GATHERING PROVIDER PERSPECTIVES ON USING A PARENT-IMPLEMENTED AUTISM INTERVENTION WITH TRADITIONALLY UNDERSERVED POPULATIONS

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ABSTRACT

GATHERING PROVIDER PERSPECTIVES ON USING A PARENT-IMPLEMENTED AUTISM INTERVENTION WITH TRADITIONALLY UNDERSERVED POPULATIONS

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Parent-mediated interventions for children on the autism spectrum are recognized as evidence-based practice. The PLAY Project autism intervention, the focus of this research, is a parent-mediated model that has been implemented on a large scale, but its effectiveness with traditionally underserved families has not been evaluated. The aim of this study was to obtain PLAY Project Consultants' (PPCs') perspectives on using PLAY with children on the autism spectrum or who have an increased likelihood of being diagnosed with autism whose families are rural-dwelling, culturally diverse, and/or low-resourced ("traditionally underserved families"). Furthermore, the study aimed to determine what adaptations could be made when using the PLAY Project, according to PPCs, to facilitate its implementation and increase its effectiveness for traditionally underserved populations while maintaining its fidelity. The study's mixed-methods analysis examined provider perspectives on barriers and facilitators to using the PLAY Project with traditionally underserved families. PPC survey data were analyzed using independent group *t*-tests, and thematic analysis was used to analyze follow-up semi-structured interviews with providers. Survey questions, interview questions, and qualitative themes were guided by the eight key dimensions of the Ecological Validity Model and viewed through a Theory of Change lens. Results of this study may inform adaptations to the PLAY Project intervention, in a way that maintains fidelity, which may be helpful for serving the broader population of children on the autism spectrum and their families. Findings and recommendations of the research may also be transferable to a variety of autism interventions.

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PREFACE

The following manuscript chapters were written as articles to appear in designated journals. Chapter 2: Evaluating the Use of Parent-Implemented Models of Autism Intervention With Traditionally Underserved Populations, is a scoping review of the literature and was written to appear in the *Journal of Racial and Ethnic Health Disparities*. Provider Perspectives on Using a Parent-Implemented Autism Intervention With Traditionally Underserved Families is the third chapter. It is a research article written for submission to the *Focus on Autism and Other Developmental Disabilities*and details the present study and its results. Chapter 4: Strategies for Using a Parent-Implemented Autism Intervention with Traditionally Underserved Families, is a Clinical Focus article written for the journal *Perspectives of the American Speech-Language-Hearing Association (ASHA) Special Interest Groups*, specifically for Special Interest Group (SIG) 14: Cultural and Linguistic Diversity. This Clinical Focus article develops the current study's findings into clinically applicable strategies for providers. Articles are in the process of being submitted for publication.

This Introduction Chapter: Using a Parent-Implemented Autism Intervention With Traditionally Underserved Populations, provides an introduction to the following three content chapters (Chapters 2-4) and will describe the thematic basis for the current project and elaborate on each chapter's relationship to these themes. The final Discussion Chapter: Using a Parent-Implemented Autism Intervention With Traditionally Underserved Populations, provides a summary of the results and conclusions of the project, integrating all previous chapters, with implications for future research. As a result of combining these articles within Northern Arizona University's formatting requirements, some redundancy will be present throughout the entire document.

Terminology

Considering the differing preferences of professionals for person-first (e.g. “child with autism”) language versus advocates for identity-first (e.g. “autistic child”) language (Steinbrenner et al., 2020), terminology in this manuscript will mixed. Autistic advocates’ preferences will be honored by primarily using the term “autism” rather than “autism spectrum disorder” (ASD) (Brown, 2011).

CHAPTER 1: INTRODUCTION

Statement of the Problem

The Diagnostic and Statistical Manual, Fifth Edition (DSM-5), describes Autism Spectrum Disorder (ASD) as being characterized by deficits in social communication and interaction plus restricted, repetitive behaviors (American Psychiatric Association, 2013). The Centers for Disease Control and Prevention's (CDC's) Autism and Developmental Disabilities Monitoring (ADDM) Network most recently estimated that approximately 1 in 36 children have been identified as having autism spectrum disorder (ASD), males being four times more likely to be diagnosed than females (Maenner et al., 2023).

One barrier to supporting an autistic person throughout their lifetime involves accessing autism services (Carr & Lord, 2016; Kasari, Lawton, et al., 2014; Straiton et al., 2021). Another barrier is the cost of supporting an autistic person throughout their lifespan in the United States, approximately $1.4 million for an autistic person who does not also have intellectual disability (Buescher et al., 2014). If the person with autism also has an intellectual disability, the cost increases to a total of $2.4 million (Buescher et al., 2014). Mean annual costs for autistic children 0-5 in the US total $63,291 for children without intellectual disability and $107,863 for children who also have intellectual disability (Buescher et al., 2014). These costs consist primarily of special education services and parental productivity loss (Buescher et al., 2014).

Parent-implemented models (PIMs) of autism intervention are interventions in which parents are involved with providers in implementing strategies to address outcomes with their autistic child (Oono et al., 2013). Other terms for PIMs in the literature include parent-implemented intervention (Steinbrenner et al., 2020; Wong et al., 2015), parent-mediated intervention (Green et al., 2015; Oono et al., 2013; Stadnick et al., 2015), and caregiver-mediated interventions (Kasari et al., 2010). These interventions, which are mediated primarily by parents rather than professionals, typically decrease the demand on the provider and therefore cost less (Solomon et al., 2014). Considering the lifetime costs described above, intervention costs are an important consideration for all families, especially those who are traditionally underserved.

Although PIMs have been determined to be evidence-based (EB) (Odom et al., 2010; Steinbrenner et al., 2020; Wong et al., 2015), a significant barrier involves their lack of reimbursement by insurance policies. All 50 states have passed insurance mandates for autism intervention (*2022 Advocacy Highlights | Autism Speaks*, n.d.); however, such mandates most often require insurance coverage for Applied Behavioral Analysis (ABA) (Cooper et al., 2007), which is based on operant conditioning and was not originally created as a PIM. Given the lifetime expenses noted above, it is understandable that caregivers of children with autism would feel concern about funding interventions for their child, leading families to utilize ABA services rather than PIMs. For this reason, PIMs are often delivered and billed through other services that are reimbursable, such as Speech Therapy (*Floortime | Autism Speaks*, n.d.). PIMs are EB practices that can save money for families and insurance companies, ultimately decreasing lifetime expenses for people with autism. These are important considerations for healthcare policymakers and parents when determining which interventions to finance.

The PLAY (Play and Language for Autistic Youngsters) Project is an autism PIM that has been designated as EB by Steinbrenner et al. (2020). The conclusion of the randomized controlled trial (RCT) conducted on the PLAY Project was that the intervention was associated with increased interaction skills, increased functional development, and improved autism symptoms (Solomon et al., 2014). In addition, due to being mediated by parents rather than professionals, PLAY is a more cost-effective treatment option for families with autistic children

(Solomon et al., 2014). The PLAY RCT occurred in five Easter Seals sites in Michigan (Detroit), Illinois (Peoria and Bloomington), Montana (Billings), and Indiana (Evansville). However, a limitation of the PLAY RCT was a decreased proportion of and focus on traditionally underserved (TU) families (Solomon et al., 2014), which for the purposes of this study will include families who are low-resourced, culturally diverse, and/or rural dwelling.

Study Purpose

The primary purpose of the current study is to obtain perspectives of PLAY Project Consultants (PPCs) about implementing PLAY with traditionally underserved (TU) families. The following research questions were explored:

1) How effective do PPCs consider the PLAY Project to be when used with TU as compared to well-resourced (WR) families?

> Hypothesis: An effect will be noted when comparing PPCs' perspectives on use of the PLAY Project with TU as compared with WR families.

2) According to PLAY Project Consultants (PPCs), what adaptations could be made when using the PLAY Project to facilitate its implementation and increase its effectiveness for rural, culturally diverse, and/or low-resourced families while maintaining its fidelity?

Results of the study may inform potential adaptations that could help PPCs implement PLAY, while maintaining its fidelity, in a way that may be helpful for serving the broader population of children with autism and their families. These findings and recommendations may also be of use to providers of a variety of EB autism PIMs by providing guidance in making relevant adaptations when implementing them with TU populations. In addition, results may be helpful in guiding providers who typically work with underserved populations to make appropriate adaptations in all therapy practices. In addition, identification of facilitators and strategies when implementing autism PIMs with TU populations is crucial to aiding leaders and policymakers in the prioritization of supportive means by which to successfully implement interventions and facilitate access to services (Stahmer, Dababnah, et al., 2019; Straiton et al., 2021). In these ways, this study aims to help bridge the gap that often occurs between research and practice (Stahmer, 2007).

Literature Review

A literature search was conducted to explore barriers and/or adaptations that have been considered for autism PIMs in relation to characteristics of TU families using the following research question: “How have caregiver-implemented early interventions for autism considered barriers and/or adapted to the needs of traditionally underserved (low-resourced, culturally diverse, and/or rural dwelling) families?” The search ultimately resulted in four studies focusing on barriers and/or adaptations made to EB PIMs for autism: two studies focused on using autism PIMs with families who have limited resources (Carr & Lord, 2016; Kasari, Lawton, et al., 2014), one study analyzing barriers to using EB PIMs for autism with low-resourced families (Pickard et al., 2016), and one study describing caregiver input on the cultural appropriateness of parent-mediated autism interventions (DuBay et al., 2018). Studies could not be found that focused specifically on use of autism PIMs with rural dwelling families.

Barriers and facilitators described in the four studies are summarized in the Literature Review (Chapter 2). Of note is that a wide range of factors were analyzed amongst the different studies, leading to inconsistent results and a clear need for replicable analysis (Carr & Lord, 2016; DuBay et al., 2018; Kasari, Lawton, et al., 2014; Pickard et al., 2016). It is the aim of the present study to contribute to the knowledge of barriers encountered and facilitators/strategies used when implementing PLAY with TU families. This aim will be accomplished using the following theoretical foundations, which will contribute to the study's replicability.

Theories Guiding the Current Study

Implementation Science

Implementation science can be defined as the use of theoretical approaches to help understand and explain how and why implementation of EB programs in practice either succeed or fail based on the need for strategies to facilitate implementation in real world settings (Nilsen, 2015). Nilsen (2015) identified three aims of the theories, models, and frameworks used in implementation science: describing and/or guiding the process of translating research into practice (process models); understanding and/or explaining what influences implementation outcomes (determinant frameworks, classic theories, and implementation theories); and evaluating implementation (evaluation frameworks) (Nilsen, 2015). The following theories within the framework of implementation science were used in the current study: the Ecological Validity Model (a determinant framework) and Theory of Change (a classic theory).

Ecological Validity Model

The Ecological Validity Model (EVM) (Bernal et al., 1995; Domenech Rodríguez et al., 2011) fits into Nilsen's framework (Nilsen, 2015) as a determinant framework, which helps specify barriers and enablers/facilitators that influence the outcomes of an intervention. The eight dimensions of the EVM (language, persons, metaphors, content, concept, goals, methods, and context) have been used to guide cultural adaptation of interventions (Bernal et al., 1995; Buzhardt et al., 2016; Domenech Rodríguez et al., 2011). Buzhardt et al. (2016) described their cultural adaptation process of evaluating and adapting a parent training program for use with Hispanic families of children with autism. EVM was used in the current research study similarly to Buzhardt et al.’s study (2016) as a methodological guide (i.e., survey and interview development) and an interpretive lens (i.e., during thematic analysis).

The first dimension of the EVM, *language*, is considered to be the carrier of culture and a crucial component to delivering a treatment (Bernal et al., 1995). *Persons*, the second dimension, considers the ethnic/racial similarities and differences between the client and the service provider and how they influence the relationship between them (Bernal et al., 1995). If a client’s and a service provider’s race/ethnicity/nationality (REN) are different, it must be considered whether the intervention has the flexibility to allow for reflection on these differences within the therapy relationship (Bernal et al., 1995). The impact of the therapist’s own culture and world views on the intervention and the relationships within it must be considered (Bernal et al., 1995). *Metaphors*, the third dimension, refer to the symbolic sayings and concepts (e.g., vocabulary) within a population and within an intervention (Bernal et al., 1995). The fourth dimension of the EVM, *content*, is defined as the cultural knowledge, such as values, customs, and traditions, that contributes to the uniqueness of a particular group (Bernal et al., 1995). *Concepts* are the fifth dimension of the EVM and refer to the constructs/structure (i.e., time commitment, activities, techniques) used within an implementation model and the degree to which these coincide with the culture (Bernal et al., 1995). The sixth dimension of the framework is the *goals* of an intervention, which may or may not coincide with cultural knowledge (Bernal et al., 1995). Framing goals within the culture can help decrease discrepancies between therapist and client goals thereby preventing decreased credibility of the therapist (Bernal et al., 1995). *Methods*, the seventh dimension of the EVM, refer to the extent to which culture is considered in developing and/or adapting an intervention (Bernal et al., 1995). The eighth and final dimension of the EVM is *context*, which considers the particular acculturative stage and supports of the individual that are unique within their culture (Bernal et al., 1995).

Theory of Change

Theory of Change (Figure 1), a classic theory (Nilsen, 2015), was used in this study as a strong foundation of and justification for the proposed research as well as a lens through which to consider the psychological domain of autism intervention with underserved families. The Center of the Developing Child at Harvard University describes Theory of Change as a means by which to evaluate an intervention's ability to build adult/caregiver capabilities and strengthen communities to build the network of relationships that are crucial to improving children's lifelong learning, health, and behavior outcomes (*Building Adult Capabilities to Improve Child Outcomes*, n.d.).

Cultural, economic, and social factors, such as those defining the underserved families that are the subject of this study, affect a population's vulnerability and health outcomes (Equity, social determinants and public health programmes, 2010). Children within these vulnerable populations are at greater risk for the poorest outcomes due to experiencing adverse factors that are all sources of toxic stress, such as abuse, neglect, violence, drug abuse, mental illness, and poverty (*Building Adult Capabilities to Improve Child Outcomes*, n.d.). Theory of Change speaks to the need to build the capacity of adults who interact with these children by increasing the skills the adults need to deal with the adversity (i.e., depression, anxiety, conflict) in their lives (*Building Adult Capabilities to Improve Child Outcomes*, n.d.). According to this theory, increasing adults' skills in this way will lead to well-regulated home and school environments, where learning and development occur (*Building Adult Capabilities to Improve Child Outcomes*, n.d.).

Parent-implemented interventions are approaches in which caregivers learn and implement strategies so that they can better support their child’s development (Boyd et al., 2011). The foundation of Theory of Change is to increase the skills of caregivers, which in turn benefits children (*Building Adult Capabilities to Improve Child Outcomes,* n.d.) so that “increased parental skills allow for continual opportunities for child learning in a range of situations” (Oono et al., 2013, p.5). This active skill building of caregivers occurs through coaching, training, and practice, all of which are components of PIMs, including the PLAY Project intervention (*Building Adult Capabilities to Improve Child Outcomes*, n.d.; Solomon et al., 2014).

Summary of Manuscripts

Literature Review Manuscript

Chapter 2: Evaluating the Use of Parent-Implemented Models of Autism Intervention With Traditionally Underserved Populations, is a scoping literature review and was written in a format to be summitted to the *Journal of Racial and Ethnic Health Disparities*. The focus of the literature review is articles centered around parent-implemented autism interventions, specifically addressing barriers and/or facilitators related to TU families. PIMs can be described as interventions in which professionals involve parents in implementing strategies to address outcomes with their child with autism (Oono et al., 2013). For the purposes of this study, TU families are defined as families who fit one or more criteria for being low-resourced, culturally diverse, and/or rural dwelling. The researcher’s search resulted in four articles that fit these criteria (Carr & Lord, 2016; DuBay et al., 2018; Kasari, Lawton, et al., 2014; Pickard et al., 2016). Results of these articles are discussed in Chapter 2 as related to the present study. This manuscript has a target audience similar to that of the *Journal of Racial and Ethnic Health Disparities,* the journal for which it has been formatted for submission: professionals and researchers with an interest in understanding disparities based on race and/or ethnicity with the ultimate goal of eliminating these disparities. Researchers and providers may benefit from the summary of the literature to date, including the summary of barriers and adaptations as well as gaps in the literature. The wider variety and paucity of results support the need for the current study, which aims to fill current gaps in the research by providing additional and replicable results.

Study Results Manuscript

The target journal for Chapter 3: Provider Perspectives on Using a Parent-Implemented Autism Intervention with Traditionally Underserved Families, is the *Focus on Autism and Other Developmental Disabilities*. This manuscript is in standard research article format and describes the methodology and results of the present study. The focus of the mixed-methods study is the PLAY Project autism intervention (Solomon et al., 2014) and the perspectives of PLAY Project Consultants (PPCs) on implementing PLAY with TU populations. Quantitative survey results and qualitative themes based on semi-structured interviews are described then integrated into barriers to and facilitators/strategies for implementing PLAY with TU families, as noted by PPCs. JADD is an autism-focused journal which explores a variety of topics, including culture and society and service provision, with an aim of promoting the well-being of children and families. It was selected as the target journal for this manuscript due to its target audience of professionals, including providers, researchers, and policymakers, who have such interests and may benefit from the results of the current study, especially the facilitators and strategies which address perceived barriers encountered when working with TU families.

Clinical Focus Manuscript

Perspectives of the ASHA Special Interest Groups is the target journal for Chapter 4:

Strategies for Using a Parent-Implemented Autism Intervention With Traditionally Underserved Families. *Perspectives* is produced by the American Speech-Language-Hearing Association (ASHA) and is coordinated by ASHA's 20 Special Interest Groups (SIGs). SIG 14: Cultural and Linguistic Diversity, is the group of focus for this manuscript, as cultural and linguistic diversity are characteristics of some of the TU families who are the topic of this study. The primary aim of *Perspectives* is to bridge the gap that often occurs between research and clinical practice, particularly in the field of Communication Sciences and Disorders (CSD), which is the researcher's profession. This aim is similar to the aim of the present study, which has been elaborated upon above in the section describing the theoretical foundations of the study, particularly Implementation Science (Nilsen, 2015). This final content chapter targets providers, specifically those within the field of CSD, as it elaborates the resulting barriers and correlating facilitators/strategies into adaptations which may be beneficial to providers who work directly with TU populations. Providers who may benefit from these adaptations include Speech-Language Pathologists (SLPs) and other professionals who use parent-implemented autism interventions with TU families as well as SLPs whose practice generally includes TU populations.

CHAPTER 2

LITERATURE REVIEW MANUSCRIPT: EVALUATING THE USE OF PARENT-IMPLEMENTED MODELS OF AUTISM INTERVENTION WITH TRADITIONALLY UNDERSERVED POPULATIONS

Terminology

Considering the differing preferences of professionals for person-first (e.g. "child with autism") language versus advocates for identity-first (e.g. "autistic child") language (Steinbrenner et al., 2020), terminology in this manuscript will mixed. Autistic advocates' preferences will be honored by primarily using the term "autism" rather than "autism spectrum disorder" (ASD) (Brown, 2011).

Introduction

Autism, also known as Autism Spectrum Disorder (ASD), currently affects 1 in 36 children, males being diagnosed four times more often than females (Maenner et al., 2023). The cost of autism in the United States is approximately $60,000 per year per child (Buescher et al., 2014). These costs increase when the child with autism also has intellectual disability (Buescher et al., 2014). As a result, the national economic cost of caring for Americans with autism was a total of approximately $268 billion in 2015 (Lavelle et al., 2014). It is estimated that this annual cost will rise to $461 billion by 2025 without more effective interventions and supports (Lavelle et al., 2014). These figures include costs of health care, education, autism-related therapy services, family-coordinated services, and caregiver time (Lavelle et al., 2014). While legally mandated public school (special education) services, rather than health care (18%), contribute the most to costs of childhood autism (Lavelle et al., 2014), high costs are also often due to interventions that rely heavily on professionals to implement them rather than parents (Solomon et al., 2014).

The focus of this review is parent-implemented models (PIMs) of autism interventions, which can be generally described as interventions in which professionals involve parents in implementing strategies to address outcomes with their child with autism (Oono et al., 2013). In addition to PIMs, additional terms for this type of intervention exist in the literature, including the following: parent-mediated models (Carr & Lord, 2016); caregiver-mediated interventions (Kasari, Lawton, et al., 2014); parent-mediated interventions (DuBay et al., 2018; Pickard et al., 2016); and parent-implemented interventions (Steinbrenner et al., 2020). A notable benefit of these types of interventions is that they are mediated mostly by parents rather than professionals and, therefore, generally cost less and are easier to implement due to decreased demand of the professional (Solomon et al., 2014).

The case for early intervention is supported by the Committee on Educational Interventions for Children with Autism, formed in 2001 to examine research supporting early education programs for children through age eight who were diagnosed with autism (Lord & McGee, 2001). Based on scientific evidence, the Committee made the following recommendations for preschool children: interventions should begin early in life, be intensive in hours (i.e., 15-20 hours per week), and actively involve the family; staff delivering the intervention should be highly trained and specialized in autism; there should be objective ongoing assessment with a curriculum that is systematic and planned; environments should be supportive and transitions well-planned; there should be consideration of the individualized strengths and needs of the child; there should be a focus on communication and other developmental areas; and there should be planning to maintain and generalize new skills (Lord & McGee, 2001).

