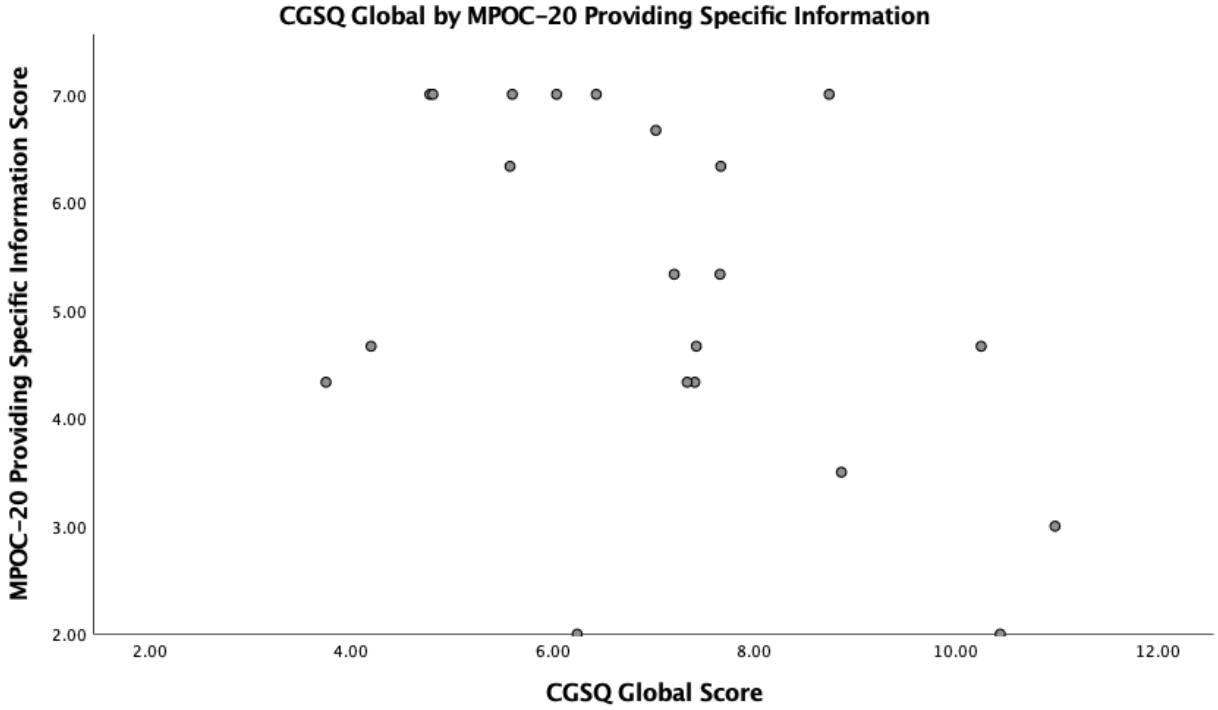


Figure 77. Scatterplot of CGSQ global scores by MPOC-20 PSI scores

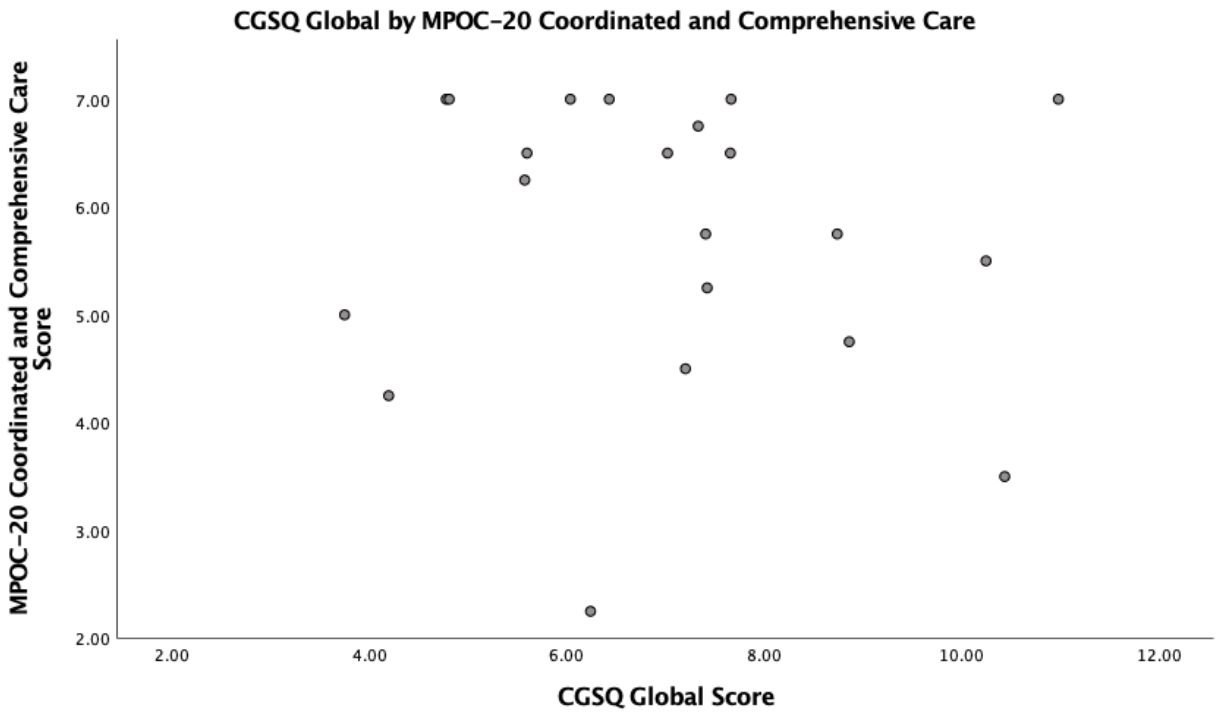


Figure 78. Scatterplot of CGSQ global scores by MPOC-20 CCC scores

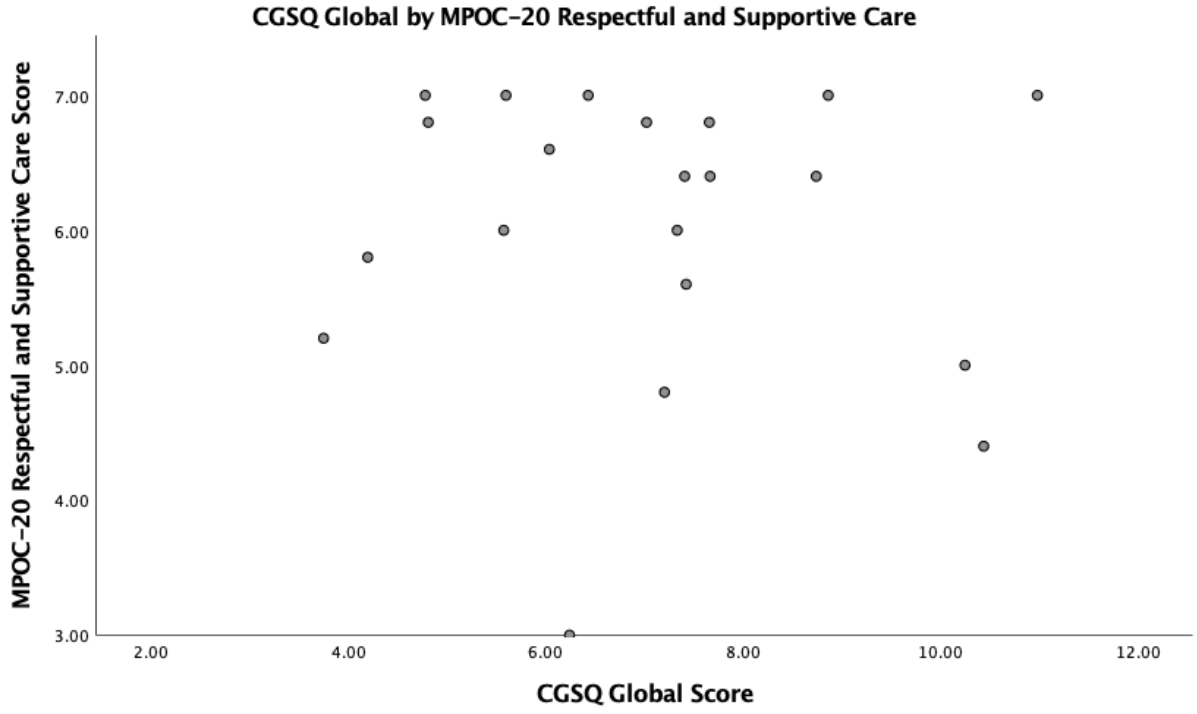