A significant barrier to using PIMs as autism interventions is their lack of reimbursement by insurance policies. All 50 states have passed insurance mandates for autism intervention for those on state-regulated health plans (*Health Insurance Coverage for Autism | Autism Speaks*, n.d.); however, that coverage is primarily for Applied Behavioral Analysis (ABA) (Cooper et al., 2007), which is based on operant conditioning and was not originally created as a PIM. Considering that individuals with autism have medical expenditures that are 4.1 to 6.2 times greater than individuals without autism (*Autism Statistics and Facts | Autism Speaks*, n.d.), it is understandable that families of children with autism have concerns about how to fund interventions for their children. It is logical then that PIMs would be utilized less than ABA services, since insurance mandates cover ABA but not PIMs. For this reason, PIMs are often delivered through other reimbursable services, such as Speech Therapy (*Floortime | Autism Speaks*, n.d.).

In 2020, the National Clearinghouse on Autism Evidence and Practice Review Team produced the third iteration of a systematic review that has examined autism intervention literature with the purpose of determining which interventions had sufficient support so as to be classified as evidence-based (EB) (Odom et al., 2010; Steinbrenner et al., 2020; Wong et al., 2015). To qualify as an evidence-based practice for autism, interventions must have met one of the following three criteria: two or more high quality design studies conducted by at least two researchers; five or more high quality single case design studies conducted by at least three researchers with at least 20 participants across studies; or a combination of one high quality group design study and three or more high quality single case design studies by at least two different researchers (Steinbrenner et al., 2020). The review by Steinbrenner et al. (2020) extends coverage to articles published through 2017 and reports practices that clearly result in positive results in autistic children, Parent-Implemented Intervention (PII) being one of these evidence-based practices (Steinbrenner et al., 2020). Steinbrenner et al. (2020) define PII as “Parent delivery of an intervention to their child that promotes their social communication or other skills or decreases their challenging behavior” (p.29).

Systematic reviews of PIMs have analyzed a variety of outcomes that often do not align across separate reviews. In addition, even when reviews analyze similar outcomes, inconsistent results may be found when reviews are compared. When comparing the Cochrane review of parent-mediated early autism interventions by Oono et al. (2013) and the systematic review of developmental social pragmatic (DSP) interventions by Binns and Oram Cardy (2019), results are inconsistent. This indicates that further and more consistent analysis is needed in the area of parent-implemented interventions for children with autism. A comparison of the results of two systematic reviews (Binns & Oram Cardy, 2019; Oono et al., 2013) analyzing outcomes of PIMs can be found in Table 1 and is described in detail below.

The Cochrane review by Oono et al. (2013) had the aim of determining the effectiveness of parent-mediated interventions (PMIs) for children with autism. Interventions were included if parents were trained, supervised, and supported on an ongoing basis by professionals in strategies to address their child’s autism-related challenges (Oono et al., 2013). Results of Oono and colleagues’ meta-analyses indicated that PMIs result in improvements in language, including receptive language, expressive language, composite language, and parent-reported language comprehension, in children with autism (Oono et al., 2013). Parent synchrony likely mediated increases in joint attention (Oono et al., 2013). Meta-analyses further suggested decreases in autism severity (Oono et al., 2013). Inconsistent positive results were noted in the following areas: child initiations, social communication skills, and decreases in negative behaviors (Oono et al., 2013).

Binns and Oram Cardy (2019) conducted a more recent review of developmental social pragmatic (DSP) interventions for autistic preschoolers. They defined DSP interventions as having three components: a therapist provides intervention for the child and coaching for caregivers, caregivers implement the strategies they have learned from the therapist throughout their interactions with their child, and both the therapist and the caregivers intervene directly with the child (Binns & Oram Cardy, 2019). Analysis indicated that DSP interventions positively affect the following foundational social communication skills in children: attention; facial focus; joint attention; engagement in reciprocal interactions; and communication initiation (Binns & Oram Cardy, 2019). Studies produced inconsistent results in language skills, some reporting positive findings while others reported null findings, indicating a need for further investigation in this area (Binns & Oram Cardy, 2019).

In summary, studies and reviews indicate that parent-implemented autism interventions are beneficial in that they result in positive outcomes for autistic children. However, these results are inconsistent, indicating a need for further analysis. Positive outcomes appear to be especially noted in the areas of joint attention, autism severity/symptomatology, and child initiations. While the reviews by Binns and Oram Cardy (2019) and Oono et al. (2013) state that they include children from a variety of cultures, ethnicities, and/or socioeconomic backgrounds, including underserved populations was not the focus of these reviews.

It was noted in the review by Oono et al. (2013) that children were from a variety of ethnicities; however, proportions of ethnicities were not given. Binns and Oram Cardy (2019) noted that since the studies included in their review occurred in four countries, participants from various socioeconomic backgrounds and cultures were included; however, as in the review by

Oono et al. (2013), these proportions were not given (Binns & Oram Cardy, 2019).

The goal of this literature review is to increase the knowledge about such populations by increasing the understanding of barriers and/or adaptations that have been considered or made to PIMs for autism due to characteristics of traditionally underserved (TU) families. For the purposes of this review, criteria for meeting the definition of traditionally underserved was families who met one or more criteria for being low-resourced, culturally diverse, and/or rural dwelling. To qualify as low-resourced, families must have met at least one of the following criteria, similar to criteria used by Kasari et al. (2014): the primary caregiver's education level is a high school diploma or lower; the primary caregiver is unemployed; and/or the family receives government assistance (i.e., Medicaid). Culturally diverse families were defined as those who self-identify as a race, ethnicity, or nationality (REN) other than white and/or speak a language other than English in the home. Rural-dwelling families were defined as those who live in zip codes identified as rural by the Federal Office of Rural Health Policy (FORHP) Data Files (*Federal Office of Rural Health Policy (FORHP) Data Files | Official web site of the U.S. Health Resources & Services Administration*, n.d.).

Methods

A literature search was conducted to accomplish the above goal using PubMed/MEDLINE, CINAHL, PsycINFO, and SocINDEX databases on March 22, 2022; the articles that were procured were then reviewed over the following six months. The search strategy involved translation of the original research question, "How have caregiver-implemented early interventions for autism considered barriers and/or adapted to the needs of traditionally underserved (low-resourced, culturally diverse, and/or rural-dwelling) families?" into unique search strategies for each database.

The search was limited to English publications. The search itself did not exclude any papers by publication type. Emphasis was placed on the following types of observational and experimental studies: case reports, clinical studies, pragmatic clinical trials, observational studies, meta-analyses, systematic review types, peer-reviewed clinical trials, and randomized controlled trials. The search covered all available results across "all-time" (or database inception) to the date of the search. A total of 1,924 results were delivered across all databases.

One of the authors, a content expert, combed through these 1,924 articles for those that would be appropriate for the review. This involved first reviewing titles and abstracts to determine which articles to exclude. The remaining articles were reviewed fully to determine which to include in the final results. Decisions on which articles to include in the review were based upon the following criteria: (1) focus on an evidence-based, parent-implemented autism intervention; (2) focus on at least one characteristic of being TU: culturally diverse, low-resourced, and/or rural dwelling; and (3) conducted in the United States, due to its unique context. Articles based on autism interventions not originally created as parent-implemented and parent training programs were excluded. The number of articles procured through this process was two. The content expert then combed through related journals and review bibliographies for additional papers to be included in the review using the same criteria. An additional two articles were procured through this combing process for a total of four articles.

Results

A paucity of literature exists regarding barriers/adaptations for using PIMs with traditionally underserved families in relation to culture, low resources, and rurality. A review of the literature resulted in only four studies regarding barriers/adaptations made to evidence-based, parent-mediated autism interventions. Two of the studies involved using autism PIMs with families who have limited resources (Carr & Lord, 2016; Kasari, Lawton, et al., 2014), one analyzed barriers to using evidence-based PIMs for autism with low-resourced families (Pickard et al., 2016), and one sought caregiver input about the cultural appropriateness of parent-mediated interventions (DuBay et al., 2018). No studies were found that specifically focused on using PIMs with rural dwelling families. Table 2 summarizes the areas addressed/barriers and facilitators described in these four studies and illustrates the wide variation in factors analyzed within the different studies, which leads to inconsistent results and a clear need for replicable analysis.

Low-Resourced-Focused Studies

Carr and Lord (2016) modified an EB autism intervention, the Early Social Interaction (ESI) Project (Wetherby et al., 2014), in an attempt to remove barriers for families with low education and low income levels (Carr & Lord, 2016). Since little research exists on modifications to autism interventions, Carr and Lord (2016) based their adaptations on those previously made to family and child interventions for other types of disorders (e.g., psychotherapeutic). ESI is a parent-mediated autism intervention that targets several areas of social communication within the daily routines of family life and was being implemented during a large-scale non-randomized pilot intervention in which some low-income families were not able to meet the time commitment and travel requirements of the study (Wetherby et al., 2014). To continue to receive the intervention, adaptations were made for these families in the following areas: overcoming barriers to access, decreasing attrition, and promoting change (Carr & Lord, 2016). Access barriers were addressed by holding sessions in families' homes and compensating families for travel expenses to required assessments (Carr & Lord, 2016). Attrition was addressed by: decreasing duration of treatment from 18 to six months; having a liberal cancellation policy which allowed families to complete all 24 sessions, regardless of how long that took; and monetary incentives to compensate for time and travel for assessments (Carr & Lord, 2016). Carr and Lord (2016) noted that focusing on individual family needs and strengths helps to empower families and promote change in them by enhancing the benefits they receive from interventions. To promote such change, families were assisted in identifying and enrolling in community resources for their children with autism (Carr & Lord, 2016). Notably, all family members present during treatment sessions were actively included in the activities (Carr & Lord, 2016). Project attrition, defined as the attrition rate measured from initial assessment through follow-up, was 62%; however, treatment attrition, defined as the attrition rate measured during the 12 weeks of the intervention, was 12.5% (Carr & Lord, 2016). This second figure was lower than the attrition rate of the larger trial's in-home (24%) and group (14%) conditions (Wetherby et al., 2014). While it is not possible to directly credit the adaptations to the program for the low attrition rate level, they did facilitate a higher level of participation from families with low levels of income and education (Carr & Lord, 2016).

Kasari, et al. (2014) used the Joint Attention Symbolic Play Engagement and Regulation (JASPER) intervention for autism (Kasari et al., 2010) to compare 2 groups, one Caregiver-Mediated Module (CMM) and one Caregiver Education Module (CEM). A large percentage (66%) of participants were non-white and low-resourced, defined as either being low income as defined by the US Department of Housing and Urban Development or by having one of the following characteristics: the child's mother held a high school diploma or lower, the primary caregiver was unemployed, or the family received government assistance, such as Medicaid (Kasari, Lawton, et al., 2014). The JASPER intervention focused on core social deficits (joint engagement, initiating joint attention, and symbolic play) of autism (Kasari, Lawton, et al., 2014). While both groups showed improvement, the CMM group demonstrated significantly greater improvements in joint engagement (moderate treatment effect) and in joint attention and symbolic play (small treatment effect) than the CEM group (Kasari, Lawton, et al., 2014). Researchers considered several design options to ensure low-resourced families could access the intervention, including: implementing treatment sessions in participants' homes and neighborhoods, working within families' schedules, using the caregivers' preferred language, and designing the intervention to be used across daily routines the families felt were important (Kasari, Lawton, et al., 2014). While these efforts were made to facilitate participation of low-resourced families, the study did not specifically measure the impact of these efforts as part of their analysis (Kasari, Lawton, et al., 2014).

Pickard et al. (2016) used focus groups to seek parent and provider perspectives on barriers to using an EB parent-mediated intervention (PMI) for autism with low-resourced families, defined as families receiving services within a Medicaid system. At the beginning of parent and provider focus groups, which were held separately, participants viewed a 15-minute video presentation about Project ImPACT (Ingersoll & Wainer, 2013), the EB PMI of focus (Pickard et al., 2016). Five themes emerged regarding needed adaptations for implementation of Project ImPACT with low-resourced families: decreased complexity of written materials, more flexible program delivery, a strong parent-therapist alliance, involvement of extended family, and use of the families' preexisting routines to practice the intervention (Pickard et al., 2016).

Culture-Focused Study

DuBay et al. (2018) used surveys and focus groups in their attempt to determine Latino caregivers' perspectives about the cultural appropriateness of parent-mediated interventions, which is important since all interventions innately contain cultural values and expectations within their goals and strategies. Quantitative analysis included survey data comparing Latino (*n* = 28) and non-Latino white (*n* = 27) parents' satisfaction with early intervention (DuBay et al., 2018). Qualitative data included Latino caregivers' (*n* = 20) perceptions obtained during one of four focus groups, comprised of four to six participants, about experiences in their own families regarding intervention models, strategies, and targets rather than specific interventions (DuBay et al., 2018). During focus groups, perspectives on the interventions the families were receiving were elicited (DuBay et al., 2018). In addition, facilitators described and showed video examples of the following intervention strategies from which to obtain family perspectives: prompting, modeling, naturalistic interventions, and discrete trial training (DuBay et al., 2018). Finally, caregivers answered questions about basic delivery models, such as parent- versus clinician-mediated sessions and group versus individual session (DuBay et al., 2018).

Analysis revealed three themes, each with three to four sub-themes (DuBay et al., 2018). The first theme regarding the impact of autism within the Latino family included the following subthemes: autism holds a stigma within the Latino culture; autism makes or breaks the family because families either wanted more of their extended family involved in therapy or felt that close-knit extended family made autism a more difficult issue due to its stigma; participants were interested in group therapy where they could learn from and support each other; and therapy priorities needed to be influenced by cultural values (DuBay et al., 2018). The second theme of mix and match therapy strategies included the following three subthemes: messages about a variety of mixed and matched therapy strategies overwhelmed caregivers; whether strategies were viewed as worth the effort to implement them was based on caregivers' perceptions of their effectiveness; and caregivers were open to a variety of strategies, especially those that incorporated physical connection with their child (DuBay et al., 2018). The final theme, unmet needs from service providers, included the following three subthemes: caregivers wanted more involvement and support from their therapists about how to work with their child in their home; parents wanted open communication, which was sometimes impeded by a language barrier; and caregivers were dissatisfied when a lack of professionalism was exhibited by providers (DuBay et al., 2018).

Discussion

Including low-resourced, culturally diverse, and rural dwelling families in research about autism interventions is necessary so that we can best meet the needs of these families. We must continue to explore the barriers these families encounter when using autism PIMs so that we may then determine how to best facilitate and/or adapt those interventions/services. To date, a paucity of such literature exists, specifically regarding barriers, facilitators, and/or adaptations of parent-implemented early autism interventions when used with these traditionally underserved populations. In fact, no research could be found specifically addressing the needs of rural dwelling populations.

As can be seen in Table 2 and as described in the studies above, while some of the areas addressed/barriers and facilitators/adaptations from different studies can be grouped together in broader categories, a wide variety of specific areas/barriers and facilitators emerge when working with traditionally underserved families, depending on the focus of the particular study. For instance, four of the six areas addressed were noted in only one study; the remaining two areas were noted in three of the four studies. Of the 22 facilitators/adaptations, 18 were noted in only one study and four were noted in two of the studies. These varied results indicate a clear need for consistency and repeated analysis across studies.

Of the four articles reviewed, two of the low-resourced studies (Carr & Lord, 2016;

Kasari, Lawton, et al., 2014) modified their interventions so that they addressed barriers encountered by low-resourced families in an effort to increase the accessibility and success of the models. Much can be gleaned about the success of these efforts by comparing them to intervention attempts that did not make such adaptations and by analyzing attrition and attendance rates. However, a limitation of these studies is that the modifications themselves were not analyzed to determine the impact of their success in facilitating the interventions (Carr & Lord, 2016; Kasari, Lawton, et al., 2014).

The remaining low-resourced-focused study (Pickard et al., 2016) and the culture-focused study (DuBay et al., 2018) both used focus groups to obtain provider and/or caregiver perspectives on autism PIMs. While DuBay et al. (2018) included surveys in addition to focus groups in their mixed methods analysis of Latino caregivers' perspectives, Pickard et al. (2016) obtained perspectives solely via focus groups from both parents and providers. Such exploration is necessary if we are to learn from those directly involved in the use of autism PIMs, parents and providers, about the barriers encountered in the delivery of these services and the adaptations needed to facilitate them.

While both Pickard et al. (2016) and DuBay et al. (2018) obtained qualitative data via focus groups, one factor leading to the varied results of the studies is likely due to the questions used to guide the focus groups. DuBay et al. (2018) provide their focus group guide in their supplemental materials; however, they do not attribute their questions to a particular theory or model. Pickard et al. (2016) based their focus groups on attributes of Rogers' Diffusion of Innovations theory, due to its use in determining the uptake and use of health interventions (Nilsen, 2015; Rogers, 2003). A benefit to creating focus group guides from an existing theory/model is that it provides a means of replicable analysis for future studies.

This study has several limitations. First, the search included articles published through March 22, 2022. Additional studies have been published since that date that may have been useful in this literature review. Second, this review was limited to studies that occurred within the United States. While this was determined essential due to the unique context of American culture and environment which impact the definition of traditionally underserved populations, much may be learned from studies analyzing barriers to and/or facilitators of implementing autism PIMs based in other countries. Third, this review was conducted primarily by one researcher; this may have resulted in relevant articles being unintentionally omitted from the review.

Conclusion

A paucity of literature exists analyzing barriers to and/or facilitators for implementation of autism PIMs with traditionally underserved (low-resourced, culturally diverse, and/or rural dwelling) populations. This review has determined the need for increased analysis of factors that can be modified or adapted for maximum impact. Obtaining caregiver and provider perspectives using existing theoretical models will increase the likelihood that the research is able to be replicated in future studies. Due to the high prevalence of autism (currently 1 in 36 children (Maenner et al., 2023)), it is important that we continue to further research this area to improve service delivery for all families, including those who are traditionally underserved, with the aim of ultimately decreasing health inequities for children with autism and their families.

CHAPTER 3

RESULTS MANUSCRIPT: PROVIDER PERSPECTIVES ON USING A PARENT-IMPLEMENTED AUTISM INTERVENTION WITH TRADITIONALLY UNDERSERVED FAMILIES

Autism currently affects 1 in 36 children, males being diagnosed four times more often than females (Maenner et al., 2023). The case for early intervention is supported by the Committee on Educational Interventions for Children with Autism, formed in 2001 to examine research evidence supporting early education programs for children through age eight who were diagnosed as being on the autism spectrum. Based on scientific evidence, the Committee made recommendations for interventions used with preschool children on the autism spectrum. These interventions should begin early, be intensive in hours, and actively involve the family (Lord & McGee, 2001).

Parent-Implemented Models

Parent-implemented models (PIMs) of autism interventions can be described as interventions in which professionals involve parents in implementing strategies to address outcomes with their child on the autism spectrum (Oono et al., 2013). In addition to PIMs, additional terms for this type of intervention exist in the literature, including the following: parent-mediated models (Carr & Lord, 2016); caregiver-mediated interventions (Kasari, Lawton, et al., 2014); parent-mediated interventions (DuBay et al., 2018; Pickard et al., 2016); and parent-implemented interventions (Steinbrenner et al., 2020). A great benefit of these types of interventions is that they are mediated mostly by parents rather than professionals and, therefore, generally cost less and are easier to implement due to decreased demand of the professional (Solomon et al., 2014).

Parent-Implemented Intervention (PII) qualified as an evidence-based (EB) practice in the National Clearinghouse on Autism Evidence and Practice Review Team's third iteration of a systematic review that has examined autism intervention literature (Odom et al., 2010; Steinbrenner et al., 2020; Wong et al., 2015). Steinbrenner et al. defined PII as, "Parent delivery of an intervention to their child that promotes their social communication or other skills or decreases their challenging behavior" (Steinbrenner et al., 2020, p. 29). The PLAY (Play and Language for Autistic Youngsters) Project (Solomon et al., 2014) is one PII listed as an evidence-based practice in this review (Steinbrenner et al., 2020).

While parent-mediated interventions generally cost less and decrease the time demands on professionals, a significant barrier to using PIMs as autism interventions is created by their lack of reimbursement by insurance policies (*Health Insurance Coverage for Autism | Autism Speaks*, n.d.; Mandell et al., 2016). In addition, a paucity of literature exists regarding adaptations for using PIMs with traditionally underserved families who are culturally diverse (DuBay et al., 2018), low-resourced (Carr & Lord, 2016; Kasari, Lawton, et al., 2014; Pickard et al., 2016), and rural dwelling. This is unfortunate since an advantage of PIMs is their lower expense as compared to interventions that are much more dependent on providers, an important consideration for traditionally underserved (rural-dwelling, culturally diverse, and/or low-resourced) families.

PLAY Project

The PLAY Project is a parent-mediated, developmental autism intervention focused on social reciprocity (Solomon et al., 2014). During a randomized controlled trial (RCT) of the PLAY Project, parents made significant gains in their abilities to engage their children and sensitively respond to them (Solomon et al., 2014). PLAY children showed increased levels of shared attention, initiation, and social-emotional skills, and improved autism characteristics (Solomon et al., 2014). However, language skills did not increase more for the PLAY group than the control group (Solomon et al., 2014). The conclusion of the RCT was that PLAY was associated with increased interaction skills, increased functional development, and improved autism characteristics of children on the autism spectrum (Solomon et al., 2014).