Figure 79. Scatterplot of CGSQ global scores by MPOC-20 RSC scores

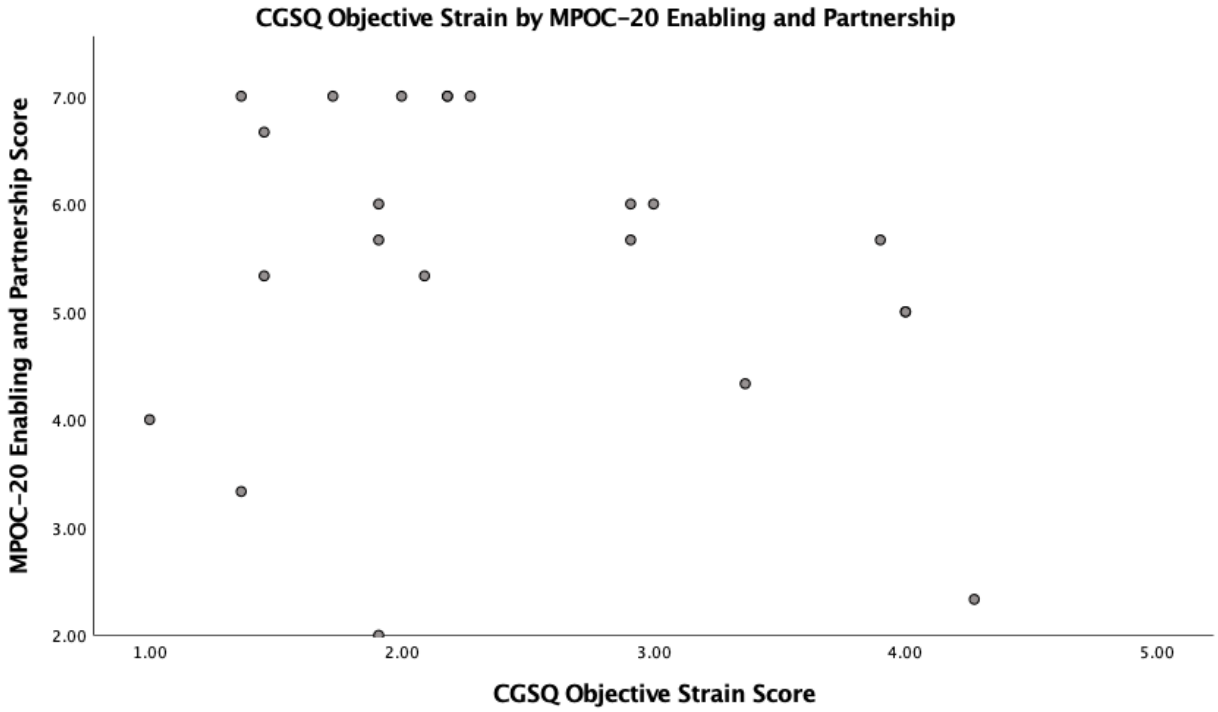


Figure 80. Scatterplot of CGSQ Objective Strain scores by MPOC-20 EP scores

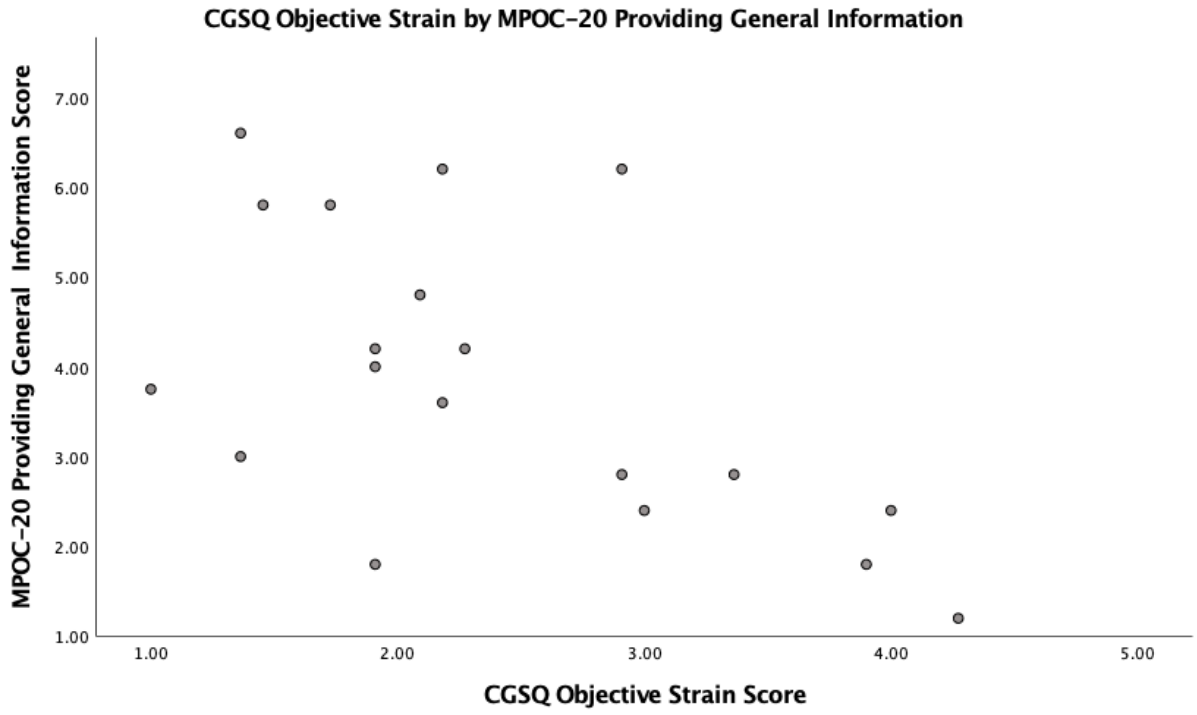


Figure 81. Scatterplot of CGSQ Objective Strain scores by MPOC-20 PGI scores

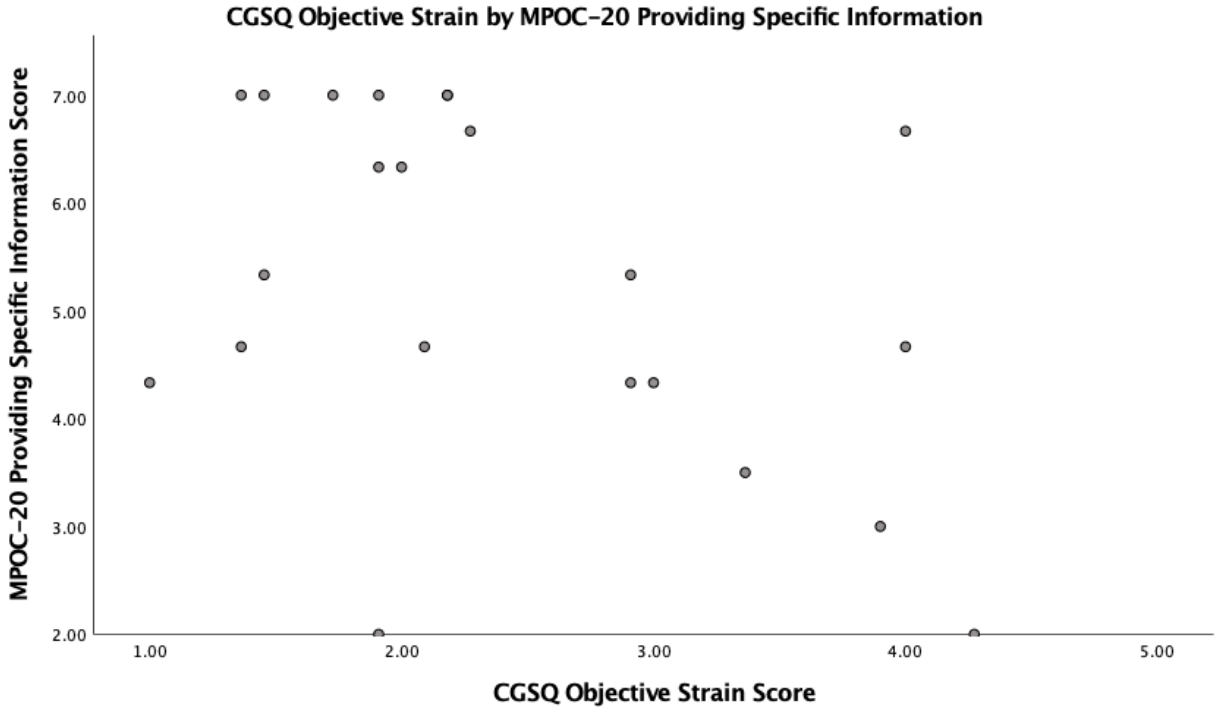


Figure 82. Scatterplot of CGSQ Objective Strain scores by MPOC-20 PSI scores

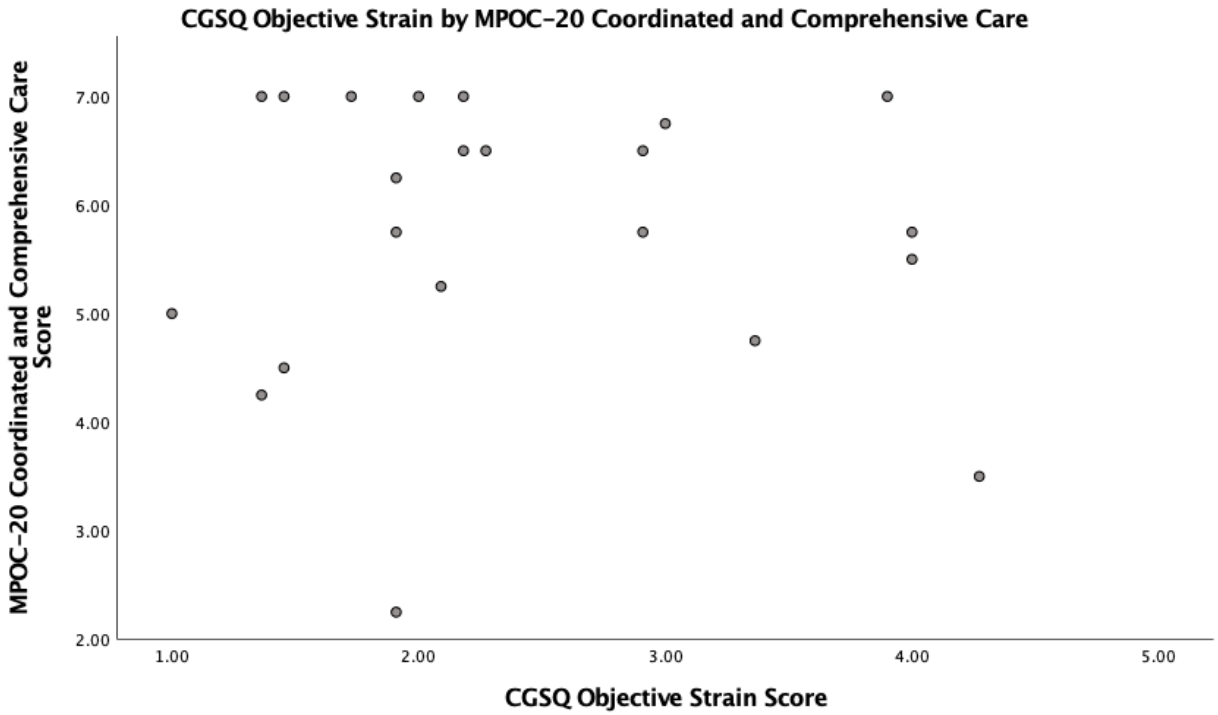


Figure 83. Scatterplot of CGSQ Objective Strain scores by MPOC-20 CCC scores