One limitation noted by Solomon et al. (2014) was that generalizability was limited due to parents in the study having higher than average education and socio-economic status (SES) levels. In addition, research and evaluation efforts regarding PLAY to date have largely been with urban dwelling and non-diverse populations. The treatment group of the PLAY RCT consisted of 30% children of color with the majority of children (91%) being from 2-parent households with 53.1% of the parents in the study having bachelors or higher degrees (Solomon et al., 2014). These demographics indicate a gap in knowledge and a clear need for determining whether PLAY is effective with traditionally underserved populations, including children from culturally diverse, low-resourced, and rural dwelling families.

Current Study

The purpose of this mixed-methods study was to obtain provider perspectives on using the PLAY Project autism intervention (Solomon et al., 2014), a parent-implemented model (PIM), with traditionally underserved (TU) families, as defined below. A goal of the project was to identify potential strategies that could help PLAY Project Consultants (PPCs) deliver PLAY in a way that may be more effective for culturally diverse, low-resourced, and/or rural families. The following research questions were investigated:

1) How effective do PPCs consider the PLAY Project to be when used with TU as compared to well-resourced (WR) families?

2) According to PPCs, what adaptations could be made when using the PLAY Project to facilitate its implementation and increase its effectiveness for TU families while maintaining its fidelity?

Methods

This study was guided by Straiton et al.'s (2021) mixed-methods analysis of Applied Behavioral Analysis (ABA) provider perspectives on barriers and facilitators to using a parent training with families enrolled in Medicaid. Theory of Change (*Building Adult Capabilities to Improve Child Outcomes*, n.d.) was used as a lens through which survey development, semi-structured interview development, and thematic analysis occurred. The eight dimensions of EVM (language, persons, metaphors, content, concept, goals, methods, and context) (Bernal et al., 1995) guided survey and interview development. The sequential mixed-methods approach for this study began with quantitative survey questions, which informed qualitative semi-structured interviews through which survey findings were elaborated (Rudestam & Newton, 2015). Assessing a large number of PPCs through a quantitative survey and then conducting semi-structured qualitative interviews with a subset of that sample resulted in a deeper understanding of survey results (Rudestam & Newton, 2015). These quantitative and qualitative results are integrated in a narrative in the "Results" section. This study received approval from the Institutional Review Board at the Northern Arizona University's Office of Sponsored Projects.

For the purposes of this study, criteria for meeting the definition of "traditionally underserved" included families who met one or more criteria for being low-resourced, culturally diverse, and/or rural dwelling. Low-resourced families met at least one of the following criteria, similar to criteria used by Kasari et al. (2014): the primary caregiver's education level is a high school diploma or lower; the primary caregiver is unemployed; and/or the family receives government assistance (i.e., Medicaid). Culturally diverse families were defined as those who self-identify as a race, ethnicity, or nationality (REN) other than white and/or speak a language other than English in the home. Rural-dwelling families were those who live in zip codes identified as rural by the Federal Office of Rural Health Policy (FORHP) Data Files (*Federal Office of Rural Health Policy (FORHP) Data Files | Official web site of the U.S. Health Resources & Services Administration*, n.d.).

Surveys

Participants

Fully certified PLAY Project Consultants (PPCs) were recruited with the full support of the PLAY Project organization. To qualify for training as a PPC, one must be a master's level pediatric professional and child development expert, which may include professionals from a wide range of backgrounds (e.g., speech-language pathologists, early interventionists, social workers, physicians) (*Autism Training - Consultant Qualifications | The PLAY Project*, n.d.). Once a qualifying professional applies and meets eligibility requirements, they must pay fees to attend a two-day intensive workshop and take the six-week online course, after which they may begin using the method with families (*Autism Training - Consultant Qualifications | The PLAY Project*, n.d.). Following the online course, consultants in training must participate in 12-18 months of supervision, during which they must submit cases to a multidisciplinary team of PLAY Project Supervisors who provide individualized feedback and guidance, ensuring fidelity of the model (*Autism Training - Consultant Qualifications | The PLAY Project*, n.d.). After all of these steps have been completed, the professional becomes a fully certified PLAY Project Consultant (*Autism Training - Consultant Qualifications | The PLAY Project*, n.d.).

The recruitment e-mail sent to PPCs (see Appendix A) included a statement of support from Dr. Richard Solomon, Founder of the PLAY Project/the PLAY Project organization, and each survey began with an Online Survey Consent (see Appendix B) that indicated that by submitting the survey, participants agreed that the information may be used in the described research project. All PPCs who completed the survey were offered a $10 gift card incentive.

Survey Development

A pilot survey was created using Qualtrics (*Qualtrics*, Provo, UT) with question development guided by the Ecological Validity Model (EVM) (Bernal et al., 1995; Buzhardt et al., 2016; Domenech Rodríguez et al., 2011) and Theory of Change (*Building Adult Capabilities to Improve Child Outcomes*, n.d.) (see Appendix C). To evaluate the quality of the survey to achieve the stated research objective, two PLAY Project supervisors were enlisted to help with survey question formation. Each of the supervisors who provided feedback on the format, content, clarity, and terminology used in the survey questions was given an incentive of two $50 gift cards, one for their feedback and refinement of the survey and one for their feedback on the follow-up semi-structured interview question guide. After considering the feedback from the supervisors, the lead researcher updated and finalized two surveys: Survey A, based on PPCs' experiences implementing PLAY with TU families; and Survey B, based on PPCs' experiences implementing PLAY with WR families.

Inclusion/Exclusion Criteria

Based upon their answers to a series of questions, PPCs were directed to complete either Survey A (TU) or B (WR), as illustrated in the Flow Chart in Figure 2. PPCs who reported that they had used the PLAY Project with at least five children considered traditionally underserved for at least six months each were directed to complete Survey A, which consisted of questions stated as relating to working with families who meet this study's criteria for being culturally diverse, low-resourced, and/or rural dwelling (TU). If PPCs reported that they had used the PLAY Project with less than five children considered traditionally underserved, whom for the purposes of this study will be labeled as “well-resourced (WR) families,” they completed Survey B.

Survey Questions

Each survey began with a definition of either TU (Survey A) or WR (Survey B) families to reiterate the perspective from which PPCs were to answer the questions. Both surveys contained statements which PPCs rated as to how often they felt the statement was true using a 5-point Likert-type scale (*never* (1) and *always* (5)). Surveys began with two broad questions about whether PLAY facilitates or creates barriers to working with families, followed by a series of questions related to the eight key dimensions of the EVM (language, persons, metaphors, content, concept, goals, methods, and context) (Bernal et al., 1995; Domenech Rodríguez et al., 2011) and whether those dimensions facilitate or create barriers to implementing PLAY (Appendix C). The next set of ratings, based upon previous questions and the researcher’s personal experience, regarded family/caregiver characteristics that could possibly impact families, including the following: family’s home, location of the family’s home, family’s socio-economic status, family’s technological capabilities, and caregivers’ education level. Additional survey questions, related to Theory of Change, included aspects such as family stress levels and family/community support levels (Appendix C). The survey ended with a place for participants’ comments.

Semi-Structured Interviews

Participants

PPCs who completed Survey A (the TU survey) were asked to indicate their interest in completing a follow-up semi-structured interview to qualitatively explore facilitators and barriers to using PLAY and any adaptations they make when using PLAY with underserved families. Interview participants were offered a $20 gift card incentive and were sent a copy of the informed consent document. The informed consent document was reviewed with participants prior to the interviews at which time their verbal consent was documented and recorded on Zoom.

Interview Guide Development

The interview guide (see Appendix D) was designed based on the survey and began with a few broad, open-ended questions about the participant's background and their use of PLAY. This was followed by questions guided by the eight key dimensions of the EVM (Bernal et al., 1995), contributing to the interviews' comprehensiveness and replicability. The interview question guide also incorporated Theory of Change (*Building Adult Capabilities to Improve Child Outcomes*, n.d.) by addressing such aspects as what types of stressors TU populations experience and how these stressors impact caregivers' ability to implement PLAY. At the end of the interviews, participants were thanked for their time then asked a few broad follow-up questions (e.g., We have talked a lot about using PLAY with traditionally underserved families – what have I missed?).

Semi-structured interviews were conducted with audio and video recordings via Zoom with PPCs serving TU families to further investigate any adaptations they make to the PLAY intervention and their perceptions of the usability, acceptability, and feasibility of the intervention. Interviews followed an iterative process, allowing the researcher to naturally follow any other topics or themes that emerged (Bernard, 2011). The aim of the interviews was to obtain results that provided richer, more detailed, contextual descriptions than survey data alone would provide (Bernard, 2011; Levitt et al., 2018). This qualitative process also required the researcher's own reflexivity (Levitt et al., 2018), including self-examination of the researcher's influence on the research process, especially regarding acknowledgement and awareness of the biases and influences of being a PLAY Project Consultant in-training.

Quantitative Analysis

Surveys were distributed to all 400 PLAY Project Consultants (PPCs)/organizations in the United States; 71 PPCs responded by completing at least some portion of the surveys by answering questions related to implementing PLAY with TU (n = 31) or WR families (n = 40), based on their experience. Descriptive statistics for participants in both TU and WR surveys may be found in Table 3. A set of two-tailed independent groups t-tests were run using IBM SPSS Statistics (Version 29) to determine the effect of a variety of factors on PLAY implementation with TU as compared with WR families, as perceived by PPCs, results of which can be found in Table 4. In most cases, each topic was determined to be either easier or more difficult with each population. Because the sizes of the groups were different and because homogeneity of variance was consistently violated, Hedges' g correction was applied uniformly. Alpha was set at .05.

Qualitative Analysis

Of the 31 survey participants who completed the TU survey, 13 volunteered to be interviewed. Two of these volunteers were unavailable for scheduling, resulting in 11 interview participants. Descriptive statistics for interview participants may be found in Table 5. Of note is the increased mean years of experience of interview participants (mean years = 8.45) versus survey participants (TU mean years = 6.97; WR mean years = 5.08). Interviews were conducted via Zoom and recorded to the cloud for both audio and video. This enabled initial transcription to be provided by Zoom, which was then checked for accuracy and corrected by the researcher.

Once all 11 interviews were complete, the group of transcriptions was inductively analyzed for themes by the researcher regarding barriers noted by PPCs and adaptations PPCs make when working with diverse families. Clarke et al.'s (2015) six phases of thematic analysis (i.e., familiarization with data, coding, searching for themes, reviewing themes, defining and naming themes, and writing the report) were followed, as they were by Straiton et al. (2021). A psychology graduate student interested in qualitative coding performed separate analysis to corroborate the researcher's coding. Once the additional coder's analysis was complete, any coding disagreements were discussed and resolved (Bernard, 2011; Richards & Morse, 2013). In addition, a member checking process was completed to increase trustworthiness and validity of results (Candela, 2019; Creswell, 2005; Lincoln & Guba, 1985). Member checking involved sharing the results in writing with two interview participants who were asked to check them for accuracy and fairness of results, themes, and interpretations. Both of these PPCs indicated via email that the results were consistent with their own experiences and those they have heard from other PPCs. Saturation was met as no new themes emerged in the final interview. The barriers and facilitators that emerged through thematic analysis were then used to develop potential strategies that may be useful when delivering the PLAY Project in a way that may be more effective for TU populations.

Results

For the purposes of this study, aspects that support families in receiving PLAY Project services will be called facilitators. Techniques that PPCs use to implement the PLAY Project will be termed strategies. Survey and interview findings of barriers and related facilitators/strategies can be found in Table 6.

Feel Successful/Encounter Barriers/Adapt PLAY

Surveys began with a few general questions about whether PPCs felt successful, encounter barriers, or make adaptations while implementing the PLAY Project. There is evidence that PPCs who implement PLAY with WR families feel more successful than PPCs who implement PLAY with TU families, M_{diff} = -0.52, 95% CI [-0.93, -0.10], $t(65.54) = -2.50$, $p = 0.015$, $d' = 0.59$, a medium effect size. There is no evidence that PPCs encounter more barriers with either TU or WR families, $d' = 0.34$, this effect size being small. Evidence exists that PPCs use more adaptations when implementing PLAY with TU than with WR families, M_{diff} = 0.57, 95% CI [0.23, 1.11], $t(67.66) = 2.08$, $p = 0.041$, $d' = 0.49$, a medium effect size.

SES Impact on PLAY Implementation

When analyzing the impact of a family's socio-economic status (SES) on PLAY implementation, there is evidence that PPCs perceive that SES makes it easier to implement PLAY with WR in comparison to TU families, M_{diff} = -1.16, 95% CI [-1.53, -0.79], $t(50.83) = -6.33$, $p < 0.001$, $d' = 1.54$, a substantial effect size, and makes it more difficult to implement PLAY with TU in comparison to WR families, M_{diff} = 0.51, 95% CI [0.11, 0.91], $t(42.29) = 2.56$, $p = 0.014$, $d' = 0.66$, a medium effect size. PPCs who were interviewed also perceived that TU families encountered barriers due to difficulty financing PLAY services.

Facilitators Related to Financial Barriers to PLAY Services

Interview participants discussed facilitators used in response to financial barriers to receiving PLAY. Ways to help TU families finance PLAY services included the following: grants, scholarships, flexible payments, sliding payment scales, and offering modified/condensed PLAY programs for a decreased cost.

Technological Access/Knowledge/Capabilities Impact on PLAY Implementation

Technology may be used in the PLAY Project in the following ways: to video record portions of sessions; to send/receive videos; to send/receive written reports; and to conduct tele-PLAY (virtual) sessions. There is evidence that a family's access to technology and/or their technological knowledge and capabilities are perceived by PPCs to make it easier to implement PLAY with WR in comparison to TU families, M_{diff} = -1.94, 95% CI [-2.42, -1.47], $t(59.25) = -8.21$, $p < 0.001$, $d' = 2.02$, and make it more difficult to implement PLAY with TU in comparison to WR families, M_{diff} = 1.19, 95% CI [0.76, 1.62], $t(46.96) = 5.55$, $p < 0.001$, $d' = 1.41$, both effect sizes being substantial. During interviews, PPCs reported that they perceived technology to create a barrier to PLAY implementation with TU families due to lack of the device(s), internet access, and/or data. PPCs also noted barriers created by children being distracted by the device being used and a perception that some TU caregivers lack the knowledge of how to use the technology.

Facilitators Related to Technological Access/Capabilities

In response to barriers created in TU populations due to lack of technology (e.g., internet, data, devices) and/or perceived lack of technological knowledge/capabilities, interview participants described using facilitators such as printing and/or mailing Video Review Forms (VRFs) and/or reviewing VRFs and PLAY Plans in person with TU families. VRFs and PLAY Plans are the written reports used in the PLAY Project and include reviews of videos taken during PLAY sessions, suggested techniques, activities and methods, and notes about the child's comfort zones, sensory motor profile, and functional developmental levels (FDLs). No specific techniques were noted in response to barriers created by the distraction created by technology.

Schedule/Availability Barriers and Facilitators

During semi-structured interviews, a barrier emerged related to TU families' schedules and availability, an aspect that was not specifically addressed during surveys. The primary adaptation used by PPCs to address this barrier was to be flexible with their schedule through the following: meeting when parents are not working or rescheduling when families are unavailable due to holidays specific to their culture; meeting when siblings are sleeping or another family member can watch them; rescheduling so that parents do not miss out on visits that must be cancelled; meeting via Tele-PLAY (virtual PLAY session); adjusting session length to fit the family's availability (e.g., meeting for 1 hour at a time instead of for 3 hours); and if in-person visits are scheduled at times not ideal for the child, having caregivers (CGs) send videos from other days/times. Some PPCs reported that they may schedule PLAY sessions in the evening or on weekends to make these accommodations. PPCs also reported facilitating PLAY services by staying connected/in communication with families in between sessions and sending reminders/confirmations.

Home Location and Characteristics

When it comes to analyzing the impact of geographic location of a family's home on PLAY implementation, there is evidence that PPCs perceive that it is easier to implement PLAY with WR families who live in urban or suburban areas as compared to TU families who live in rural areas, $M_{diff} = -1.47$, 95% CI [-1.98, -0.95], $t(49.62) = -5.74$, $p < 0.001$, $d' = 1.39$, a substantial effect size, and that it is more difficult to implement PLAY with TU families who live in rural areas as compared to WR families who live in urban or suburban areas, $M_{diff} = 0.60$, 95% CI [0.11, 1.09], $t(38.97) = 2.47$, $p = 0.018$, $d' = 0.64$, a medium effect size. These data were confirmed with interviewees, who perceived home distance/location to be a barrier to implementing PLAY with TU populations.

Characteristics of a family's home (e.g., size, number of people present, furniture) were perceived by PPCs to make it easier to implement PLAY with WR in comparison to TU families,

M_{diff} = -1.30, 95% CI [-1.77, -0.83], $t(56.28) = -5.52$, $p < 0.001$, d’ = 1.35, a substantial effect size, and make it more difficult to implement PLAY with TU in comparison to WR families, M_{diff} = 0.42, 95% CI [0.03, 0.82], $t(43.86) = 2.15$, $p = 0.037$, d’ = 0.55, a medium effect size. Barriers relating to TU families’ homes noted by PPCs during interviews include the following: small home size; the condition of the homes (i.e., qualities of the home, such as disorganization or uncleanliness, fear of judgment about their home); a lack of toys/materials; televisions being on; a lack of a functional outdoor space; and a high/distracting number of people.

Facilitators/Strategies Related to Home Location/Distance and Characteristics

To implement PLAY services with TU families for whom home distance/location is a barrier, PPCs use the following adaptations: location flexibility, such as meeting at a park or library; schedule flexibility, which may include traveling far distances to TU families’ homes in the evenings or on weekends; grouping distant families by location when possible; and using Tele-PLAY. In response to barriers created by TU families having a small home, PPCs use the following strategies: implementing PLAY outside; adapting PLAY activities to be appropriate for the available space; focusing on sensory activities; and implementing PLAY into families’ daily routines. A strategy used by PPCs in response to barriers created by the condition of TU families’ homes was to suggest modifications to the home environment.

In response to a lack of toys/materials in TU families’ homes, PPCs noted using the following strategies: connecting the family with resources through which they can obtain toys; bringing toys/materials that they leave with the family; and, most commonly, using what the family already has in their home. When televisions or other screens are on in homes, PPCs either ask families to turn it off or attempt to incorporate it into the session (e.g., pointing out examples of PLAY concepts in the video). No strategies were noted by PPCs in direct relation to barriers created by lack of a functional outdoor space or the number of people in TU families' homes.

Race/Ethnicity/Nationality and Primary Language Impacts on PLAY Implementation

When it comes to the importance of race/ethnicity/nationality (REN), there is evidence that it is PPCs' perception that it is easier to implement PLAY with families lacking in diversity in comparison to those who have diversity in REN, $M_{diff} = -0.65$, 95% CI [-1.15, -0.14], $t(62.81) = -2.57$, $p = 0.013$, $d' = 0.58$, and that it is more difficult to implement PLAY with families who have diversity in REN in comparison to families who lack diversity, $M_{diff} = 0.51$, 95% CI [0.15, 0.87], $t(54.20) = 2.86$, $p = 0.006$, $d' = 0.71$. These differences have medium effect sizes. However, during semi-structured interviews, PPCs described differences between PPCs' REN and TU families' REN as not being a barrier to PLAY implementation.

There is evidence that primary language is perceived by PPCs to make it easier to implement PLAY with WR in comparison to TU families, $M_{diff} = -1.68$, 95% CI [-2.29, -1.07], $t(47.94) = -5.53$, $p < 0.001$, $d' = 1.41$, and make it more difficult to implement PLAY with TU in comparison to WR families, $M_{diff} = 1.99$, 95% CI [1.51, 2.48], $t(30.88) = 8.36$, $p < 0.001$, $d' = 2.28$, both being substantial effect sizes. Similar findings occurred in semi-structured interviews, during which a barrier was noted to occur when a family's primary language is not English.

Strategies Related to Primary Language

Numerous strategies were suggested when implementing PLAY with families whose primary language is not English, the most common being use of a translator/interpreter, whether that be a professional or a family member. Other strategies included use of bilingual PPCs, materials that have been translated into the family's primary language, translation technology (e.g., Google Translate), and increased nonverbal communication, including gestures, facial expressions, and body language.

Culture Impact on PLAY Implementation

Evidence exists that PPCs perceive cultural identity to make it easier to implement PLAY with WR in comparison to TU families, $M_{diff} = -0.57$, 95% CI [-1.10, -0.04], $t(65.92) = -2.13$, $p = 0.037$, $d' = 0.50$, a medium effect size. There is no effect of cultural identity on difficulty of implementing PLAY with TU as compared to WR families, $d' = 0.44$, this effect size being small. Furthermore, during semi-structured interviews, PPCs stated that cultural diversity does not create a barrier to PLAY implementation with TU populations.

There is not statistically significant evidence that PPCs adapt more based on a family's culture when implementing PLAY with TU in comparison to WR families, $d' = 0.20$, a small effect size. In addition, PPC interviewees overwhelmingly stated that cultural diversity in TU populations does not create a barrier to PLAY implementation.

Strategies Related to Cultural Diversity

Interview participants described several strategies they use when implementing PLAY with culturally diverse families, including: discussing aspects of TU families' culture with them to better understand/accommodate the family's culture; using culturally appropriate activities; researching or trying to learn more about the family's culture; incorporating the family's culture and/or language into PLAY; and turning to a mentor who they feel knows more about the culture than they do.