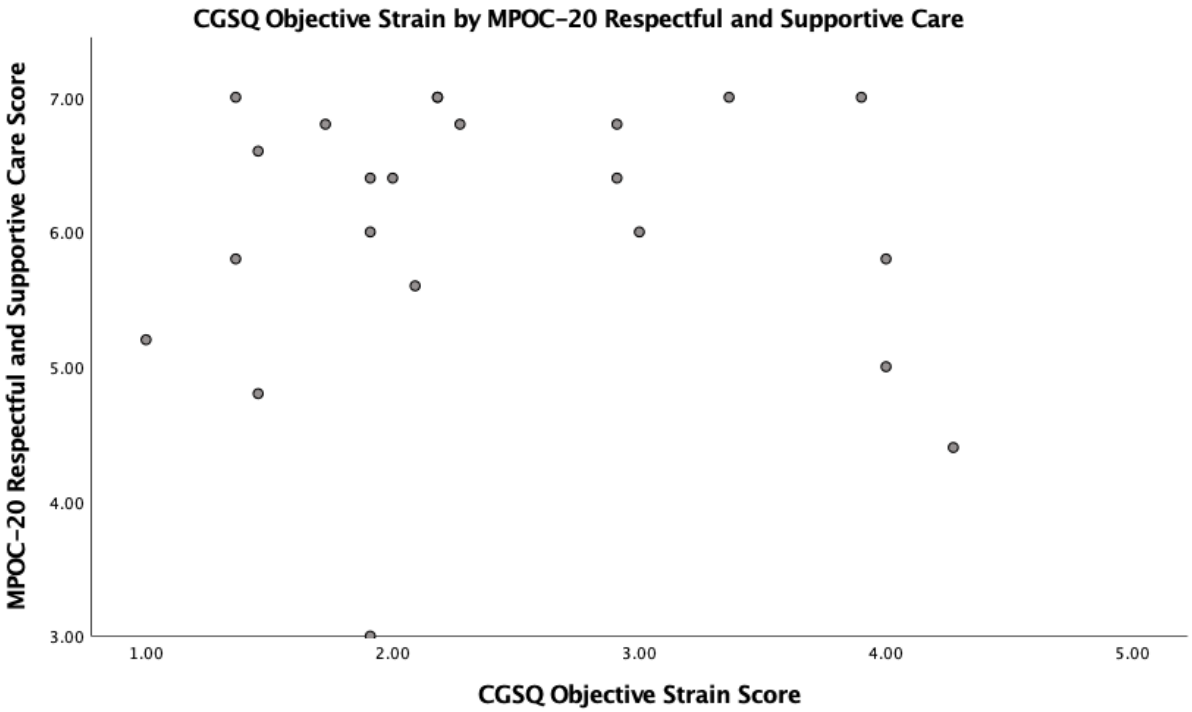


Figure 84. Scatterplot of CGSQ Objective Strain scores by MPOC-20 RSC scores

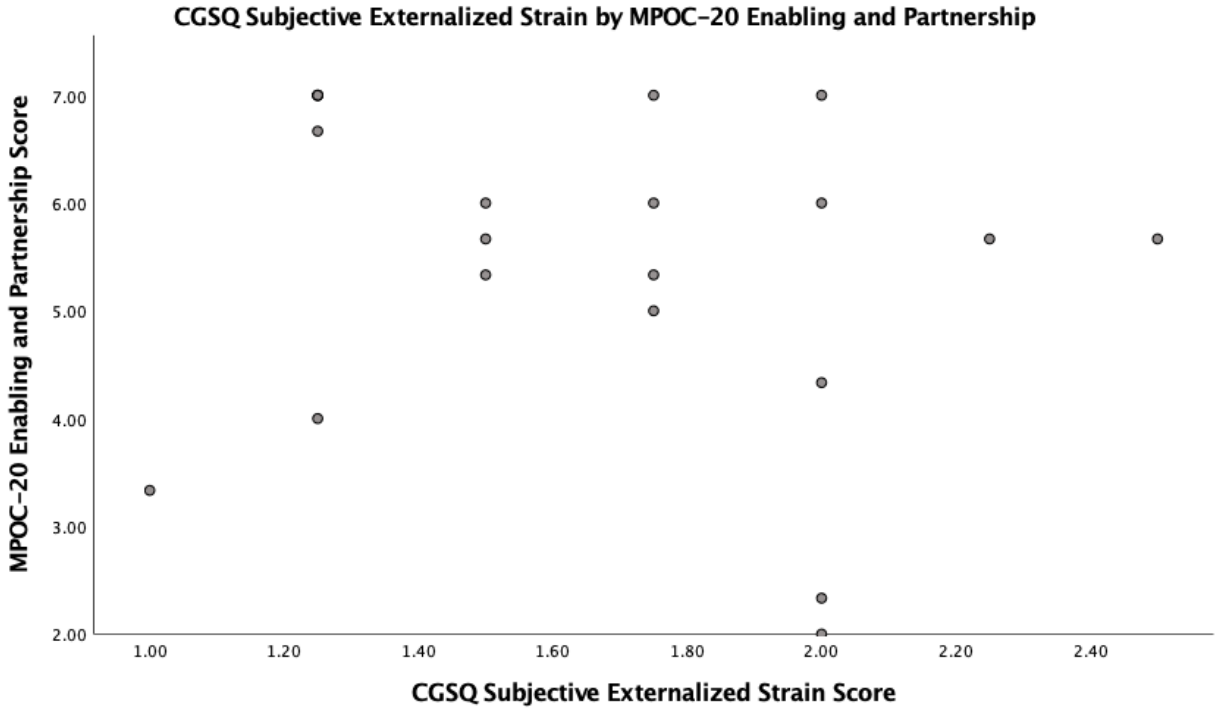


Figure 85. Scatterplot of CGSQ Subjective Externalized Strain scores by MPOC-20 EP scores