Impact of Structure of PLAY

There is evidence that PPCs perceive that the structural aspects of PLAY (e.g., time commitment, activities, techniques, methods) coincide with the cultures of WR families, making it easier to implement PLAY with WR in comparison to TU families, $M_{diff} = -0.59$, 95% CI [-1.07, -0.12], $t(61.67) = -2.52$, $p = 0.014$, $d' = 0.62$, a medium effect size, and conflict with the cultures of TU families, making it more difficult to implement PLAY with TU in comparison to WR families, $M_{diff} = 0.51$, 95% CI [0.18, 0.84], $t(42.01) = 3.09$, $p = 0.004$, $d' = 0.80$, a large effect size.

During interviews, PPCs' greatest perceived barrier regarding the structure of PLAY was TU families' ability to put in the time that it takes to implement PLAY. PPCs also perceived that the PLAY model creates barriers to implementation with TU families due to the VRFs and PLAY Plans being overwhelming in addition to the other stressors present in their lives. Video recording with TU families was also perceived to create barriers to implementation due to caregivers feeling self-conscious of themselves and/or their homes being recorded.

Strategies Related to Structure of PLAY

To address barriers related to TU families putting in the time necessary for PLAY implementation, PPCs stated that they help the family focus more on implementing PLAY through the family's daily routines and less through playtime with their child. Other adaptations include the following: discussing potential issues, barriers, and expectations with families and troubleshooting them prior to initiating PLAY services; emphasizing to families that playing with their child can occur in short time frames (e.g., five minutes at a time); and helping families schedule times they will focus on PLAY throughout their week. In response to barriers created by the PLAY model itself, PPCs reported that they adapt the PLAY model in the following ways: condensing the program to decrease its overall length and completing videos, VRFs, and PLAY Plans less frequently. In response to barriers related to videorecording, PPCs use the strategies of discussing the purpose/rationale of the videos and using humor to lighten the mood and decrease feelings of self-consciousness.

Comprehension of PLAY Vocabulary/Concepts

When it comes to families’ comprehension of the vocabulary and concepts used in PLAY, there is evidence that PPCs perceive vocabulary and concepts to be more easily understood by English-speaking WR families in comparison to TU families, $M_{diff} = -2.16$, 95% CI [-2.50, -1.81], $t(54.77) = -12.47$, $p < 0.001$, $d' = 3.08$, and less easily understood by TU families in comparison to English-speaking WR families, $M_{diff} = 0.68$, 95% CI [0.30, 1.06], $t(48.01) = 3.57$, $p = 0.001$, $d' = 0.90$. These differences have substantial effect sizes. These findings were supported by interviews, during which participants stated their perceptions that vocabulary and/or concepts can create barriers at times when implementing PLAY with TU populations.

Strategies Related to PLAY Vocabulary/Concepts

The most common adaptation PPCs stated they use in response to their perception that the vocabulary/concepts in PLAY create barriers to implementation with TU families is modifying the language/vocabulary they use. PPCs also reported using a variety of other teaching strategies that will be reported in the Teaching Strategies section below.

Impact of PLAY Goals

Evidence exists that PPCs perceive PLAY goals to coincide with the goals of WR families, making them easier to implement with WR in comparison to TU families, $M_{diff} = -1.31$, 95% CI [-1.77, -0.85], $t(60.18) = -5.69$, $p < 0.001$, $d' = 1.41$, a substantial effect size. There is no effect of PLAY goals conflicting with the goals of TU families, making them more difficult to implement with TU families in comparison to WR families, $d' = 0.28$, this effect size being small. Interviewees reported perceived differences in goals/expectations between PPC and families create barriers when implementing PLAY with TU populations.

Strategies Related to PLAY Goals

When PPCs perceive that the goals of PLAY conflict with TU families' goals/expectations, the two most common strategies reported are to prioritize family goals (e.g., when the family has goals not related to PLAY, such as potty training) and to focus on the Functional Developmental Levels (FDLs) to help clarify the developmental process (e.g., when family goals are beyond what the child is ready for developmentally). They also described attempting to keep goals realistic/tangible and strengths-based. PPCs use a variety of other teaching strategies when implementing PLAY goals, as reported in the Teaching Strategies section below.

Education/Learning Ability Impact on PLAY Implementation

PPCs perceive that it is easier to implement PLAY with families who have high education levels as compared to TU families with low education levels, $M_{diff} = -1.40$, 95% CI [-1.84, -0.96], $t(56.30) = -6.35$, $p < 0.001$, $d' = 1.58$, and that it is more difficult to implement PLAY with TU families with low education levels as compared to families with high education levels, $M_{diff} = 0.65$, 95% CI [0.29, 1.01], $t(50.51) = 3.66$, $p = 0.001$, $d' = 0.93$, both effect sizes being substantial. During interviews, some PPCs described perceived barriers related to CGs being on the autism spectrum or having an intellectual or developmental disability (I/DD), low education level, and/or low literacy level. The following section includes specific teaching strategies that PPCs reported using when implementing PLAY with CGs who have I/DDs, low education levels, and/or low literacy levels, as well as TU families in general.

Teaching Strategies Related to Implementing PLAY

Throughout PPC interviews, across a wide variety of topics, PPCs reported using various strategies having to do with actual implementation of PLAY with TU families. Some of these strategies are components intrinsic to the PLAY Project while others are better described as teaching strategies. PPCs reportedly use these strategies with CGs in TU families generally as well as with those who have lower education/ability levels. A large proportion of PPCs stated that components intrinsic to the PLAY model itself are helpful when implementing PLAY with TU families, including the following: modeling and coaching; PLAY vocabulary and concepts; toys not being necessary; fun with people (rather than toys/items); and being caregiver-implemented. Some PPCs described how the PLAY model itself facilitates implementation with TU populations.

Across interview topics, PPCs reported using a variety of teaching strategies when in PLAY sessions with TU families. PPCs discussed focusing on the results/progress they see in the child, which may include pointing out specific examples during sessions of when they see children and/or parents using a particular skill or technique. They reportedly spend time describing the purpose/rationale of PLAY methods to CGs, giving the CGs concrete examples of how to implement concepts, if needed. Numerous PPCs noted slowing the pace of introducing concepts and/or giving information to CGs in "chunks" or small amounts. Some described efforts to "ease in" with new information and gently leading CGs by asking them questions that helped the CGs identify the purpose for new concepts. They also described intentional repetition of concepts with TU families. Several PPCs described attempting to determine CGs' learning style/ability to introduce concepts in ways that could be most easily understood by CGs (i.e., handouts and/or teaching videos for more visual learners). They also described beginning sessions by assessing "where the caregiver is at" to determine how much information the CG may be capable of taking in that particular session and whether CGs need support with self-regulation first. Finally, PPCs described different means of checking CGs' comprehension of PLAY concepts throughout the PLAY session.

Additional Facilitators/Strategies

The following adaptations were discussed by PPCs throughout semi-structured interviews. They could not be pinpointed to addressing one specific barrier but instead were brought up by PPCs across a variety of topics. PPCs felt that their own experience and their access to a network of other PPCs helped facilitate their implementation of PLAY with TU families. Additional miscellaneous strategies relate to personal qualities/outlooks and efforts PPCs make with TU populations. PPCs bring a variety of personal strengths and outlooks to PLAY in attempts to benefit their implementation with TU families. Numerous PPCs described attempts at implementing PLAY with TU families using fun and joy, humor, and encouragement and positivity. PPCs noted the importance of self-reflection and empathy with TU populations. In addition, PPCs described the importance of being sensitive to, respectful of, and accepting and nonjudgmental of families' differences.

PPCs make the following additional efforts throughout their work implementing PLAY with TU populations, rather than to address a specific barrier. Many PPCs noted that a crucial component to successful PLAY implementation is the rapport/relationship they build with TU families. PPCs described having open discussions about a variety of topics with TU families during which they make deliberate attempts to listen carefully to what TU caregivers are saying. Flexibility was also noted as an important strategy when working with TU populations. Additional efforts include individualizing/tailoring PLAY to each TU family, not making assumptions about TU families, focusing on the child's/family's best interests, and following families' leads. Two other strategies noted were having a team-oriented approach and focusing on similarities to connect with TU caregivers. Many of the above concepts may be encompassed by a phrase used by a large number of PPCs numerous times, which was to, "meet families where they’re at.”

Discussion

The aims of this study of PLAY Project Providers’ perspectives were to determine how effective PPCs consider the PLAY Project when used with TU as compared with WR families and to determine what adaptations PPCs use in response to barriers they perceive when implementing PLAY with TU families while maintaining PLAY fidelity and increasing PLAY effectiveness. Families who are low-resourced, culturally diverse, and/or rural dwelling have not received adequate attention in studies about the effectiveness of parent-implemented autism interventions (Carr & Lord, 2016; DuBay et al., 2018; Kasari, Lawton, et al., 2014; Pickard et al., 2016). This study presents facilitators/strategies that may be helpful when implementing the PLAY Project with TU families, which may then inform providers who implement a variety of autism interventions with TU populations.

Through both surveys and interviews, PPCs reportedly perceived the following factors to make it easier to implement PLAY with WR and more difficult to implement PLAY with TU families and reported facilitators/strategies they use when they encounter these perceived barriers, as can be seen in Table 7: SES, technological access/knowledge/capabilities, home location, home characteristics, primary language, PLAY structure, PLAY vocabulary/concepts, and low education level/IDD. While REN was perceived as making it easier to implement PLAY with WR and more difficult to implement PLAY with TU families during surveys, PPCs did not report REN to create a barrier to PLAY implementation during interviews or suggest strategies to be used when implementing PLAY with families who have a REN different from their own. A possible explanation for this is that PPCs may have felt more comfortable reporting that they perceive REN to create barriers when doing so anonymously through survey questions rather than face-to-face over Zoom with the researcher. Another possibility is that PPCs who volunteered to be interviewed may feel more skilled at working with families with an REN different from their own and, therefore, do not perceive these differences as barriers, while PPCs who do perceive such differences as barriers may have been less likely to volunteer to be interviewed.

Survey participants perceived cultural diversity to make it easier to implement PLAY with WR as compared with TU families but did not perceive cultural diversity to make it more difficult to implement PLAY with TU as compared with WR families. This may be due to PPCs' hesitancy to make such a general statement indicating that cultural diversity creates barriers, as can be noted from PPCs' comments at the end of the survey, such as the following: "Tough to answer with such broad items. It really depends on the family…So tough to answer." In addition, interview participants reported strategies they use when implementing PLAY with culturally diverse families despite not reporting cultural diversity as a barrier. It may be that PPCs who are adept at using strategies when implementing PLAY with culturally diverse families feel skilled and proficient enough at doing so that they do not perceive a barrier in this area.

While survey responses indicated that PPCs perceive that PLAY goals coincide with and are easier to implement with WR as compared with TU families, they did not perceive PLAY goals to conflict with and be more difficult to implement with TU as compared with WR families. One reason for this may be the wording of the question, specifically the use of the word "conflict," which may have been perceived as too severe or unclear. Another reason for this may be related to PPCs' love of the PLAY Project, as stated by numerous interview participants, including the following: "I believe so much in the PLAY Project, I tell people all the time, I see miracles happen every day. And it's lovely, and I'm so happy to be a part of it." This love of

PLAY may contribute to a reluctance to indicate a “conflict” between PLAY and TU populations. As stated in the Results, while some PLAY components were perceived by interview participants to create barriers when working with families who are TU, much more frequently and widely spread across many perceived barriers, PPCs noted components of PLAY as strategies that facilitate PLAY implementation with TU families.

Implications

This study’s findings make a significant contribution to the limited research that has been conducted on using parent-implemented autism interventions with traditionally underserved families. While it is true that low-resourced, culturally diverse, and rural dwelling families all experience unique challenges and barriers, many of these experiences overlap. The methodology used for this study may inform future research with the aim of gathering knowledge from providers regarding adaptations for a variety of interventions. The study could also inform future research in the following areas: TU families’ perspectives on the use of strategies/adaptations for the PLAY Project and provider and family perspectives on the use of strategies/adaptations to other autism interventions (PIMs and non-PIMs) used with TU populations. A strength of this study is illustrated by the current caseload of survey respondents who serve TU families (n = 31), of which the interview participants are a subset, which totaled 207 families served. This total caseload indicates the large amount of experience and the variety of families served that respondents were considering when completing the study.

This study increases the knowledge of barriers perceived when working with rural, culturally diverse, and low-resourced families and strategies/facilitators used to address those barriers. Results will be shared with the PLAY Project organization for their use in program development and training. In addition, results will be disseminated to providers in the format of an article specifically geared toward clinical applications. In a broader sense, it is the aim of this project that this information and the resulting facilitators and strategies based on providers' perspectives will increase knowledge of how effective PLAY is with TU populations, increase PPCs' awareness of how to use PLAY in a way that benefits families who are TU, and decrease autism characteristics in traditionally underserved children. Ideally, this will ultimately lead to effective strategies for working with children on the autism spectrum and their families who are rural-dwelling, culturally diverse, and/or low-resourced.

Using the EVM and Theory of Change to guide survey and interview development provides a structure from which to analyze barriers and facilitators/strategies in a way that is replicable for future research (Bernal et al., 1995; *Building Adult Capabilities to Improve Child Outcomes*, n.d.; Buzhardt et al., 2016; Domenech Rodríguez et al., 2011). Member checking, a process through which PPCs indicated agreement with resulting themes, increased validity of results. In addition, being a PLAY Project Consultant in-training enhances the researcher's knowledge of and familiarity with the PLAY Project and its use with traditionally underserved populations.

Limitations and Future Directions

Several important limitations should be considered with this study involving provider perspectives, as similar to Straiton et al.'s study (2021). First, using only provider perspectives and not including those of caregivers provides an incomplete picture of PLAY Project services. Secondly, PPCs may be biased in their self-reporting, including recall bias, such as difficulty remembering initial barriers that may have worked themselves out throughout the course of implementing PLAY with TU populations. As noted, PPC demographics indicate that the mean years of experience for interviewees (8.45 years) was greater than that of survey respondents

(TU = 6.97 years; WR = 5.08 years). This self-selection of more experienced PPCs who volunteered to be interviewed is a benefit rather than a bias as it ensured that these more experienced PPCs were the ones to share their expertise in adapting PLAY with TU populations. Future studies should pursue the perceptions of caregivers in low-resourced, culturally diverse, and rural dwelling families who receive PLAY Project services as well as agency leaders. Family perspectives are crucial to determining the accuracy of PPCs' perceived barriers and the effectiveness of PPCs' recommended facilitators and strategies.

Another limitation of this study is related to the researcher's own status as a PLAY Project Consultant in-training who uses PLAY solely with underserved populations. This may contribute to biases and influences on the study, which the researcher acknowledges for the sake of transparency and fidelity (Levitt et al., 2018). In future studies of TU caregiver perspectives on PLAY implementation, these biases will need to be considered throughout the project, including during survey and/or interview question formulation and interpretation.

The researcher attempted to schedule with all 13 survey participants who volunteered to participate in interviews; however, it was not possible to schedule with two of those 13. No new codes were created between the tenth and eleventh interviews, indicating that saturation was met. The researcher has written a Clinical Focus article in which the qualitative results of this study are expanded upon. It is the hope of the researcher that the Clinical Focus article will facilitate the results of the present study being transferable so that they may inform practice. These transferable results would be strengthened by future studies that duplicate this study's results as well as combine the perspectives of providers and caregivers to determine whether they converge.

Limitations exist regarding the framework of this study. The use of the Ecological

Validity Model contributed to the structure and content of questions used for surveys and interviews. However, other similar models exist that could have been used to structure the surveys and interviews; these other models may have led to different results. In addition, the researcher's translation of the eight dimensions into survey questions may have resulted in questions being confusing, as noted in some PPCs' comments at the end of the survey. In future research, different models could be used to structure surveys and interviews to determine whether results based on different models converge with the results of this study.

A significant limitation regards providers' REN. According to demographic data, all but one PPC who completed the TU survey indicated their REN as white. The remaining PPC designated her REN as Hispanic. This lack of diversity may be representative of an overall lack of diversity in PPCs. The Hispanic PPC indicated interest in being interviewed; however, in response to the researcher's attempts to schedule an interview, the PPC responded that she was not available during any of the given dates and times due to a high caseload. It would be beneficial for future research to aim to include more diverse PPCs when obtaining provider perspectives, which may lead to deeper insights.

Conclusion

The overarching purpose of this study was to describe how the PLAY Project has been used, as reported by PLAY Project Consultants, with traditionally underserved populations. The results of the study may inform adaptations to using the PLAY Project autism intervention in a way that maintains fidelity, which may be helpful for serving the broader population of children on the autism spectrum and their families. Findings and recommendations may be transferable to a variety of autism interventions, helping to bridge the gap that often occurs between research and practice (Stahmer, 2007). Results may provide guidance to practitioners in making relevant adaptations when using evidence-based autism PIMs. In addition, identification of facilitators to implementing autism interventions with traditionally underserved families is crucial to aiding leaders and policymakers in the prioritization of supportive means by which to successfully implement interventions and facilitating access to services (Stahmer, Vejnoska, et al., 2019; Straiton et al., 2021). This may ultimately help policymakers and parents alike determine which interventions are most important to invest in and promote (Oono et al., 2013).

While PPCs noted in both surveys and interviews that they encounter barriers at times when implementing the PLAY Project autism intervention with TU populations, they also described numerous adaptations to be used when they encounter these barriers. Overall, PPCs express that the connections between parents and children as a primary goal of PLAY are universal. They note that PLAY is a model that is flexible in helping meet this goal, as long as PPCs “meet families where they’re at.”

CHAPTER 4

CLINICAL FOCUS MANUSCRIPT: STRATEGIES FOR USING A PARENT-IMPLEMENTED AUTISM INTERVENTION WITH TRADITIONALLY UNDERSERVED FAMILIES

Introduction

Oono et al. (2013) define parent-implemented models (PIMs) as interventions in which professionals involve parents/caregivers in implementing strategies to address outcomes with their child. PIMs will be the umbrella term used in this article for all such interventions, which may also be described in the literature as: parent-mediated models (Carr & Lord, 2016); caregiver-mediated interventions (Kasari, Lawton, et al., 2014); parent-mediated interventions (DuBay et al., 2018; Pickard et al., 2016); and parent-implemented interventions (Steinbrenner et al., 2020). In a systematic review by the National Clearinghouse on Autism Evidence and Practice Review Team, Parent-Implemented Intervention (PII) qualified as an evidence-based (EB) practice and was defined as, “Parent delivery of an intervention to their child that promotes their social communication or other skills or decreases their challenging behavior” (Steinbrenner et al., 2020, p. 29).

Early intervention is supported by the Committee on Educational Interventions for Children with Autism, formed in 2001 to examine research evidence supporting early education programs for children through age eight who were diagnosed with autism. Based on scientific evidence, the Committee made the following recommendations for preschool children, all of which may be characteristics of PIMs: interventions should begin early in life, be intensive in hours, and actively involve the family; staff delivering the intervention should be highly trained and specialized in autism; there should be objective ongoing assessment with a curriculum that is systematic and planned; environments should be supportive and transitions well-planned; there should be consideration of the individualized strengths and needs of the child; there should be a focus on communication and other developmental areas; and there should be planning to maintain and generalize new skills (Lord & McGee, 2001).

Parent-implemented models (PIMs) of autism interventions, which may be a component of early intervention, are of significant benefit to providers and families due to their decreased cost and their decreased demand on the professional (Solomon et al., 2014). These are important considerations due to the ever-increasing prevalence of autism, which is currently 1 in 36 children (Maenner et al., 2023). In addition, decreased cost is an important factor for traditionally underserved (culturally diverse, low-resourced, and/or rural dwelling) families. However, a significant barrier to using PIMs as autism interventions involves their lack of reimbursement by insurance policies. All 50 states have passed insurance mandates for autism intervention for those on state-regulated health plans (*Health Insurance Coverage for Autism | Autism Speaks*, n.d.); however, those mandates require insurance coverage for Applied Behavioral Analysis (ABA) (Cooper et al., 2007), which is based on operant conditioning and was not originally created as a PIM. Considering that individuals with autism have medical expenditures that are 4.1 to 6.2 times greater than individuals without autism (*Autism Statistics and Facts | Autism Speaks*, n.d.), it is understandable that families of children with autism have concerns about how to fund interventions for their children. It is logical then that PIMs would be utilized less than ABA services, since insurance mandates cover ABA but not PIMs. For this reason, PIMs are often delivered through other reimbursable services, such as Speech Therapy (*Floortime | Autism Speaks*, n.d.).

PLAY Project

The PLAY (Play and Language for Autistic Youngsters) Project is a developmental, relationship-based, parent-implemented autism intervention, which is focused on social reciprocity in parent-child interactions (Solomon et al., 2014). During a randomized controlled trial (RCT) of the PLAY Project, language skills of children in both the PLAY and control group improved significantly; however, the language skills of the children receiving PLAY did not improve significantly more than the children in the control group. Significant improvements were noted in children's shared attention, initiation, social-emotional skills, and autism symptoms (Solomon et al., 2014). Parents also demonstrated improvements in their abilities to engage and sensitively respond to their children (Solomon et al., 2014). The RCT concluded that PLAY was associated with increased interaction skills, increased functional development, and improved autism symptoms (Solomon et al., 2014).

A limitation of the PLAY Project RCT was its generalizability to variety of families, particularly culturally diverse, low-resourced, and rural dwelling families. Parents involved in the RCT were largely from non-diverse, urban dwelling populations with higher education and socio-economic status (SES) levels (Solomon et al., 2014). The majority of children (91%) in the treatment group were from two-parent households, with 53.1% of these parents having bachelors or higher degrees (Solomon et al., 2014). In addition, a small proportion (30%) of children of color were included in the study (Solomon et al., 2014). While the PLAY Project was determined by the RCT to be an effective autism intervention, these demographics indicate a gap in knowledge and a clear need for determining how to implement PLAY most effectively with traditionally underserved populations, including children from culturally diverse, low-resourced, and rural dwelling families.

Present Study

The purpose of the study from which findings described in this article are based was to obtain provider perspectives on using a PIM of autism intervention, the PLAY Project, with traditionally underserved (TU) families. A goal of the project was to determine strategies which could be used by PLAY Project Consultants (PPCs) to address barriers they encounter when implementing PLAY with TU families. The following research questions were explored:

1) How effective do PPCs consider the PLAY Project to be when used with TU as compared to well-resourced (WR) families?

2) According to PPCs, what adaptations could be made when using the PLAY Project to facilitate its implementation and increase its effectiveness for rural, culturally diverse, and/or low-resourced families while maintaining its fidelity?

The purpose of this Clinical Focus article is to extrapolate the findings from the described study, particularly those from Research Question 2, to formulate useful and applicable adaptations that Speech-Language Pathologists (SLPs) and other providers may use when implementing the PLAY Project with TU families. Further aims are that these adaptations may be useful to providers of other PIMs and to SLPs who routinely work with TU populations. Providing applicable adaptations will ideally help bridge the gap between research and practice, that is the purpose of Implementation Science (Dingfelder & Mandell, 2011; Nilsen, 2015; Stahmer, 2007).

A review of the literature revealed a small number of studies that address barriers and/or facilitators to implementing a PIM with TU families, which for the purposes of the current study includes families who are culturally diverse (DuBay et al., 2018), low-resourced (Carr & Lord, 2016; Kasari, Siller, et al., 2014; Pickard et al., 2016), and rural dwelling. Culturally diverse families were defined in the present study as those who self-identify as a race, ethnicity, or nationality (REN) other than white and/or speak a language other than English in the home. Low-resourced families met one of the criteria, similar to those used by Kasari et al. (2014): the primary caregiver's education level is a high school diploma or lower; the primary caregiver is unemployed; and/or the family receives government assistance (i.e., Medicaid). Rural dwelling was defined as families who live in a zip code designated as rural by the Federal Office of Rural Health Policy (FORHP) Data Files (*Federal Office of Rural Health Policy (FORHP) Data Files | Official web site of the U.S. Health Resources & Services Administration*, n.d.).

Methods

The present study consisted of a mixed-methods analysis of provider perspectives on barriers perceived and facilitators/strategies used when implementing PLAY with TU families. To address the first research question (How effective do PPCs consider the PLAY Project to be when used with TU as compared to well-resourced (WR) families?), a survey was developed as guided by the eight dimensions of the Ecological Validity Model (EVM) (language, persons, metaphors, content, concept, goals, methods, and context) (Bernal et al., 1995) to contribute to the study's comprehensiveness and replicability. Theory of Change (*Building Adult Capabilities to Improve Child Outcomes*, n.d.) was also incorporated through questions related to family stress and community/familial support levels. Surveys were distributed to all PLAY Project Consultants (PPCs) in the United States (N=400), 71 of whom completed at least some portion of the surveys by answering questions related to implementing PLAY with traditionally underserved (TU) families (n = 31) or well-resourced (WR) families (n = 40), based on their experience.

The second research question (According to PPCs, what adaptations could be made when using the PLAY Project to facilitate its implementation and increase its effectiveness for rural, culturally diverse, and/or low-resourced families while maintaining its fidelity?) was investigated through semi-structured interviews, also guided by the EVM. Of the 29 survey participants who completed the TU survey, 13 volunteered to be interviewed. Two of these volunteers were unavailable for scheduling, resulting in 11 interview participants. Interviews also incorporated Theory of Change (*Building Adult Capabilities to Improve Child Outcomes*, n.d.) by addressing topics such as the stressors TU populations experience and the levels of community and family supports TU families have. These aspects were used as a lens through which to view barriers and facilitators/strategies that emerged through thematic analysis.

Analysis

Quantitative survey results were analyzed by running a set of two-tailed independent groups *t*-tests using IBM SPSS Statistics (Version 29) to determine the effect of a variety of factors on PLAY implementation with TU as compared with WR families, as perceived by PPCs (Table 4). In most cases, factors were perceived as making PLAY implementation easier or more difficult with each population. These results may be referenced in the study's research article. Survey findings were elaborated upon by conducting semi-structured interviews with a portion of the TU survey participants (N = 11), leading to a deeper understanding of survey results.

Following interview transcription, thematic analysis (Clarke et al., 2015) of transcripts occurred to analyze for themes regarding barriers perceived by PPCs and resulting facilitators/strategies used by PPCs when implementing PLAY with TU populations. Facilitators were defined in this study as aspects that support families in accessing PLAY Project services. Strategies was the term used for techniques that PPCs use in direct relation to implementation of the PLAY Project. The barriers, facilitators, and strategies identified through thematic analysis of interviews are the topic of this article. Adaptations are organized in Table 8 according to the barriers they address. It should be noted that while culturally diverse, low-resourced, and rural dwelling families each experience unique challenges and barriers, many families fit in more than one category, creating overlapping experiences. The facilitators and strategies may be useful in helping PPCs deliver the PLAY Project autism intervention in a way that may be more effective for culturally diverse, low-resourced, and rural dwelling families. In addition, as stated above, while the present study is focused on the PLAY Project autism intervention, the resulting barriers and facilitators/strategies may also be of benefit to providers of other autism PIMs as well as SLPs who work with TU populations.

Strategies/Facilitators

This section contains techniques PPCs described during interviews as having used during PLAY sessions with TU families (strategies) and to help families access PLAY services (facilitators). These are organized according to the barrier PPCs most frequently associated with that strategy/facilitator; however, it should be noted that many of these areas overlap so that a particular strategy/facilitator may have been mentioned in response to more than one barrier/challenge when discussing PLAY implementation with TU populations.

Cultural Diversity

Although cultural diversity was not perceived as a barrier to PLAY implementation during surveys or interviews, PPCs did describe strategies they use when implementing PLAY with culturally diverse families during interviews. One strategy involved adapting activities so that they are more culturally appropriate:

> In some cultures, the young male children aren't expected to do as much, so you know, in PLAY there's a technique called Make Them Work? Well … the parents don't necessarily feel it's needed to make a child work within that culture. So, for example, to be engaged

> in the process of getting himself a drink and going through all the steps, that's probably not something that's really important in that culture. So, you have to find other routines to try to embed that in. So, for example, it's more if a child wants access to a certain toy versus, because sometimes the mothers and the fathers in that culture, they have so much pleasure and joy in just giving the child the drink, preparing the food … they don't necessarily want to embed Make Them Work into those specific routines.

Another strategy involved PPCs attempting to incorporate families' culture into PLAY activities:

> I've done these tea parties with these families from Africa that was just very different, sitting down on the floor, and I'm like, "All right, we'll play tea party that way." Everybody has a pillow under them … trying to play out what their cultural activities are, what they typically do.

Similarly, PPCs also use the strategy of embedding PLAY into the family's cultural activities:

> They'll be like, "Oh, we can't meet tomorrow because we have to go to Sabbath," and I'm like, "Oh, that's great, what does that look like to you?" and they'll tell me what they do, and then I go, "Well, how does your son do at that?" and they'll be like, "Oh, we have trouble here," and I was like, "Oh, well … how does it work?" … so, they'll discuss what it looks like, and then we'll go work on strategies so that he can tolerate it.

PPCs described learning more about a family's culture by researching the culture, turning to a knowledgeable mentor, and by asking questions during discussions with the family about their culture. As illustrated in the following quotation, PPCs' self-reflection may include awareness of white privilege and cultural humility (Tervalon & Murray-García, 1998):

> I definitely think, yeah, as white woman with many unearned advantages in a society that has been set up in many ways for me, it took me a little while to realize that that could be

> super oppressive for other people and erasing the expertise and stories and cultures and ways that people have done things long before … that people have their own unique diverse and cultural experiences and expertise and practices to bring to the table … And so, I think I always have to go to it being like, even our diverse families and culturally different, can't find practitioners who look like them, who have … a shared cultural experience. And I'm fully aware of that part. And so I just think for all families what it has been, particularly for families who are not white who English is not their only language or first language, and I would say, even for my Black families who have been under the oppression of kind of white-set norms and white privilege norms for so long that they have all had to give up things in order to access where they are … I'm very aware of that, and I am aware that families have had to lose a lot, and they might not even be aware of it sometimes … it's just been normalized … culturally there's a lot of differences but … connection is a human experience, wanting to connect and wanting to experience joy are at the core of PLAY, and I think it's also at the core of human experience.

Race/Ethnicity/Nationality and Primary Language

PPCs stated that differences in race/ethnicity/nationality (REN) between themselves and families do not create barriers to PLAY implementation. In addition, no specific strategies were described by PPCs for situations in which the REN of families is different from their own. Interview participants did note that barriers occur when families' primary language is not English. The most common strategy described by PPCs when a family's primary language is different from their own was to use a translator/interpreter, whether this be a professional or a family member. Other strategies included having a bilingual provider implement PLAY with the family, using translated written materials, using translation technology (i.e., Google translate) when talking with families, and increasing their use of nonverbal communication (i.e., gestures, facial expressions, body language). Some PPCs attempt to incorporate families' primary language into activities:

> We'll be doing like animal sounds, and she makes it really fun, and she's like, "Oh, Miss [name], did you know in Spanish, this is called this," or, "The animal in our language makes this sound." So, we try to incorporate it in so I can do the animal sound in English and in Spanish for him, see if he gets a better response one way or the other.

As illustrated by the interview participant below, while these strategies can decrease the barriers that are perceived when English is not a family's primary language, the situation may still be challenging:

> It's been challenging, actually. We do not speak the same language, so I am not bilingual. So, it makes it tough, and the majority of them are Hispanic. We have had other families that [speak] a different language but [the] majority are Hispanic speaking. And, usually, we have an interpreter who is with us. That is not the best solution, by any means. And we're fortunate having people that understand PLAY Project and they work in our department that we pair up, so it's not like we're speaking two different languages. Like typically, this, she's a case manager that works with us, and so typically she understands what we're doing, and we've been very fortunate so that it's easy for her to interpret and talk about the lessons at hand. Other family members, it's sort of like you're teaching everybody for the first time, so it's a little more challenging, to say the least.

Vocabulary/Concepts

PLAY vocabulary and concepts were described as both being easily understood and facilitating PLAY implementation and at times creating barriers to implementing PLAY with TU families. When PLAY vocabulary and concepts were perceived as creating a barrier to PLAY implementation, PPCs most commonly suggested the strategy of simplifying/modifying the vocabulary/language they use with TU families:

> I try to keep my language simple and almost like child-friendly for everything because like as I’m saying it, I'm saying it in front of the kid, so like if I'm describing Taffy Pulling, I’m like, “Well, it's called Taffy Pulling, but what we're gonna do is *stretch* [emphasis added] out our interactions and go for those circles.” I feel like I keep it at a level that could be understood by someone with really any level of education.

Other strategies used by PPCs to address perceived barriers related to PLAY vocabulary and concepts were also noted in response to other barriers and will be described in the Teaching Strategies section below.

Goals

When PPCs perceive that the goals/expectations of TU caregivers conflict with the goals of PLAY, one of the most common strategies discussed was to prioritize family goals, especially when the family expresses a desire to focus on goals not related to the PLAY Project (i.e., potty training):

> Say that … I’ve been focusing on simple repetitive sensory motor sequences with a family, like … this song with movement that we're doing and then inserting the pauses and waiting, but then they come back with me as they want to work on potty training … I will figure out, okay, how can I weave what I’m wanting to accomplish into the potty-training routine.

Another common strategy, especially when the TU caregivers’ goals are beyond what the child is developmentally ready for, was to focus on the Functional Developmental Levels (FDLs) to help clarify the developmental process:

> I say, “What are your goals?” and they’re like, “I want my kid talking.” “I want my kid to go to college.” “I want my kid to do this and that,” and I'm like … really explaining the foundational process of the FDLs, and I find myself explaining more like, “This is a process that we have to have the strong foundation. You're going to see a lot of work on these levels one and two where we're just trying to get them regulated in their body and engaged.” And sometimes they're disappointed, especially because they're like, “Well, I'm paying all this money and coming all this way. This is something that's difficult for me. And I want my kid talking.” I'm like, “Well, talking is way up here at Level Four. Your kid’s currently functioning here. We're doing the steps, but we're not going to push it until we have those strong foundational skills.” And they tend to understand.

Additional strategies noted by PPCs included attempting to keep goals realistic/tangible and strengths-based. Teaching Strategies, as described below, were also noted in response to goal-related barriers.

Structure of PIM

The most commonly noted structural barrier was the time commitment it takes to implement PLAY, commonly stated as difficulty, “putting in the time.” Video Review Forms (VRFs) and PLAY Plans, the written reports that PPCs write up for families, were perceived as being too overwhelming for some TU families. Videorecording, a crucial component of the PLAY method, was also perceived as creating a barrier to implementation with TU families due to feelings of self-consciousness of themselves and/or their homes being recorded.

To address barriers related to putting in the necessary time to implement PLAY (e.g., 2 hours/day), PPCs help families determine how to incorporate PLAY into their daily routines more (and less through designated playtime):

> And then also try to explain [to] them again that … the methods and principles apply to everything that's happening in your day, so it's not necessarily like, let's just sit down and play this 15 [minutes], no, but like, when you're feeding them. Your daily routines can also be very effective for utilizing the methods and the principles of the PLAY Project. So, trying to help them to understand that this is a way of life and not just when I come and do these things.

PPCs also remind TU caregivers that playtime during which they focus on PLAY implementation can be in short segments (i.e., five minutes at a time):

> I find a lot of them saying it's hard to find the time to dedicate to PLAY, and I just try to stress, yes, like dedicated playtime, you can take 20 minutes and sit down and play is awesome, but mealtime can be PLAY time, bath time can be PLAY time, and just stressing that it doesn't have to be this intimidating chunk of time. It can be five minutes here singing a song when we're getting buckled in the car, splashing in the bath, that can be little ways to connect and engage with your child throughout the day. And that tends to alleviate some of the pressure because we're like, "20 hours of PLAY a week," and they're like, "20 hours? Who has 20 hours?" and I'm like, "It adds up. Those little minutes add up."

Other strategies PPCs use to address barriers related to putting in the time to implement PLAY include condensing the program to decrease its overall length, discussing any potential barriers to implementation so they can attempt to address them before beginning services, and working with the family to schedule times that might work for them to insert PLAY into their weekly routine:

> …helping them come up with a plan, “When would be a good time to practice this? Maybe we can pick one time of day that would be easy for you,” … and try to work those strategies in during those times.

PPCs who perceive that the written reports of PLAY (VRFs and PLAY Plans) are overwhelming to TU caregivers tend to decrease the frequency with which they complete them. In response to perceptions that TU caregivers did not want to be videorecorded, interview participants noted two strategies: to discuss the purpose/rationale of the videos and to use humor, as described in the following quotation, to attempt to lighten the mood and to decrease feelings of self-consciousness:

> Many times, the parents will tell me they don't like the way they look in videos, so they don't want to watch it, and they're embarrassed … so it's about kind of lightening the air, and saying, “Oh no, we all look that way. Hey, look at me! My hair is a mess. My underwear was showing in that shot!” Just keeping it lighthearted, so that it takes the embarrassment away a little.

Education/Learning Ability

PPCs noted perceived barriers related to caregivers having low education levels, autism or other intellectual or developmental disabilities (I/DDs), or low literacy levels.

PLAY Components

In response to barriers related to decreased education/learning ability, PPCs described some of the components intrinsic to the PLAY Project as helping facilitate learning, including the following: modeling and coaching; PLAY vocabulary/concepts; toys not being necessary to implement PLAY; having fun with people (rather than toys/objects); and reliance on caregiver implementation. PPCs also described how the PLAY model itself facilitates implementation with

TU families: “PLAY is very easily adaptable and easy for families to grasp and understand and utilize, which is why I love it so much.”

Teaching Strategies

PPCs referred to multiple strategies they use to help implement PLAY with TU families across a wide variety of topics. One strategy PPCs described was to inspire and motivate parents by helping them notice the results/progress their child is making. This may also include pointing out examples to parents of their child and/or themselves using a particular skill or technique. One PPC described helping parents recognize their own successes by saying, “Sometimes, what we do about it is, we may have to … help them identify when they are doing it and recognize the situations when, “Hey, you just did it!” You know I think that's been really helpful ….” Another PPC described how empowering hope can be:

> A lot of my families have said, when they see it working, when they get the results they want, and often that’s within the first or second visit … When the families see that, oh my gosh, they're just so excited … And I think that gives them hope. And hope is empowering and motivating, no matter what your circumstance.

One PPC described how helping parents identify their child’s progress can be motivating:

> I feel like when … they see their kid interacting with me, and I can point out little things like, “Oh, well, he's not talking, but look, did you see how he just shifted? That's a big deal. Did you see how he gestured? That's a big deal.” And showing them these changes that to them look small but that we as professionals recognize as like Climbing the Language Mountain. And they're like, “Oh, I wouldn't have even recognized that that is progress until you pointed it out to me.” So just reassuring them and showing them the progress that's being made I feel motivates them to want to keep trying and implementing

> it at home, too.

PPCs also reported explaining the purpose/rationale of the PLAY concepts to parents, giving them concrete examples of how to implement the concepts, when needed:

> I work with a family right now, they're from India, but they're both college-educated here. They have a little boy, and you can see a little bit the culture of trying to anticipate this little guy's every need and not wanting to see him struggle … I think once families understand why you want to try to pull back that support and help the child develop those skills on their own, they come on board, they really do….

Numerous interview participants described giving TU caregivers smaller amounts ("chunks") of information during PLAY sessions:

> Sometimes going over one or two terms per session and really showing how it works and working with it together, they grasp it, but if you give them like seven or eight, they're just in the shutdown mode, and they don't even hear what you're saying.

PPCs also noted the strategy of decreasing the amount of written information they give TU caregivers:

> You know the family resource manual that we give parents? I don't really give them everything at once. I give them one section of it at a time or one thing at a time, or sometimes I won't even give them like all of it, it's just too overwhelming … so I'll just talk about certain things, specifically why I'm there, and then give them maybe a sheet that has that broken down into it.

In addition to giving less information at a time, they also use the strategy of slowing the pace of the information they give to TU caregivers:

> If they have a lot of stressors, that could make it difficult. I think it can sound

> overwhelming from the beginning … So, I think sometimes just the presentation in itself of what the program is, can be … an overwhelming kind of thing. And then I would say, I just try to be a little bit slower through how much information is shared ….

As can be seen in the statements above and below, slowing the pace or decreasing the amount of information PPCs share with families assists with repetition of concepts:

> But a lot of my families, they're overwhelmed. Especially with COVID, I found people's capacity to take it all in, even if they take it in, it's not retained. So, I think in general, I've been really taking *small* [emphasis added] nuggets of information that are the crucial parts, rather than expecting that families are taking it all in, and we're reviewing it all every time.

The strategies of slowing the pace and repetition were mentioned in working with TU caregivers who have learning challenges:

> Mom has reportedly said she's got ADHD. So, she's dropped out of high school, so she struggles a little bit, but it took her about three months to tell me what was happening … she told me that she was stressed because she wasn't understanding all the concepts, and there's a lot, and so I said, “Well, let's just slow it all down.” And so, we broke it up into chunks … when we’d do our Visit Suggestion, I gave her maybe one or two and that's it, and we’d just hammer those two concepts the entire hour and a half or whatever I’m with her and use the term over and over ….

Several PPCs described attempts to determine caregivers’ (CGs’) learning style and/or attempting to teach concepts to CGs in multiple modalities:

> I do a lot of detail and a lot of information with my reports and the pictures that you see on Pinterest or Facebook, where it's just a one little snapshot of definitions … pictures of

> kids spinning, jumping … I try to do things in different ways and figure out how the families learn. So, I'll do podcasts, picture cards long reports, whatever kind of things also help the family that way. So whatever type of learner that the parent is, then I try to incorporate that.

Another PPC described using different learning modalities to teach concepts through real life examples:

> I also use handouts and visuals. So, say I'm explaining Communication Circles. That's not something anyone really hears every day. So, I use real life examples or model it and show like, "Okay, you see they're opening a Communication Circle. This is what they did … And this is how you responded to close the circle … What questions do you have about that?" And also handouts, so really just giving them multiple modes of learning. Sometimes I even do the video and talk about it, like just video in general. Not necessarily video of the family, but even a cartoon you can show it.

Another teaching strategy PPCs described during interviews was to in some way check for CGs' comprehension of PLAY concepts, directly and indirectly:

> You have to be really careful with what you're talking about and making sure they really understand because sometimes they just pretend that they understand, but they aren't really getting it. So, I just kind of watch their face and see if it's like, "You know what I'm talking about?"