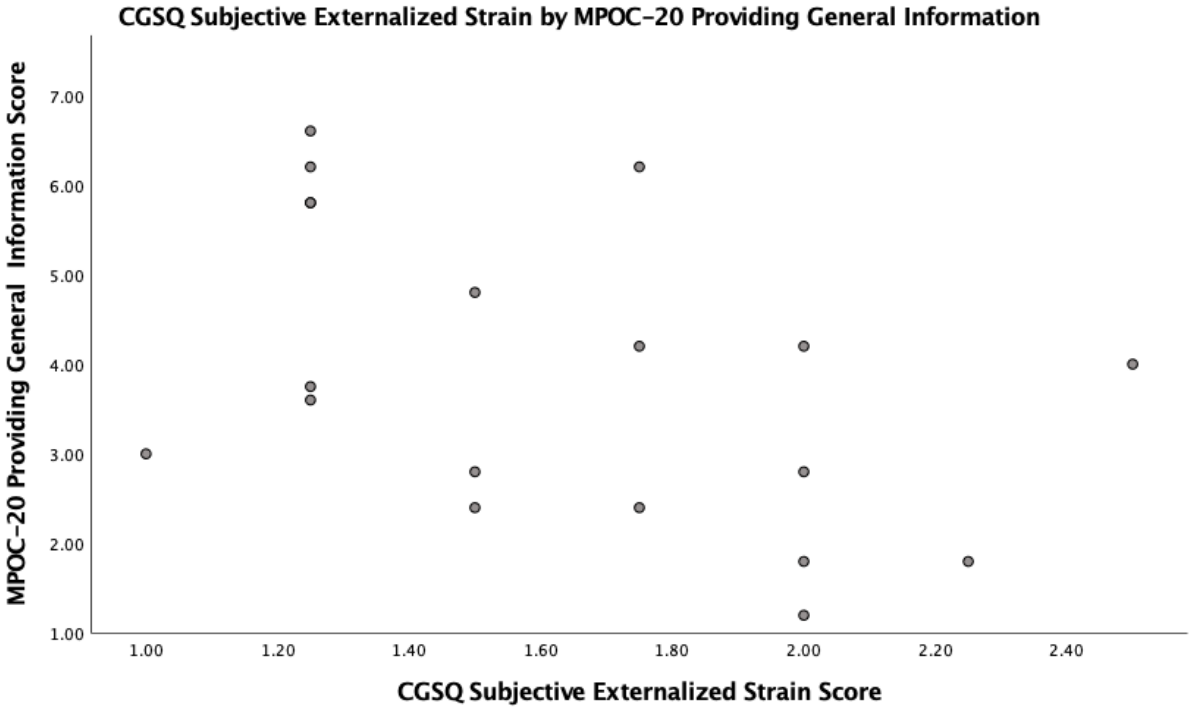


Figure 86. Scatterplot of CGSQ Subjective Externalized Strain scores by MPOC-20 PGI scores

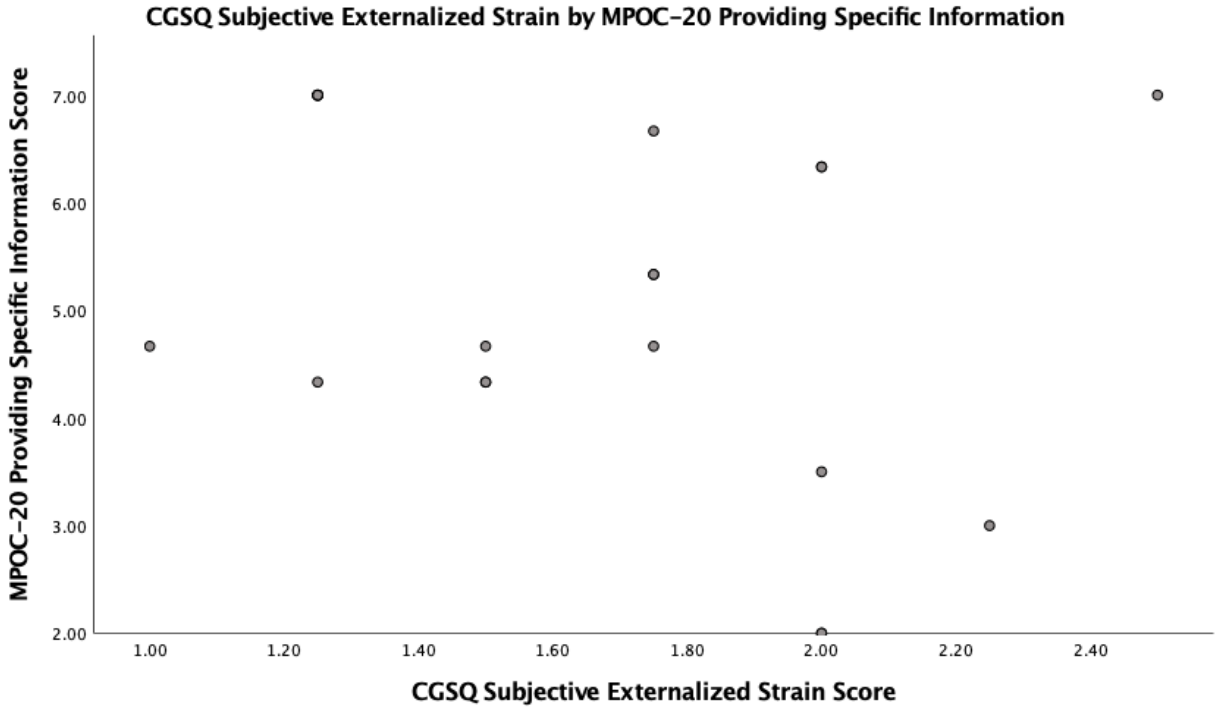

Figure 87. Scatterplot of CGSQ Subjective Externalized Strain scores by MPOC-20 PSI scores

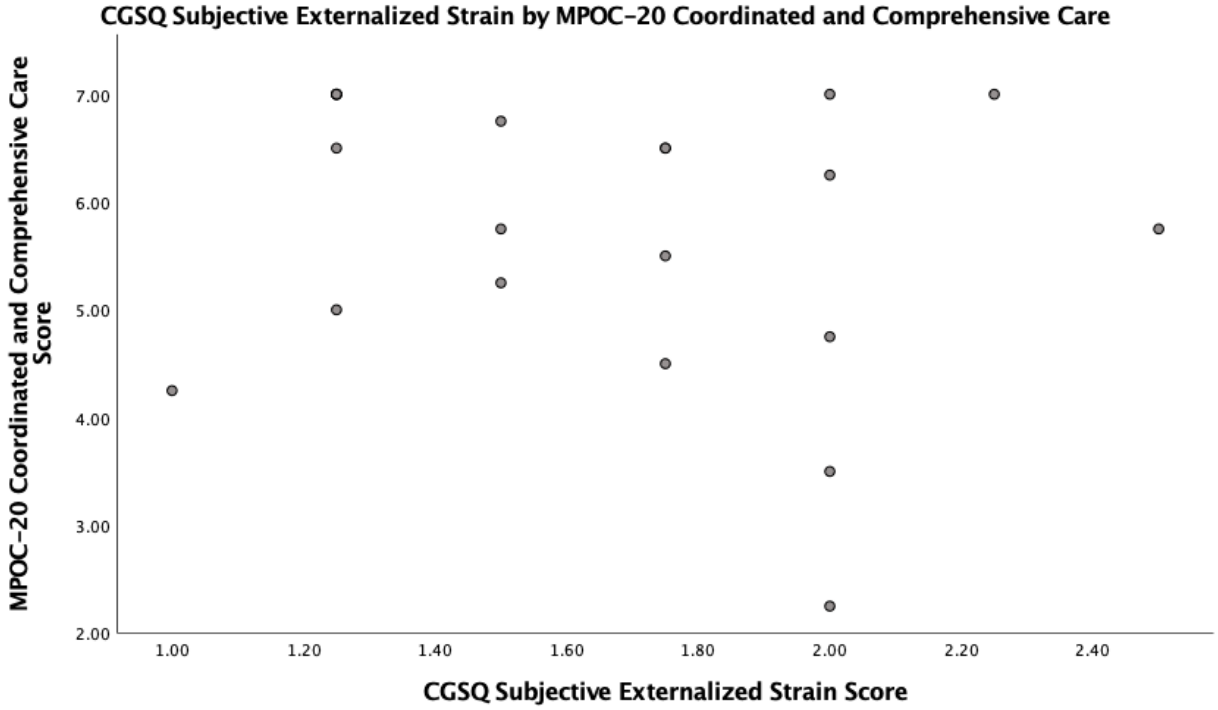


Figure 88. Scatterplot of CGSQ Subjective Externalized Strain scores by MPOC-20 CCC scores

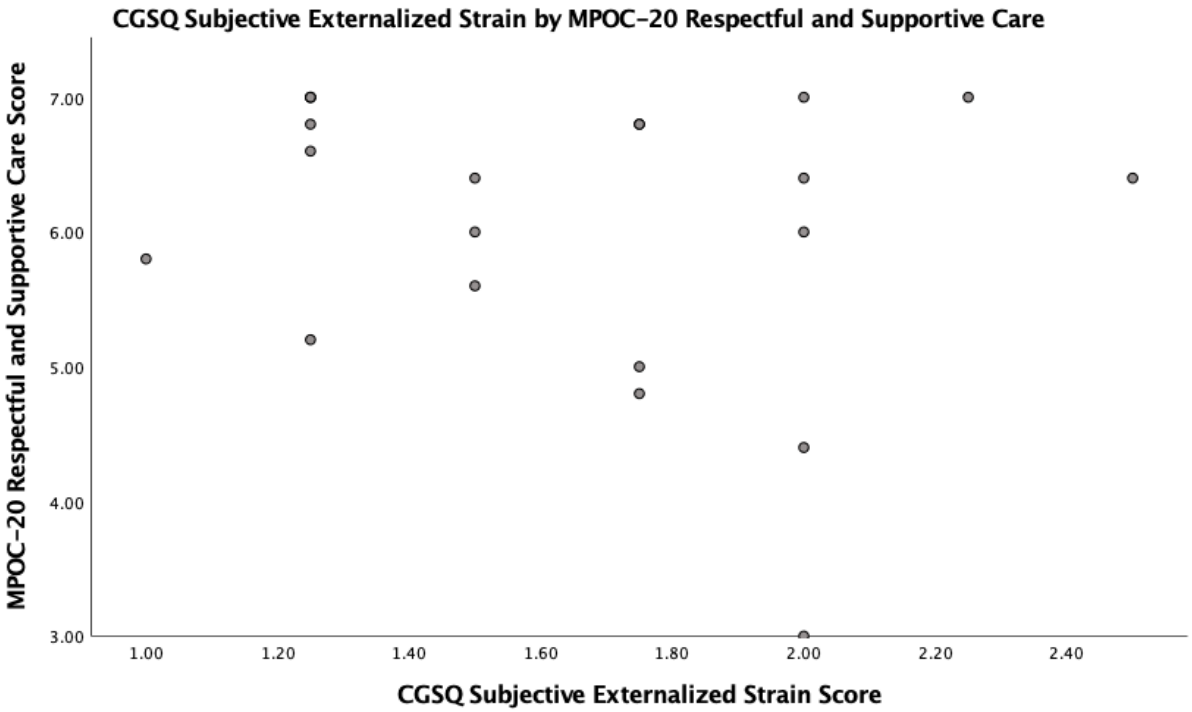


Figure 89. Scatterplot of CGSQ Subjective Externalized Strain scores by MPOC-20 RSC scores