Other PPCs check CGs' comprehension more formally:

> We do that little quiz that comes with the PLAY Project, you know, you do it at the three-month level and then at the end, "We'll see how we're doing." And I keep it in a really lighthearted [voice], "Okay, we're gonna take a little test. You better be prepared." Kind

> of make it fun and silly and just to see. And then I tell them, “It's really just to see how you're doing and how I can help to modify if we need to, to make sure we're getting the most out of this time together.” And they really seem to like that. It takes the edge and the stress off of the test. But it really is very insightful to me as to see how they're doing. And a lot of times they surprise themselves, and you're the parents’ cheerleader in the house, too, it's not just the child.

PPCs described attempts to assess “where the parent is at” during PLAY sessions to determine whether they need help self-regulating at the beginning of a session and how much information they may be able to take in on a given day:

> I think, honestly, what we do with the kids, which is like what level are the parents at today? And before the parent can even engage with the child, we have to get the parent regulated or at least just get a sense of like, where are they so that we can not overwhelm them or underwhelm them … it's really just assessing where the parent is at.

Technological Access/Knowledge/Capabilities

PPCs noted a perceived technological barrier to PLAY implementation due to lack of device(s), internet access, and/or data. Two other perceived barriers were that technology can be distracting to children in TU families and that some TU caregivers do not have the knowledge to use the technology.

Strategies PPCs described using in response to technological barriers included printing and/or mailing any written reports (i.e., VRFs and PLAY Plans) and reviewing written reports in person with TU caregivers during PLAY sessions. No specific strategies were noted in response to children being distracted by technology.

Home Characteristics

The following barriers related to TU families' homes were noted by PPCs: small home size; the condition of homes (i.e., qualities of homes, such as disorganization or uncleanliness, fear of judgment about their home); a lack of toys/materials; televisions being on; a lack of functional outdoor space; and a high/distracting number or people.

When PPCs perceive small home size to be a barrier to implementing PLAY with TU families, they use the following strategies: adapting activities to be appropriate for the available space; focusing on sensory activities that take less space; and focusing on implementing PLAY through the family's daily routines:

> If we just had that limited space, it often tended to be sensory motor play, that's the only thing that we were probably going to do. So, it was oftentimes the squeezes, the tickles, the hugs, bouncing. Sensory motor play, for the most part, was about what we could do … every once in a while, for some of those I would say, "Do you want me to show what we could do during bath time?" So, we would just like do bath so we could do some other techniques of like, "Here's how you could do this in the bathtub," or if it was mealtime, "All right, we're gonna put the food over here, and we're going to say, 'More food, here it comes!'" … as long as there wasn't other family members sleeping or trying to work, we could get creative in like finding little things to do with their routine and activities.

Another strategy PPCs noted using in response to small homes was to have sessions outside:

> One family, I met them at a park, even though we didn't really like doing PLAY outside in such an open big space, I did meet them a couple times at a local park, just to get out of that smaller space. And that worked. That worked. So that was for space.

In response to barriers created by the condition of TU families' homes, interviewees described the strategy of suggesting modifications to CGs, noting that they only do this once they have built a strong rapport with that family and gently, slowly, and with sensitivity for the TU caregiver's feelings:

> You just have to be very careful of how you do that because it is their home, it is how they live … So still matching where they are but trying to bring up some ways that are just a little bit outside of where they are but not too overwhelming with them.

When televisions are on in TU families homes during PLAY sessions, PPCs either ask families to turn them off or, if the family does not turn them off, attempt to incorporate them into the session:

> But I will ask always, "What shows do they watch? What songs do they watch then?" and let's try to do them, so we get the attention. So, you still try to merge what their interest is from the TV, and I'll ask it, too, "Why do you think they like this kind of show?" "It's more colorful. It's fast paced." "What does that tell us about the way we have to interact, then?"

PPCs noted using adaptations in response to a lack of toys/materials in TU families' homes, including connecting families with resources through which they can obtain toys:

> I felt like it was kind of challenging, especially if they didn't have much resources … So that was a lot of my role was just trying to help give them, you know, "You guys don't have toys. Let's get you to this place … and we'll get some toys for your son."

At times, PPCs may also bring toys/materials that they leave with the family:

> I might still sometimes say, "Hey, I'd love to see what he thinks about puzzles. Do you mind if I bring that in and we see?" And I will leave the puzzle there if it's something that

> they're into and be like, “Keep it here.” … but if I bring something into those families or culturally it's different, I either ask permission, or I just name, “I really want to find [out how the child responds]” ….

PPCs described that the strategy they most commonly use in response to a lack of toys/materials in TU families’ homes is to use what the family has, including making toys with simple household items:

> Using more … things in the home that they have that aren't toys … I would be more creative with resources in the house … So, for example, if the kids typically really like music, then we're going to be like, “Okay, let's use the pots and pans,” or, “Let's use the toilet paper roll for a horn," or we can create our own fun musical instruments with beans and a toilet paper roll we can tape on the end and make a shaker, right? So, we'll use anything … in the house, instead of saying you have to go out and buy these fancy toys.

This type of creativity was noted to become easier as PPCs gain experience:

> I have one family that I went to that, really all they had were milk crates. There were no toys; there were milk crates, and we did a lot with milk crates. We put the kid in the milk crate, and we zoomed it around like a car, and then we stacked the milk crates, and then we played peek-a-boo with the milk crates … you just have to be really creative … I’ve been a Speech Pathologist long enough that I can do therapy with a pencil … so, that's experience, for sure. So, somebody who's more experienced probably can work through that. Is it as stimulating, sometimes? Not really, but, as we know, in this Method, and I'll explain that to the parents, too, it's not about fun with toys, it's Fun with People. So, if we can just figure out how to have fun, we don't need anything else.

Creativity was noted as necessary to the strategy of using what the family has:

> I'm a big make things and use what you have around your house, stuff like that, where I don't go in with toys or anything, but that also gives me an idea of, again, what they have or how to be creative with stacking pans instead of stacking blocks … whatever they do have. So, I feel like that's another plus for PLAY Project as far as just, you don't have to have *things* [emphasis added], and it's more about *your* [emphasis added] interactions with the child anyway. So, yeah, benefit and not a barrier, but makes you be creative.

PPCs noted that toys are not necessary for PLAY implementation due to its focus on fun with people (rather than objects):

> I would say the biggest way is just using the resources in that family's environment. If they have toys or if they don't, how can I create or use what they already have in the home? I never want a family to feel like they need to go out and purchase things, or I always tell the families, "I want *you*, as parents, to be the funnest toys in the room. So then how can we accomplish that?"

Home Location

PPCs reported perceiving barriers to PLAY implementation created by the distance to and/or the location of TU families' homes. In relation to these issues, PPCs described facilitating PLAY sessions in the following ways: being flexible with location (i.e., meeting at a park or library); being flexible with their scheduling, which may include having sessions in the evenings or on the weekends to accommodate traveling far distances; grouping distant families who live in the same region when possible; and using virtual sessions. Some PPCs described the location/distance barrier as one they are not able to overcome:

> And I would say now, the fact that they are rural, *it is impacting* [emphasis added] because we are no longer serving those families because we just can't drive that far. We

> weren't getting reimbursement for driving out that far and coming back, and so we were spending sometimes two and a half hours in the car, no gas, no mileage, no time. And so, I would say that just by being that far, they are missing out on a service that is no fault of their own but just not possible for us to reach those families.

Schedule/Availability

Barriers related to TU families' schedules/availability for PLAY sessions emerged during interviews. PPCs noted that they facilitate PLAY services by staying in communication with TU caregivers between sessions and sending session reminders/confirmations, being flexible with scheduling, and meeting virtually when in-person sessions were not possible. Schedule flexibility may include meeting when siblings are asleep or can be watched by another adult, rescheduling to ensure TU families do not miss out on sessions that they need to cancel, adjusting the length of sessions to fit the TU family's availability (e.g., having a 1 hour versus a 3 hour session), and having CGs send videos to the PPC if it does not work out to get video of the child during the in-person session. Once again, some PPCs noted that they schedule with TUF in the evenings and/or on weekends to make such accommodations. One PPC described schedule flexibility related to accommodating a TU family's religious holiday observance:

> They just went through Ramadan, and so just understanding that that's a month where they need a break from therapy, they're not gonna put in the time as often …. I didn't see any significant regression from that …. We took a month off. … And I think it's important obviously not to shame a family for that, by them saying, "This is our month of Ramadan. We're fasting from sunup to sundown. We're tired during the day. It's all we can do to get through our jobs and get home and take care of our son, and we need a break," and I'm like, "Of course. Whatever you need to do. I'll see you in a month."

Socio-economic Status/Financing Services

Interviewees stated that socio-economic status (SES) creates a barrier to implementing PLAY with TU populations due to difficulty financing the services. This barrier is important to address, especially since insurance in most states does not fund PIMs (*Health Insurance Coverage for Autism | Autism Speaks*, n.d.; Mandell et al., 2016). Several facilitators to help families finance services were noted by PPCs, including: financing services for families through grants and scholarships; allowing flexible payment plans and sliding scales based on income; and offering modified/condensed programs that cost less. One PPC noted that, when possible, she offers families the free code for the PLAY Intensive Workshop Online (IWO) when sent out by the PLAY Project organization. Another PPC stated that she has conducted sessions and/or follow-ups for free to help families afford services, whether in person or virtually: “Yeah, so they’d pay for once a month, and then I’d do a free follow-up that’s virtual … but I was like, I can't drive out for free.” She also stated:

> There's three with Medicaid that I work with that, they were having financial problems, and one of them's a single Mom, and Dad left, and I ended up doing some private free services to help them out … I try to help them as much as I can, but sometimes it's hard … I wish we had other ways to help them financially so that they could get more services.

Additional Facilitators/Strategies

The following facilitators and strategies were mentioned throughout interviews with PPCs. Rather than addressing specific barriers, their distribution across numerous topics indicated PPCs’ use of them for a variety of reasons. PPCs described their personal experience (i.e., number and type of TU families they have worked with, length of time in their field and/or as a PPC) and their access to a network of other PPCs as facilitating their PLAY implementation with TU populations. Additional miscellaneous strategies that PPCs bring to PLAY implementation with TU populations relate to personal qualities and outlooks. The following quotations are from two of the numerous PPCs who described attempting to implement PLAY with fun and joy, humor, and encouragement and positivity: “I would just say be flexible, meet the families where they are, and have fun with the parents because when you're having fun with the parents, then *they'll* [emphasis added] be more likely to have fun with their kids.”

> I think if we treat the family and their whole experience like we do with PLAY is like building that relationship first, at the very base has to be a trusting, positive relationship where we share joy. I feel like if we don't have that, nothing else is going to be effective. And so I think, that's first and foremost, just like it is with the kids. Get in there, and have a shared joyful experience, and we're good.

PPCs described the importance of self-reflection, empathy, sensitivity, and respect, as well as being accepting and non-judgmental of TU families:

> Trying to be empathetic and trying to again meet them where they're at and saying, “I’m here to help,” and establishing that was a big factor, I think. And, “It's okay your house isn’t perfectly clean. It's okay that you didn't get any sleep last night, and you're kind of tired today, and I know it. It's okay, we all go through that.” So having no judgment but saying, “Okay, well, let's just do the best we can today.”

The following strategies describe additional efforts PPCs make throughout their work implementing PLAY with TU families, rather than to address a specific barrier. Many PPCs noted the importance of building a strong rapport/relationship with TU families, which helps facilitate open discussions about a variety of topics during which PPCs describe making a concerted effort to listen carefully to what TU caregivers are saying:

> I’m open to asking them about their culture and what their beliefs are, and because we do have a pretty trusting relationship, I do a lot of talking to them like, “What does this look like?” because they know that I’m interested and I care, and then we can kind of work it around their cultural beliefs and the way that they interact with their kids.

Two other strategies were to have a team-oriented approach and to focus on similarities to connect with TU families. Additional efforts included not making assumptions about TU families, focusing on the child’s/family’s best interests, following families’ leads, and to be flexible by individualizing/tailoring PLAY to each TU family:

> You just have to tailor it to the situation. … I really gauge where they're at and what they can do. … It's getting to know each individual family … every family you work with is so different, so I don't feel like there's one blanket term to be like, “Oh, this is what you have to do.” You really need to get to know them and be willing to modify and make it work, that's all. As long as you can be flexible, I don't think there's any barriers to it, really, but you have to be flexible.

Many of the strategies described in this section may be encompassed by a phrase used during interviews by a large number of PPCs numerous times, which was to, “meet families where they’re at:”

> What do you need to know to use PLAY with underserved families? I would say go in, meet the family where they're at. Join them in their wishes for their child. Explain to them how using PLAY will help them to bring out their child's potential. Help them to understand how PLAY has a purpose. And I mean every family, every family I've met, they want to connect with their child. They're desperate to connect with their child and

> enjoy a relationship with their child. So, if they really want that, then you're good to go.

Conclusion

An aim of this study was to determine provider perspectives on adaptations that could be made when using the PLAY Project to facilitate its implementation and increase its effectiveness with TU populations. These adaptations were identified as strategies and facilitators to address potential barriers when implementing PLAY with TU families and were elaborated upon in this article. Across a wide range of topics, the strategies that PPCs recommended were components of the PLAY model. Numerous PPCs described PLAY as a highly flexible model that is easily adaptable for use with all families, including those who are TU:

> I think it's been really successful in that families learn the model … they learn the model. And it has to do with access more than anything, but once you have that ability to connect with a family and apply the program, that difference isn't there anymore. The model is just extremely teachable for the most part ….

A goal of the study was to bridge the gap that often occurs between research and practice, the purpose of Implementation Science (Dingfelder & Mandell, 2011; Nilsen, 2015; Stahmer, 2007), by disseminating these potential strategies and facilitators in a way that they may be useful adaptations for PPCs to apply when implementing PLAY with TU families. It is the author's hope that these adaptations may also be of use to practitioners, including SLPs, of other parent-implemented autism interventions. It is also hoped that the findings may guide deeper exploration of barriers that impact families and strategies/facilitators through which these barriers may be addressed for SLPs who routinely work with TU populations, including families who are culturally diverse, low-resourced, and rural dwelling.

CHAPTER 5

DISCUSSION OF RESULTS AND CONCLUSIONS: USING A PARENT-IMPLEMENTED AUTISM INTERVENTION WITH TRADITIONALLY UNDERSERVED POPULATIONS

The aim of the present study was to determine PLAY Project Consultants' (PPCs') perspectives on the facilitators and strategies they use when they perceive barriers to implementing the PLAY Project autism intervention with traditionally underserved (TU) families. Very little research could be found about using parent-implemented models (PIMs) of autism interventions with families who are low-resourced, culturally diverse, and rural dwelling (TU) (Carr & Lord, 2016; DuBay et al., 2018; Kasari, Lawton, et al., 2014; Pickard et al., 2016). The following two research questions were used to investigate provider perspectives about implementing the PLAY Project autism intervention, a PIM, with TU families:

1) How effective do PPCs consider the PLAY Project to be when used with TU as compared to well-resourced (WR) families?

2) According to PPCs, what adaptations could be made when using the PLAY Project to facilitate its implementation and increase its effectiveness for rural, culturally diverse, and/or low-resourced families while maintaining its fidelity?

The first research question was investigated primarily via surveys completed by PPCs (*N* = 71) who answered questions based on their experience implementing PLAY either with TU (*n* = 31) or WR (*n* = 40) families. Survey questions were guided by the eight dimensions of the Ecological Validity Model (EVM), which has been used to inform cultural adaptation of clinical practices (Bernal et al., 1995; Domenech Rodríguez et al., 2011). Results of the study indicate that PPCs perceive barriers based on a variety of factors that make it easier to implement the PLAY Project with WR than TU families and more difficult to implement PLAY with TU than

WR families.

The second research question was explored via semi-structured interviews with a subset of the PPCs (*n* = 11) who completed surveys based on experiences implementing PLAY with TU families. Interview questions were again guided by the EVM but were this time focused on adaptations PPCs use when they encounter barriers based on a variety of factors. Results indicated that, while PPCs do perceive barriers when implementing the PLAY Project autism intervention with TU families, PPCs who participated in interviews were also able to describe a wealth of facilitators and strategies to implementing PLAY with TU populations to address these barriers. These resulting adaptations are discussed in detail in Chapters 3 and 4.

Theoretical Implications

Implementation Science

There is often a gap that occurs when researched models are implemented in the real world. Implementation science uses theoretical models to understand and explain why evidence-based (EB) programs either succeed or fail based on strategies used to implement them in real world settings (Nilsen, 2015). The present study is founded on implementation science as its aim is to determine barriers and related adaptations that will facilitate implementation of the PLAY Project autism intervention specifically with families who are low-resourced, culturally diverse, and/or rural dwelling. Nilsen (2015) identified three aims of the theories, models, and frameworks used in implementation science: those that describe and/or guide the process of translating research into practice (process models); those with the function of understanding and/or explaining what influences implementation outcomes (determinant frameworks, classic theories, and implementation theories); and those that evaluate implementation (evaluation frameworks). The following theories within the framework/context of implementation science were used in the proposed research: Theory of Change (a classic theory) and the Ecological Validity Model (a determinant framework). The Ecological Validity Model (Bernal et al., 1995; Domenech Rodríguez et al., 2011) was used as a guide for survey and interview questions. Theory of Change (*Building Adult Capabilities to Improve Child Outcomes*, n.d.) was used as a foundation and justification for the study as well as a lens through which to consider the psychological domain of autism intervention with TU populations.

Ecological Validity Model

The eight dimensions of the EVM (language, persons, metaphors, content, concept, goals, methods, and context) have been used to guide cultural adaptation of interventions (Bernal et al., 1995; Buzhardt et al., 2016; Domenech Rodríguez et al., 2011). Use of a model such as the EVM provides a guide for the structure of a study as well as contributing to its replicability. Both survey and interview questions for the current study were guided by the EVM. While resulting themes from semi-structured interviews with PPCs were developed inductively, these themes can also be organized according to the eight dimensions of the EVM.

The first dimension of the EVM is *language* (Bernal et al., 1995), which was explored through questions about families whose primary language is different from that of the PPC. Results indicated that a difference in primary language was perceived as a barrier when implementing PLAY with TU families in both surveys and interviews. While a primary language other than English (since English was the primary language of all PPCs who were interviewed) was perceived as a barrier, PPCs also described numerous strategies that they use when implementing PLAY with TU families for whom English is not their primary language.

Persons, the second dimension of the EVM, relates to the race/ethnicity/nationality (REN) of families and providers and how any similarities or differences in REN may impact the relationship between TU families and PPCs (Bernal et al., 1995). Surveys indicated a perception that it is easier to implement PLAY with families who lack diversity in REN and more difficult to implement PLAY with families who are diverse in REN. However, during interviews, PPCs stated that a difference in REN between TU families and PPCs does not create a barrier to PLAY implementation. Bernal et al. (1995) suggest that interventions must have the flexibility for reflection on any differences in families' and providers' RENs and that therapists need to reflect on the impact their own culture and world views have on the intervention and their relationships within the intervention. Such reflections were noted during interviews, particularly by one PPC who discussed her own white privilege and cultural humility (Tervalon & Murray-García, 1998).

The third dimension of the EVM, *metaphors,* refers to the symbolic sayings and concepts within populations and interventions (Bernal et al., 1995). Survey participants perceived PLAY vocabulary and concepts to be more easily understood by English-speaking WR families and less easily understood by TU families. These findings were supported by interview results, which indicated that PPCs perceive PLAY vocabulary and concepts to create barriers at times to PLAY implementation with TU families. PPCs also described using numerous strategies when they perceive PLAY vocabulary and concepts to create barriers to PLAY implementation with TU families.

Content is the fourth dimension of the EVM and refers to the cultural knowledge (i.e., values, traditions) that contributes to the uniqueness of a particular group (Bernal et al., 1995). While cultural identity was perceived during surveys as making it easier to implement PLAY with WR families than with TU families, it was not perceived as making PLAY implementation more difficult with TU families than with WR families. In addition, PPCs who were interviewed stated that cultural diversity does not create barriers to implementing PLAY with TU families.

Although cultural diversity was not perceived as a barrier to PLAY implementation, PPCs described a variety of strategies for implementing PLAY with culturally diverse families during interviews. It may be that PPCs felt reluctant to describe cultural diversity as creating a barrier or that PPCs who were interviewed feel skilled enough at using strategies when implementing PLAY with culturally diverse families that such diversity is truly not perceived as a barrier.

The fifth dimension of the EVM is *concepts*, which refers to the constructs of an implementation and the degree to which they coincide with a given culture (Bernal et al., 1995). To address this dimension, survey and interview questions asked about the constructs of PLAY, such as the structure of the method, the time commitment, the activities, the techniques, and the methods, and whether those coincide or conflict with TU families' cultures. Survey participants perceived that these constructs coincide with the cultures of WR families, making it easier to implement PLAY with WR families than with TU families, and conflict with the cultures of TU families, making it more difficult to implement PLAY with TU families than with WR families. During interviews, PPCs described several constructs as creating barriers when implementing PLAY with TU families, including putting in the time, written plans, and video recording. PPCs also detailed adaptations for each of these barriers related to the constructs of PLAY.