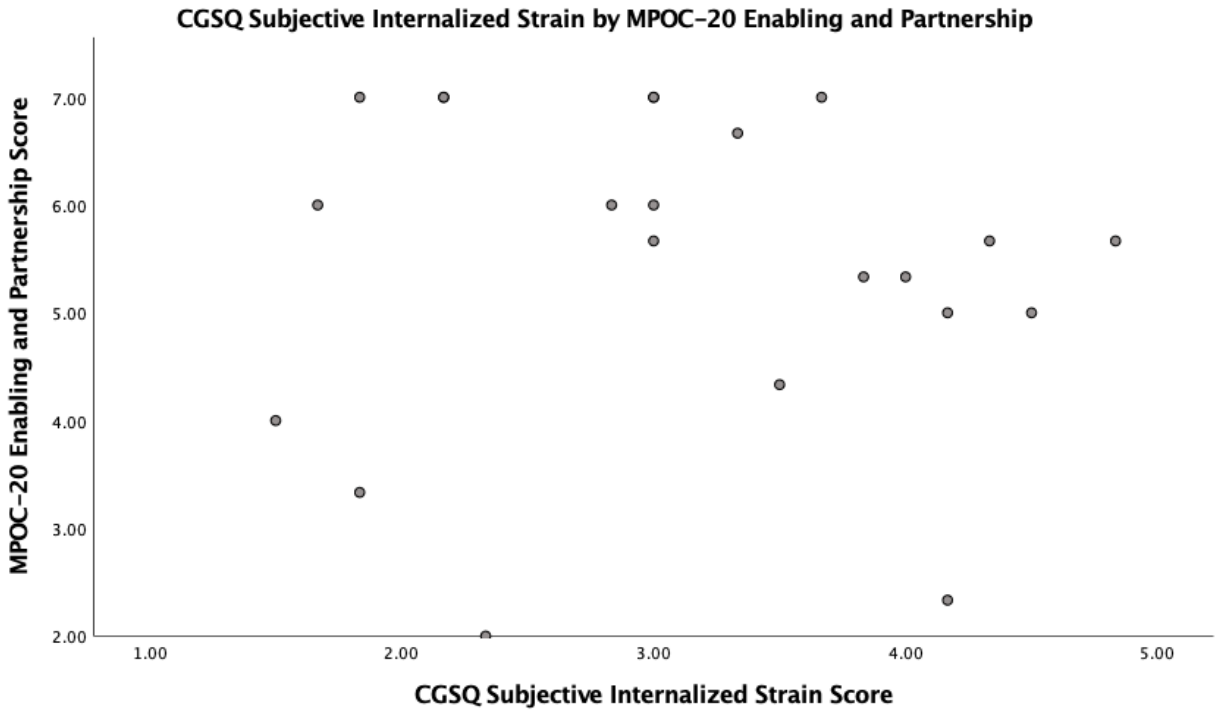


Figure 90. Scatterplot of CGSQ Subjective Internalized Strain scores by MPOC-20 EP scores

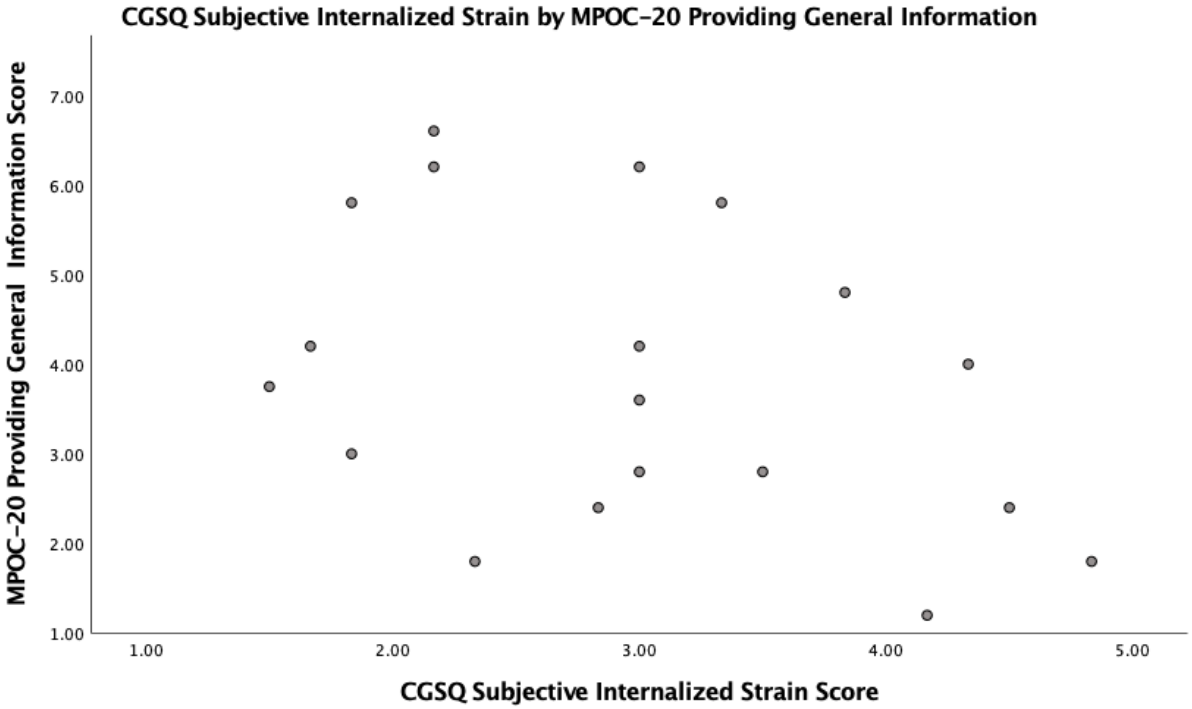


Figure 91. Scatterplot of CGSQ Subjective Internalized Strain scores by MPOC-20 PGI scores

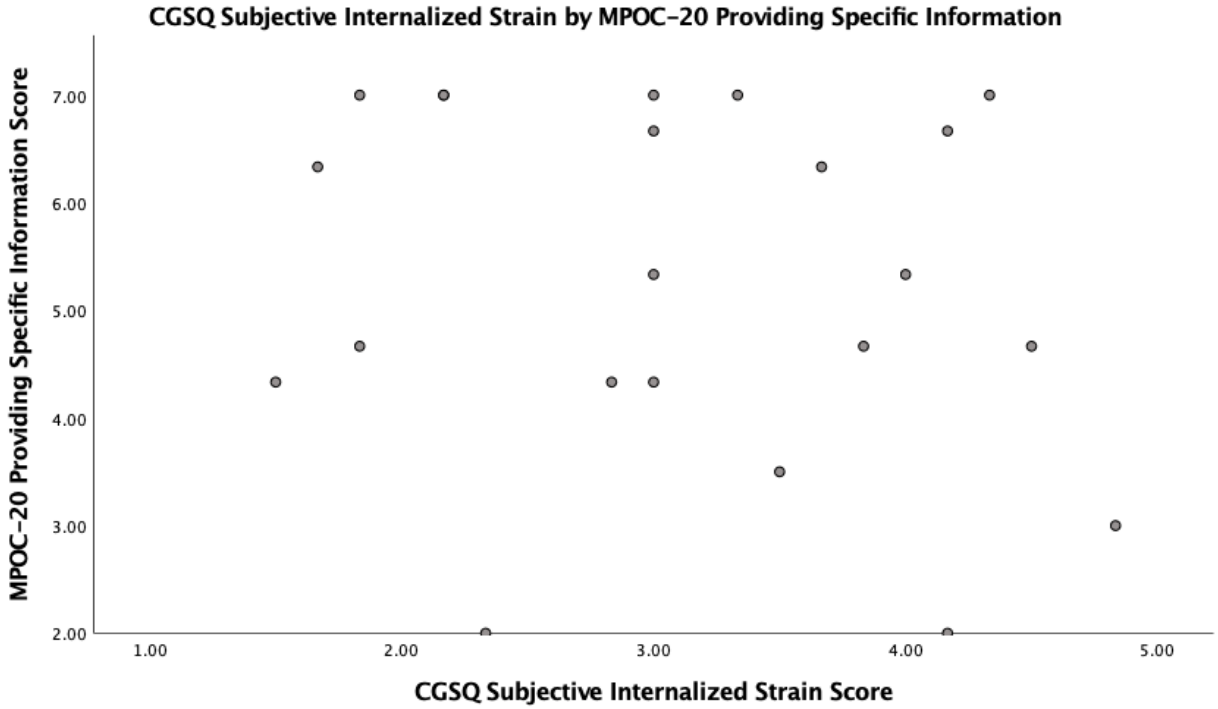

Figure 92. Scatterplot of CGSQ Subjective Internalized Strain scores by MPOC-20 PSI scores