The *goals* of an intervention, which may or may not coincide with the cultural knowledge of a family, are the sixth dimension of the EVM (Bernal et al., 1995). Survey results indicated that PPCs perceive that the goals of PLAY coincide with the goals of WR families, making it easier to implement PLAY with WR families than with TU families. However, no evidence was found that PPCs perceive the goals of PLAY to conflict with the goals of TU families, making it more difficult to implement PLAY with TU families than WR families. This may have been due to the word, "conflict," which could perhaps have been remedied by rephrasing the question (i.e., The goals of PLAY do not coincide with the goals of TU families…). While interview participants noted differences at times in the goals/expectations of PLAY and TU families, they did not indicate that these differences create barriers when implementing PLAY with TU families. PPCs did, however, describe strategies they use when they perceive that PLAY goals conflict with TU caregivers' goals/expectations. One strategy suggested by PPCs when families' goals are different from PLAY goals is to prioritize the goals of the family. This strategy is in line with Bernal et al.'s (1995) statement that framing goals within families' cultures can decrease discrepancies between provider and family goals as well as increase the credibility of the therapist. As with cultural adaptations, it is possible that PPCs who were interviewed feel adept enough at using strategies when they perceive a family's goals are different from PLAY goals that they do not perceive this as a barrier.

Methods is the seventh dimension of the EVM and refers to the consideration of culture in the development and/or adaptation of an intervention (Bernal et al., 1995). To address this dimension, PPCs were asked about whether they adapt PLAY in relation to families' cultures. Surveys did not indicate that PPCs adapt more based on a family's culture when implementing PLAY with TU families. This dimension overlaps with the fourth dimension, *content*, which refers to the cultural knowledge of a particular group. Although surveys indicated that PPCs do not adapt more based on culture when implementing PLAY with TU families, as noted above, PPCs did describe numerous strategies for implementing PLAY with culturally diverse families during interviews. It may be that PPCs felt reluctant to imply that culture creates a barrier or that PPCs feel skilled enough at using strategies when implementing PLAY with culturally diverse families that such diversity is truly not perceived as a barrier.

The eighth and final dimension of the EVM is *context*, which considers the particular acculturative stage of a family and supports that are present for them within their culture (Bernal et al., 1995). To address this area, survey and interview participants were asked whether/how they consider and support the degree to which TU families have acculturated into mainstream American culture. Seventy percent of TU Survey participants indicated that they consider and support the particular acculturative stage of TU families either most of the time (37%) or always (33%). Interview participants referred to several strategies that they use to support TU families in their particular acculturative stage, including the following: open discussion/listening; acceptance; cultural competence/learning/humility; respect; using culturally appropriate activities; and building a strong rapport.

Theory of Change

According to the Center of the Developing Child at Harvard University, Theory of Change (Figure 1) may be used as a lens through which to evaluate an intervention's ability to build adult/caregiver capabilities and strengthen communities by building the network of relationships that are crucial to building children's lifelong learning, health, and behavior outcomes (*Building Adult Capabilities to Improve Child Outcomes*, n.d.). Children who are part of families that are low-resourced, culturally diverse, and/or rural dwelling, the focus of this study, may be affected by cultural, economic, and social factors which can affect their vulnerability and health outcomes (Equity, social determinants and public health programmes, 2010). Abuse, neglect, violence, drug abuse, mental illness, and poverty are some of the adverse factors leading to toxic stress within these vulnerable populations, which may in turn put these children at risk for the poorest outcomes (*Building Adult Capabilities to Improve Child Outcomes*, n.d.). Teaching adults the skills they need to deal with adversity in their lives, thereby building their capacity, leads to better regulated home environments (*Building Adult Capabilities* *to Improve Child Outcomes*, n.d.).

Increasing the skills of caregivers, which then benefits children, is the foundation of Theory of Change (*Building Adult Capabilities to Improve Child Outcomes*, n.d.). This is similar to the motive of PIMs to teach caregivers to implement strategies to support their child's development (Boyd et al., 2011). Addressing adverse factors which lead to toxic stress is beyond the scope of the PLAY Project. However, having an awareness of the stressors and supports in families' lives may give PPCs a lens through which to help them tailor/individualize their PLAY implementation to each family's unique circumstances.

To incorporate aspects of Theory of Change into the present study, survey participants were asked about their perception of the levels of stress and familial/community supports experiences by low-resourced, culturally diverse, and rural dwelling families and how specific stressors and levels of familial/community supports have impacted PLAY implementation. PPCs were also asked about their perceptions of factors that help or make it difficult for TU caregivers to increase their capacity.

Surveys indicated that PPCs perceive that WR families experience less stressors than low-resourced families and that low-resourced families experience more stressors than WR families. PPCs also perceived that non-culturally diverse families experience less stressors than culturally diverse families and that culturally diverse families experience more stressors than non-culturally diverse families. Home location was not perceived by PPCs as creating more or less stress for rural dwell families as compared with urban and suburban dwelling families. These results can be found in Table 9.

PPCs indicated in surveys that they perceive low-resourced families to have less familial/community supports than WR families and WR families to have more familial/community supports than low-resourced families. When analyzing the effect of cultural diversity on familial/community supports, there was evidence that culturally diverse families are perceived by PPCs to have less familial/community supports in comparison to non-culturally diverse families; however, PPCs did not indicate a perception that non-culturally diverse families have more familial/community supports than culturally diverse families. Rural dwelling families were perceived by PPCs as having less familial/community supports in comparison to urban or suburban dwelling families; however, urban or suburban dwelling families were not perceived as having more familial/community supports than rural dwelling families. (Table 9)

While the areas of stressors and familial/community supports are beyond the scope of practice for PPCs, it is important to be aware of these aspects to better implement PLAY with TU populations with increased sensitivity and empathy, important attributes noted by PPCs throughout interviews. PPCs noted the following stressors during interviews that they have observed being experienced by TU families with whom they have implemented PLAY: being a single parent; having multiple children, especially when more than one of those children has autism or another intellectual/developmental disability (I/DD); difficulties with childcare; little/no time for self-care/fun; lack of access to services beyond PLAY; transportation difficulties; work-/job-related issues; being exhausted; and general overwhelm. These stressors can ultimately lead to childhood averse factors which contribute to toxic stress (*Building Adult Capabilities to Improve Child Outcomes*, n.d.), the following of which were noted by PPCs during interviews: poverty; mental health issues; trauma; and concerns about safety/violence. PPCs discussed using the following approaches/attributes in association when confronting stressors in TU families: taking the time to have non-PLAY conversations with families to really listen to what families are going through, which also requires building a strong rapport with families; slowing the pace of PLAY and helping families figure out how to implement PLAY more through their routines to decrease time demands; being flexible with scheduling; providing “case management” support to help connect TU families with resources outside of PLAY; using humor at times to help lighten the mood; and not judging families. Many of these aspects can be described with the phrase used throughout many PPC interviews: “meet families where they’re at.”

According to Theory of Change, increasing adults’ skills benefits the children in their lives (*Building Adult Capabilities to Improve Child Outcomes*, n.d.). PIMs are in line with Theory of Change in that their goal is to teach caregivers to implement strategies to support their child’s development (Boyd et al., 2011). The coaching and modeling used in PLAY, a parent-implemented autism intervention, directly increase caregivers’ capacity to improve child outcomes. In this way, PLAY builds caregiver capacity, leading to better regulated home environments and improved child development, both of which contribute to those children growing into adults with increased capacities (*Building Adult Capabilities to Improve Child Outcomes*, n.d.).

Discussion

Overall, the PLAY Project autism intervention was described by PPCs as a highly adaptable PIM to use with TU populations. While barriers were noted in both surveys and interviews, the only barriers PPCs stated were insurmountable were not related to the PLAY model itself but rather to accessing the PLAY Project: home location and financing PLAY services. Many PPCs did describe ways to address barriers related to providing services to families who either live rurally or at far distances, such as grouping families by location, traveling far distances on the weekends, and using Tele-PLAY; however, it was noted by at least one PPC that occasionally there have been families who are not able to access PLAY Project services due to the distance to/location of their home. PPCs also noted a variety of facilitators related to helping families finance PLAY services, including scholarships and grants, sliding payment scales, and flexible payment plans. However, frustration was also expressed that PPCs, “wish we had other ways to help them financially, so that they could get more services.”

PPCs described a multitude of strategies that they use when they perceive barriers to implementing PLAY with TU families, which have been described throughout this manuscript. It should be noted that a good portion of the strategies PPCs listed are intrinsic components of the PLAY Project intervention. PPCs have used the strategy of focusing more on Sensory Motor Play when TU families have smaller homes and/or less toys. While PPCs note simplifying the vocabulary/concepts used in PLAY, they also describe how the simple terms the PLAY Project uses facilitate families’ understanding of PLAY concepts. Barriers related to the video review component of PLAY were noted by PPCs; however, video review was also a strategy used to illustrate PLAY concepts with families, to help families see the progress their child is making, and when families’ primary language is not English.

Some PPCs noted responding to TU families who lack toys/materials in the home by attempting to connect the family with resources through which they could get more toys in the home or bringing toys/materials into TU families’ homes that they leave with the family. However, PPCs also noted that PLAY being a relationship-based model focused on interactions between parent and child with a focus on having fun with people (rather than objects) and not requiring toys or other materials were described by PPCs as helping facilitate services with TU families who have less toys/materials in the home. While PPC experience was noted as helpful in increasing PPCs’ ability to be creative in using the toys and/or objects the family has in their home, this aspect was described as a “benefit, not a barrier.” The modeling and coaching practices used in PLAY were stated by PPCs to be strategies when TU families have barriers related to video recording or reviewing video recordings; however, rather than addressing specific boundaries, modeling and coaching were mentioned throughout interviews as ways to facilitate comprehension of the concepts used in PLAY, especially with TU caregivers who may have a variety of personal barriers that may impact their comprehension (i.e., being overwhelmed, having I/DD, having a primary language other than English).

PPCs stated that the PLAY model itself benefits TU populations, saying that, “Families learn the model.” Reasons for this included that the model is, “packaged in a way that is systematic, so that they feel organized in the way that they're learning the content.” PPCs also stated that PLAY is easy to learn and has a lot of flexibility with how you implement it with families, making it easy to tailor/individualize for TU families. PLAY was described as a model that is easy to adapt in both its structure and the activities through which it is implemented. While this flexibility was noted as a benefit of PLAY by PPCs, they also stated that experience does matter and that someone with less experience may have more difficulty knowing how to adapt PLAY based on barriers they may encounter with TU populations, as illustrated by this PPC’s comment which supports the purpose of this study:

> The PLAY model, it’s awesome. I fully 100% think it's a great framework. *And* [emphasis added] I appreciate how you're looking into this because I feel like I do have the experience and some of the common sense and some of the … like skills that I can tweak the information. But I think it would be hard to come up with this formula if you were a newbie right out of school and you didn't have experience …

Strengths and Limitations

A strength of this study is that provider perspectives provide useful information from those implementing PLAY; however, this information is based solely on PPCs' perceptions rather than from caregivers themselves. A limitation of the present study is the lack of family perspectives. Future research would benefit from using the same theoretical models to structure a study of TU caregivers' perspectives on barriers to PLAY implementation and the facilitators and strategies that are helpful in addressing those barriers. Another limitation of provider perspectives is due to PPCs' biases in favor of the PLAY Project model and in perhaps forgetting to note barriers that have been encountered then addressed. The perspectives of low-resourced, culturally diverse, and rural dwelling families are crucial to obtaining a complete picture of PLAY Project services and to confirming PPCs' perceptions of barriers and adaptations that can be used to best implement PLAY with TU populations.

Selection bias may have occurred in this study. PPC demographics indicate that the mean years of experience for interviewees (8.45) was greater than that of survey respondents (TU = 6.97; WR = 5.08). This self-selection of more experienced PPCs who volunteered to be interviewed is a benefit rather than a limitation as it ensured that these more experienced PPCs were the ones to share their expertise in adapting PLAY with TU populations. In addition, a strength of this study is illustrated by the current caseload of the TU survey respondents (n = 31), of which the interview participants are a subset, which totaled 207 families. This total caseload indicates the large amount of data survey and interview participants were drawing from as well as the vast impact the results of the study may have.

The researcher's status as a PLAY Project Consultant in training who implements PLAY primarily with families who are low-resourced, culturally diverse, and rural dwelling, is both a strength and a limitation of the present study. The researcher has more knowledge about the PLAY Project than someone who has not trained in the model and about implementing PLAY with TU populations, factors which have motivated the present study and may have led to deeper insights which could be beneficial to the study. The researcher has considered and acknowledged that these aspects may contribute to biases and influences for the sake of transparency and fidelity (Levitt et al., 2018).

A methodological strength of this study was its mixed-methods analysis. Using surveys to determine barriers then determining adaptations to address these barriers through semi-structured interviews allowed for a deeper understanding of results than surveys alone would have provided (Rudestam & Newton, 2015). However, a limitation of the present study is its use of the Ecological Validity Model as the primary guide for survey and interview questions, which may have limited the study's results. Using a different guiding theoretical model may have resulted in other barriers and/or facilitators/strategies. The researcher's translation of the eight dimensions of the EVM into questions also may have been a limitation in that the questions may have been confusing, as noted in some PPCs' comments at the end of their survey. PPCs asked for clarification when needed during interviews; however, this was not possible during surveys. A final limitation of the theories used in this study is that neither the EVM or Theory of Change encompassed the interpersonal characteristics of the provider (e.g., PPC qualities and outlooks). This gap in these theories could be further explored in future research.

Participant demographics were both a strength and a limitation of the study. It was a strength that experienced PPCs participated from various regions of the US. However, a limitation is regarding the narrow REN of participants. As noted in the demographics table and earlier in this manuscript, all survey participants' REN was marked as white except for one who marked Hispanic, one who marked Asian, and one who marked Other. All but one interview volunteer (Hispanic) marked white as their REN. Despite attempts to interview the one Hispanic PPC who indicated interest, it was not possible to schedule with her, resulting in all interviews being conducted with white PPCs. This leaves a large gap in perspectives from PPCs diverse in REN and/or culture, a gap which future studies should continue to attempt to alleviate.

Implications

Future Studies

This study investigated provider perspectives on using a parent-implemented autism intervention with low-resourced, culturally diverse, and rural dwelling families. However, provider perspectives alone present an incomplete picture of the effectiveness of using an autism PIM with TU populations. Future studies of caregiver perspectives that use the same methodology would contribute a wealth of information on the barriers faced by TU families and the facilitators/strategies that are useful in addressing those barriers. Using a similar structure guided by the EVM and Theory of Change for future studies would allow for a comparison of perspectives from providers and from families. The methodology used for the present study may also be used to inform future research about a variety of additional autism interventions and adaptations used when implementing them with TU families, including provider and caregiver perspectives about barriers and adaptations to autism interventions that are PIMs and those that are not PIMs.

Practice

The fourth chapter of this manuscript is a clinical focus article written for submission to *Perspectives of the ASHA Special Interest Groups*, a journal for Communication Sciences and Disorders professionals (a.k.a. Speech-Language Pathologists (SLPs)). The primary aim of

Perspectives is “to help bridge the gap between research and clinical practice in the discipline” (*Perspectives of the ASHA Special Interest Groups*, n.d.), which is also an aim of the present study and implementation science. It is the researcher’s hope that disseminating the results of the present study in such a clinically applicable format will enable the information to be directly applied to clinical practice, lessening the gap between research and clinical practice. SLPs may find the resulting adaptations beneficial in their implementation of the PLAY Project or other autism PIMs with TU populations. In addition, SLPs may find some of the adaptations useful in their general speech therapy practice with TU populations.

Results of the present study will also be shared with the PLAY Project organization for their use in program development and training. It is an aim of the study that the resulting facilitators and strategies, based on PPCs’ perspectives, will provide increased knowledge of how effective PLAY is with TU families and adaptations PPCs can use when implementing PLAY so that it is as effective and beneficial as possible, ultimately decreasing autism symptomatology for traditionally underserved children. Ideally, this study in combination with future studies that include caregiver perspectives will result in effective adaptations that can be applied to a variety of interventions used with families who are low-resourced, culturally diverse, and rural dwelling.

Policy

The high lifetime costs of supporting a person with autism (~$1.4 million without I/DD and ~$2.4 million with I/DD (Buescher et al., 2014)) are concerning for many, particularly for populations who are traditionally underserved. It is crucial that insurance policies reimburse treatments for autism to help families mitigate these lifetime costs. As previously noted, all 50 states have now passed insurance mandates for autism intervention (*2022 Advocacy Highlights |*

Autism Speaks, n.d.); however, that coverage is primarily designated for Applied Behavioral Analysis (ABA) (Cooper et al., 2007), an intervention based on operant conditioning that was not originally created as a PIM. In its original form, ABA requires much time on the behalf of the professional providing services, leading to a high cost of treatment. While ABA is considered evidence-based (EB) (T. Smith & Iadarola, 2015), many other autism treatment practices have also been designated EB. PIMs are not only EB (Odom et al., 2010; Steinbrenner et al., 2020; Wong et al., 2015), they are a lower-cost intervention due to their decreased demand on the professional (Solomon et al., 2014). This decreases costs for families, insurance companies, and society in general.

Interventions are not one size fits all, and families must have a say in determining what intervention best fits them and their child. It is the hope of the researcher that the current study will add to the breadth of knowledge about the effectiveness of PIMs by contributing to the limited knowledge about how to effectively implement autism PIMs with traditionally underserved families. Studies such as this one confirm that PIMs are effective treatments for a wide variety of families, including those who are low-resourced, culturally diverse, and rural dwelling, and provide useful adaptations for providers to apply when implementing PIMs with TU families. These are important considerations for parents, providers, and healthcare policymakers when determining in which interventions to invest their time and money to address the ultimate goal of the study to reduce health inequities for TU families who have children with autism. For these reasons, expanding current insurance mandates to cover parent-implemented autism interventions would benefit children with autism, their families, insurance companies, and society in general.

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Table 1

PIM Outcomes

Outcome	Oono et al. (2013)	Binns & Oram Cardy (2019)
Receptive language	+	
Expressive language	+	
Overall language	+	*
Joint attention	+	+
Autism severity/symptoms	+	
Child initiations	*	+
Social communication	*	
Negative behaviors	*	
Attention		+
Facial focus		+
Engagement in reciprocal interactions		+

Note. + = improved; * = inconsistent results.

Table 2

Barriers and Facilitators to Using Autism Interventions with TU Families

Area addressed/Barrier	Facilitator
Access to services (Carr & Lord, 2016; Kasari, Lawton, et al., 2014)	Home/local sessions (Carr & Lord, 2016; Kasari, Lawton, et al., 2014) Travel expense compensation (Carr & Lord, 2016) Work with family schedules (Kasari, Lawton, et al., 2014) Decrease complexity of written materials (Pickard et al., 2016)
• Primary language (DuBay et al., 2018)	Use CG's preferred language (Kasari, Lawton, et al., 2014)
Attrition (Carr & Lord, 2016)	Flexible service delivery (Carr & Lord, 2016; Pickard et al., 2016) Liberal cancellation policy (Carr & Lord, 2016) Monetary incentives (Carr & Lord, 2016)
Promote change (Carr & Lord, 2016)	Assist with identifying/enrolling in community resources (Carr & Lord, 2016)
Family	
• Stigma (DuBay et al., 2018)	More extended family involvement (DuBay et al., 2018)
• Stressors/structure (DuBay et al., 2018)	Less extended family involvement (DuBay et al., 2018)
Therapy strategies (DuBay et al., 2018; Kasari, Lawton, et al., 2014; Pickard et al., 2016) • Overwhelming when mixed and matched (DuBay et al., 2018)	Must be seen as effective (DuBay et al., 2018) Incorporate physical connection (DuBay et al., 2018) Use daily routines important to family (Kasari, Lawton, et al., 2014; Pickard et al., 2016)
Service providers • Language barrier (DuBay et al., 2018) • Lack of professionalism (DuBay et al., 2018) • Limited training (DuBay et al., 2018)	More involvement & support (DuBay et al., 2018) Open communication (DuBay et al., 2018) Increase professionalism (DuBay et al., 2018) Increase trainings (DuBay et al., 2018)
	Other facilitators: • Include all family members present (Carr & Lord, 2016; Pickard et al., 2016) • Strong parent-therapist alliance (Pickard et al., 2016) • Group therapy (DuBay et al., 2018)

	• Consider cultural values (DuBay et al., 2018)

Table 3

Survey Participants' Demographics

Characteristic	TU Survey PPCs (*n* = 31)		WR Survey PPCs (*n* = 40)	
	Percent	Mean (SD)	Percent	Mean (SD)
Gender (% female)	100.00		97.50	
Age in years		44.71 (9.83)		44.62 (10.40)
Ethnicity				
White	96.80		95.00	
Hispanic	3.20			
Asian			2.50	
Other			2.50	
Education				
Bachelor's degree	41.90		30.00	
Master's degree	54.80		65.00	
Doctorate	3.20		5.00	
Discipline				
Education	25.80		17.50	
Occupational Therapy	25.80		15.00	
Social Work	12.90		10.00	
Speech-Language Pathology	9.70		12.50	
Psychology			7.50	
Other (i.e., Developmental Specialist, Counseling)	25.80		37.50	
Years certified PPC		6.97 (4.43)		5.08 (4.20)
Current PLAY Caseload		6.68 (7.33)		4.13 (5.72)

Table 4

t-test Results

Item	TU (*n* = 31) Mean (SD)	WR (*n* = 40) Mean (SD)	*p*-value	Hedges' *g*
Feel successful	3.48 (0.85)	4.00 (0.88)	0.015	0.59
Encounter barriers	2.68 (0.83)	2.40 (0.81)	0.164	0.34
Adapt PLAY	2.97 (1.08)	2.40 (1.22)	0.041	0.49
SES				
Easier	1.57 (0.50)	2.73 (0.91)	<0.001	1.54
More difficult	2.27 (0.98)	1.76 (0.50)	0.014	0.66
Tech Access/ Capabilities				
Easier	1.63 (0.81)	3.58 (1.06)	<0.001	2.02
More difficult	2.73 (1.01)	1.55 (0.62)	<0.001	1.41
Geographic location				
Easier	1.50 (0.68)	2.97 (1.29)	<0.001	1.39
More difficult	2.27 (1.23)	1.67 (0.54)	0.018	0.64
Home characteristics				
Easier	1.73 (0.74)	3.03 (1.10)	<0.001	1.35
More difficult	2.33 (0.96)	1.91 (0.52)	0.037	0.55
REN diversity				
Easier	1.63 (0.76)	2.28 (1.32)	0.013	0.58
More difficult	2.10 (0.80)	1.59 (0.64)	0.006	0.71
Primary language				
Easier	2.34 (1.40)	4.03 (0.10)	<0.001	1.41
More difficult	3.07 (1.28)	1.08 (0.27)	<0.001	2.28
Cultural identity				
Easier	2.30 (0.99)	2.87 (1.21)	0.037	0.50
More difficult	2.13 (0.73)	1.82 (0.69)	0.073	0.44
Adapt PLAY based on culture	3.17 (1.26)	2.91 (1.22)	0.415	0.20
PLAY structure				
Easier	2.10 (0.96)	2.69 (0.95)	0.014	0.62
More difficult	2.37 (0.81)	1.86 (0.42)	0.004	0.80
PLAY vocabulary/concepts				
Easier	1.77 (0.77)	3.92 (0.62)	<0.001	3.08
More difficult	2.50 (0.90)	1.82 (0.60)	0.001	0.90
PLAY goals				
Easier	2.13 (0.94)	3.44 (0.89)	<0.001	1.41
More difficult	2.17 (0.99)	1.94 (0.60)	0.282	0.28
Education/Learning Ability				

Easier	1.63 (0.72)	3.03 (0.10)	<0.001	1.58
More difficult	2.43 (0.82)	1.78 (0.55)	0.001	0.93

Note: Sample sizes for TU surveys ranged from 29 to 31. Sample sizes for WR surveys ranged from 32 to 40.