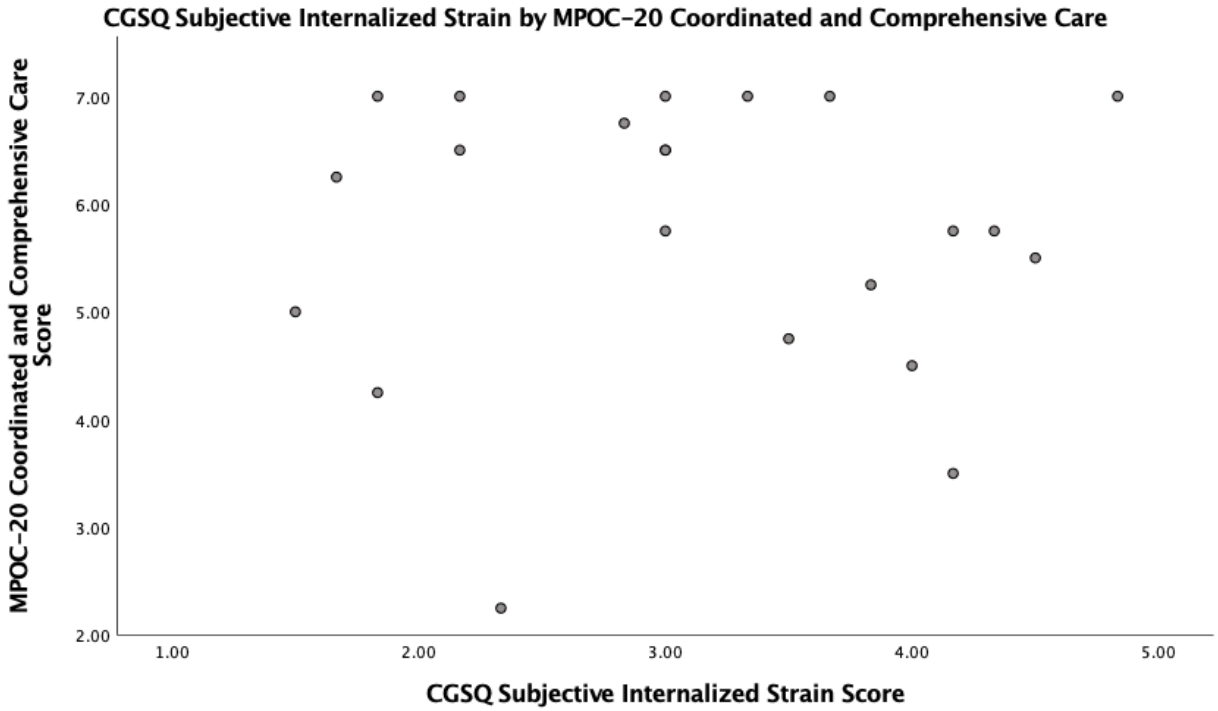


Figure 93. Scatterplot of CGSQ Subjective Internalized Strain scores by MPOC-20 CCC scores

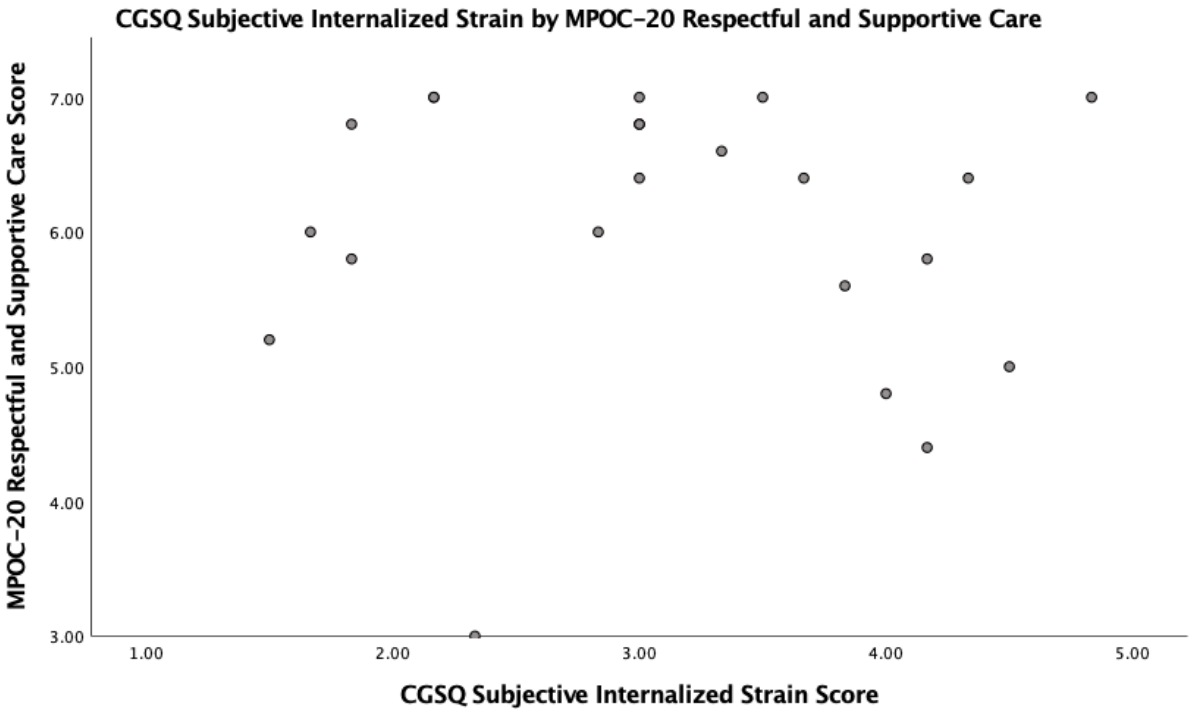


Figure 94. Scatterplot of CGSQ Subjective Internalized Strain scores by MPOC-20 RSC scores