Table 5

Interview Participants' Demographics

Characteristic	Percent (*n = 11)*	Mean (SD)
Gender (% female)	100.00	
Age in years		45.55 (11.10)
Ethnicity		
White	100.00	
Education		
Bachelor's degree	36.40	
Master's degree	54.50	
Doctorate	9.10	
Discipline		
Education	27.30	
Occupational Therapy	27.30	
Speech-Language Pathology	18.20	
Psychology		
Other (i.e., Developmental Specialist, Counseling)	27.30	
Years certified PPC		8.45 (4.59)
Current PLAY Caseload		11.00 (8.51)

Table 6

Barriers and Related Facilitators/Strategies

Barrier	Facilitator/Strategy
SES/Financing PLAY Services	Grants/scholarships Sliding scales/flexible payments Modified/condensed programs Free sessions/IWO code
Technological access/knowledge/capabilities	Print and/or mail VRFs Review VRFs in person
Schedule/availability	Schedule flexibility Tele-PLAY Decrease session length Communication between sessions
Home location	Location flexibility Schedule flexibility Group families by location Tele-PLAY
Home characteristics	Implement PLAY outdoors Adapt activities Implement PLAY via family routines Gently suggest modifications Connect family with resources Give family toys/materials Use toys, materials, space family has
Primary language	Translator/interpreter Bilingual PPC Translated materials Translation technology Body language
Culture	Learn more Adapt activities Incorporate culture/language Self-reflection
Structure of PLAY	Implement PLAY via family routines Troubleshoot prior to services Plan/schedule short time frames for implementation Decrease length of program Decrease frequency of VRFs Omitting VRFs Discuss purpose/rationale
PLAY vocabulary/concepts	Modify language/vocabulary Teaching strategies
PLAY goals	Prioritize family goals

	FDLs
	Realistic/tangible/strengths-based goals
	Teaching strategies
Education level	**PLAY components:** modeling/coaching; PLAY vocabulary/concepts; toys not necessary; fun with people; caregiver-implemented **Teaching strategies:** focus on results/progress; purpose/rationale; pacing/chunking information; repetition; learning style/ability; assess caregiver; check comprehension
Additional facilitators/strategies	PPC experience and network PPC qualities/outlooks PPC efforts

Table 7

Variables as Perceived by PPCs

Variable	Survey Result		Interview Result	
	Make it easier to implement PLAY with WR	Make it more difficult to implement PLAY with TU	Barrier to PLAY implementation with TU	Facilitators/ strategies used when implementing PLAY with TU
SES/Finances	X	X	X	X
Technological Access/Capabilities	X	X	X	X
Home Location	X	X	X	X
Home Characteristics	X	X	X	X
REN	X	X		
Primary Language	X	X	X	X
Culture	X			X
PLAY Structure	X	X	X	X
PLAY Vocabulary/ Concepts	X	X	X	X
PLAY Goals	X		X	X
Low Education Level/IDD	X	X	X	X

Table 8

Barriers and Related Adaptations

Barrier	Adaptation
Cultural diversity	Learn more • Research • Mentor • Family Adapt activities Incorporate culture/language Self-reflection • White privilege • Cultural humility
Primary language	Translator/interpreter • Professional • Family member Bilingual PPC Translated materials Translation technology Nonverbal communication • Gestures • Facial expressions • Body language
PIM vocabulary/concepts	Modify language/vocabulary Teaching strategies
PIM goals	Prioritize family goals FDLs Realistic/tangible/strengths-based goals Teaching strategies
Structure of PIM • Putting in the time • Written reports • Videorecording	Implement via family routines Troubleshoot prior to services Plan/schedule short time frames for implementation Decrease length of program Decrease frequency of written reports Discuss purpose/rationale Humor
Education/Learning ability	**PLAY components:** modeling/coaching; PLAY vocabulary/concepts; toys not necessary; fun with people; caregiver-implemented **Teaching strategies:** focus on results/progress; purpose/rationale; pacing/chunking information; repetition; learning style/ability; assess caregiver; check comprehension
Technological access/knowledge/capabilities	Print and/or mail VRFs Review VRFs in person

Home characteristics • Size • Condition • TV on • Lack of toys/materials	Implement outdoors Adapt activities Implement via family routines Gently suggest modifications Connect family with resources Give family toys/materials Use toys, materials, space family has
Home location	Location flexibility Schedule flexibility Group families by location Virtual sessions
Schedule/availability	Schedule flexibility Virtual sessions Decrease session length Communication between sessions
SES/Financing Services	Grants/scholarships Sliding scales/flexible payments Modified/condensed programs Free sessions/online workshop code
Additional facilitators/strategies	PPC experience and network PPC qualities/outlooks PPC efforts

Table 9

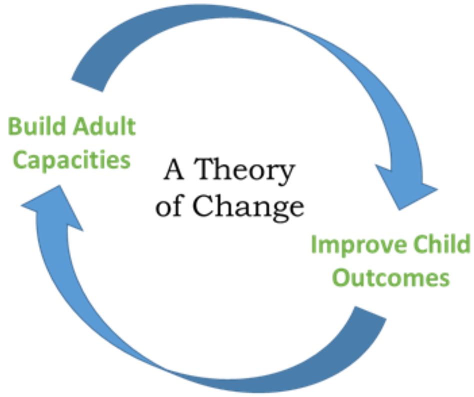
Stressors and Familial/Community Supports* t*-test Results

Item	TU (*n* = 30) Mean (SD)	WR (*n* = 32) Mean (SD)	*p*-value	Hedges' *g*
Stressors				
Resources				
Create less stress	1.40 (0.72)	2.72 (1.02)	<0.001	1.46
Create more stress	3.37 (1.10)	1.69 (0.47)	<0.001	1.99
Cultural diversity				
Creates less stress	1.67 (0.71)	2.22 (0.94)	0.011	0.65
Creates more stress	2.67 (0.88)	1.78 (0.49)	<0.001	1.23
Home location				
Creates less stress	1.76 (0.64)	2.00 (0.63)	0.146	0.38
Creates more stress	2.31 (0.89)	1.97 (0.41)	0.066	0.49
Familial/community supports				
Resources				
Create less support	10.93 (1.03)	9.97 (0.60)	<0.001	1.13
Create more support	9.93 (0.75)	10.48 (0.85)	0.010	0.68
Cultural diversity				
Creates less support	10.28 (0.70)	9.90 (0.47)	0.021	0.62
Creates more support	9.97 (0.57)	10.32 (0.83)	0.056	0.49
Home location				
Creates less support	10.28 (0.70)	9.87 (0.62)	0.022	0.61
Creates more support	10.03 (0.78)	10.26 (0.73)	0.256	0.29

Note: Sample sizes for TU surveys ranged from 29 to 30. Sample sizes for WR surveys ranged from 31 to 32.

Figure 1

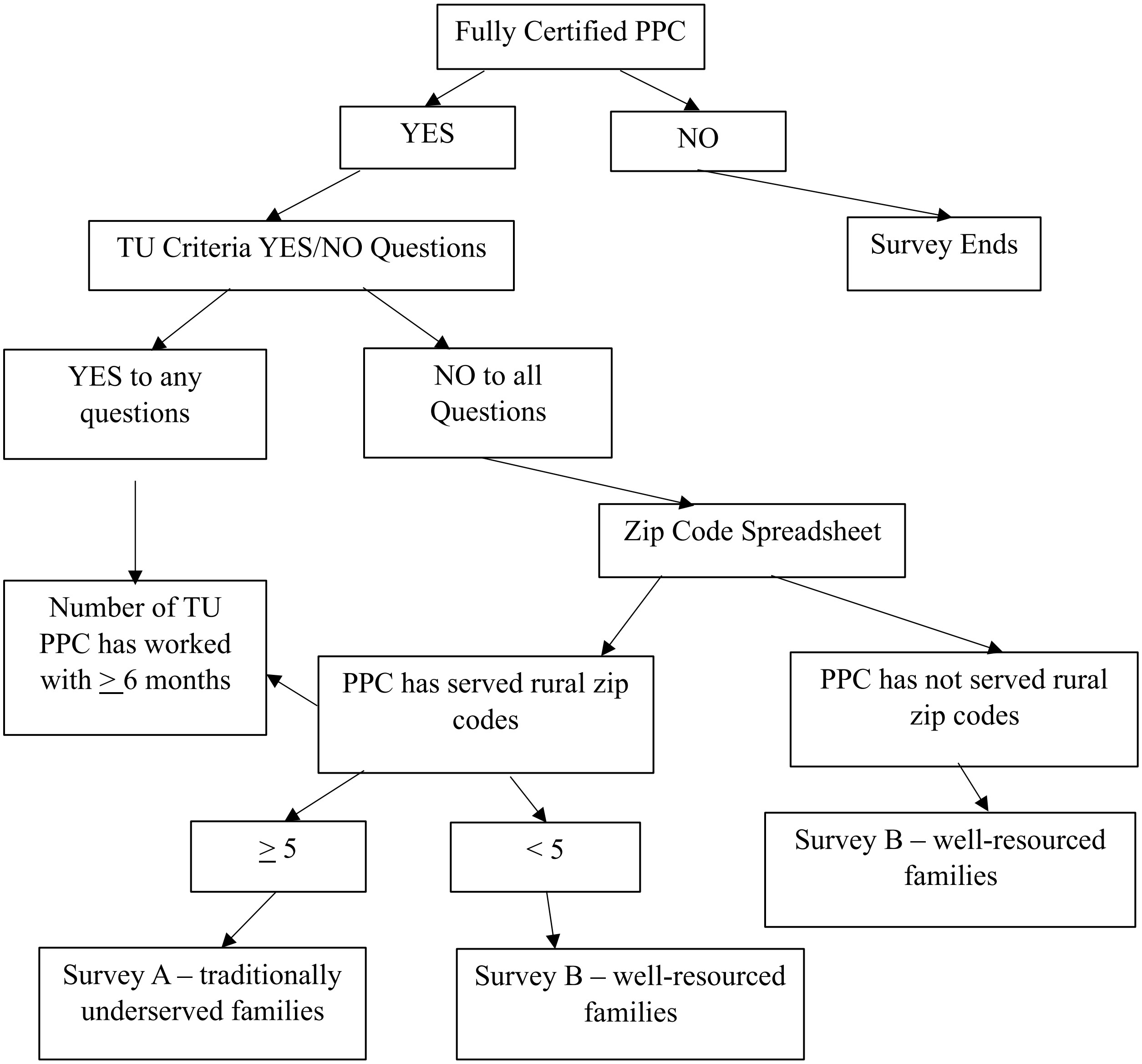
Theory of Change Model



Note. From the Center of the Developing Child at Harvard University (*Building Adult Capabilities to Improve Child Outcomes*, n.d.).

Figure 2

Survey Inclusion/Exclusion Flow Chart



Appendix A

Survey Invitation E-mail

Dear <Insert PLAY Project Consultant/Organization>,

Thank you for all of the amazing work you do using the PLAY Project autism intervention! We would love to have your help in making the PLAY Project the best it can be by completing a research survey about using PLAY with traditionally underserved families. It will take approximately 15 minutes to complete, and for your time, you will receive a $10 gift card. You must be a fully certified Play Project Consultant, meaning you have completed the supervised video-submission period, to complete this survey.

If you are receiving this invitation as an organization with more than one PLAY Project Consultant (PPC), we ask that you please reply to this email with the total number of PPCs who work for your organization then forward the invitation to all PPCs who work for your organization.

The PLAY Project Organization fully endorses this survey and research project:

> *"Hi All, Dr. Rick here. I am very supportive of Erika's research project which will help us in The PLAY Project understand how to better help underserved families. PLEASE give Erika a hand on this especially if you are serving families who live in rural-dwelling, culturally diverse, and/or low-resourced communities. It would mean a lot to me personally because it could help so many needy families. Thanks so much!"*

Please complete the survey by <Insert survey due date>.

Survey link here

All of your answers will be kept secure and confidential and could provide important information to help PLAY Project Consultants like yourself use PLAY in the most effective ways possible.
I hope you'll take 15 minutes to complete the survey and receive a $10 gift card!

Thank you,

Erika N. Palm, MA, CCC-SLP
PLAY Project Consultant In-Training
Interdisciplinary Health PhD Candidate

Appendix B

Online Survey Consent

You are being invited to participate in a research study titled *Gathering Provider Perspectives to Evaluate the Use of the PLAY Project with Traditionally Underserved Populations*. This study is being done by a PhD student, Erika Palm, from Northern Arizona University.

The purpose of this research study is to obtain provider perspectives on using the PLAY Project autism intervention, a parent-implemented model, with traditionally underserved families (TUF), defined as families who are rural-dwelling, culturally diverse, and/or low-resourced. The goal of the proposed project is to identify potential strategies that could help PLAY Project Consultants deliver the PLAY Project autism intervention in a way that may be more effective for TUF. If you agree to take part in this study, you will be asked to complete an online survey/questionnaire. This survey/questionnaire will ask about your personal demographics, de-identified demographics of families with whom you work, and the facilitators and barriers you encounter when using PLAY with TUF, and it will take you approximately 15 minutes to complete.

You may not directly benefit from this research; however, we hope that your participation in the study may help identify potential strategies that could help you deliver PLAY in the most effective way possible for TUF. We believe there are no known risks associated with this research study; however, as with any online related activity the risk of a breach of confidentiality is always possible. To the best of our ability your answers in this study will remain confidential. We will minimize any risks by keeping all electronic data and notes on a password protected drive, an encrypted drive, and a cloud server and deleting them within one year of the study, following data analysis. Data analysis and notes will be deleted from the cloud within five years. Hard copies of written transcripts will be kept in a locked cabinet with the primary researcher at the Institute for Human Development at Northern Arizona University for 5 years then being shredded.

Your participation in this study is completely voluntary and you can withdraw at any time. You are free to skip any question that you choose. If you choose not to participate it will not affect your relationship with the PLAY Project organization or Northern Arizona University or result in any other penalty or loss of benefits to which you are otherwise entitled.

If you have questions about this project or if you have a research-related problem, you may contact the researcher, Erika Palm at 928-600-4283. If you have any questions concerning your rights as a research subject, you may contact Northern Arizona University IRB Office at irb@nau.edu or (928) 523-9551.

By submitting this survey, I affirm that I am at least 18 years of age, I am a PLAY Project Consultant, and I agree that the information may be used in the research project described above.

Appendix C

Example Survey A (TUF) Questions as Related to EVM and Theory of Change

Note: Similar questions were asked for Survey B but worded for the context of WRF.

EVM Dimensions and Related Questions

1) Language
   - The family’s primary language facilitates use of the PLAY Project with TUF.
   - The family’s primary language creates a barrier when using PLAY with TUF.
2) Persons
   - The family’s race/ethnicity/nationality (REN) facilitates use of the PLAY Project with TUF.
   - They family’s REN creates a barrier when using PLAY with TUF.
3) Metaphors
   - PLAY Project vocabulary/concepts facilitate use of PLAY with TUF.
   - PLAY Project vocabulary/concepts create a barrier when using PLAY with TUF.
4) Content
   - The family’s culture facilitates use of the PLAY Project with TUF.
   - The family’s culture creates a barrier when using PLAY with TUF.
5) Concept
   - PLAY constructs (e.g., the structure of the method, time commitment, activities, techniques, methods) coincide with the culture of TUFs and facilitate use of PLAY.
   - PLAY constructs conflict with the culture of TUFs and create barriers when using PLAY.

6) Goals
    - The goals of the PLAY Project coincide with the culture of TUFs and facilitate use of PLAY.
    - The goals of the PLAY Project conflict with the culture of TUFs and create barriers when using PLAY.
7) Methods
    - I adapt the PLAY Project due to consideration of the culture of TUFs.
8) Context
    - When using PLAY, I consider and support the particular acculturative stage of individual families that are traditionally underserved.

Theory of Change-Related Questions

- When using PLAY with low-resourced/culturally diverse/rural dwelling families, I notice that they encounter less stressors than well-resourced families.
    - When using PLAY with low-resourced/culturally diverse/rural dwelling families, I notice that they encounter more stressors than well-resourced families.
- When using PLAY with low-resourced/culturally diverse/rural dwelling families, I notice that they have less familial/community supports than well-resourced families.
    - When using PLAY with low-resourced/culturally diverse/rural dwelling families, I notice that they have more familial/community supports than well-resourced families.

Appendix D

Interview Guide

Greeting and Verbal Consent

Hi, it's great to meet you! Thank you so much for taking the time to meet with me today. Before we begin, I want to make sure you have received and taken the time to review the verbal consent document? Do you have any questions about it? And before I start recording, do I have your consent to video and audio record this zoom interview?

Now that I'm recording, please state your name and whether you agree to be a part of this study, which includes video and audio recording this zoom interview.

Rapport Building and General Questions

First, I'll tell you a little bit about myself. I'm a Speech-Language Pathologist and have had my current job since March of 2016. I do early intervention out on the Navajo Nation and started my PLAY Project Training in the summer of 2018 and am still technically in-training, with the interruption of covid and working on my PhD. So I got a chance to PLAY in home visits before covid and have just gotten going again with it in homes out there…so pretty much all of the families I work with out there (and use PLAY with) meet the criteria for being TUF. Any questions about any of that?

OK, well, now I'd like to know a little bit about you and your experience with the PLAY Project.

- Where do you currently work?
- How long have you been a PLAY Project Consultant or PPC?
- Discipline?
- How would you describe the families you typically use PLAY with?

As a reminder, this study is about traditionally underserved families, which includes families who are low-resourced, culturally diverse, and/or rural-dwelling. Low-resourced families are those in which the primary caregiver's education level is a high school diploma or lower, the single caregiver (if only one caregiver in the home) or both caregivers (if more than one caregiver in the home) is/are unemployed, and/or the family receives government assistance (i.e., Medicaid). Culturally diverse families are those who self-identify as a race, ethnicity, or nationality (REN) other than white and/or speak a language other than English in the home. Rural-dwelling families are those who live in zip codes identified as rural by the Federal Office of Rural Health Policy (FORHP) Data Files.

[The following definition will be shared on the zoom screen with participants, as needed throughout the interviews:

Traditionally underserved families (TUF):

a. Low-resourced

        i. Primary caregiver’s education level is a high school diploma or lower;
        ii. Single caregiver (if only one caregiver in the home)/both caregivers (if more than one caregiver in the home) is/are unemployed;
        iii. and/or the family receives government assistance (i.e., Medicaid).
    b. Culturally diverse
        i. Self-identify as a race, ethnicity, or nationality (REN) other than white
        ii. and/or speak a language other than English in the home.
    c. Rural-dwelling
        i. Live in zip codes identified as rural by the Federal Office of Rural Health Policy (FORHP) Data Files.]

- What types of families have you worked with who fit that definition of TUF?
- Do you tend to have more homogenous or diverse caseloads (all/most are TUF, half TUF and half well-resourced families, etc.)?
- How has it been helpful to use the PLAY Project with culturally diverse, low-resourced, and/or rural-dwelling families (TUFs)?
- What barriers have you encountered to using PLAY with TUFs?

Ecological Validity Model

1. Language
    a. What do you do when a family speaks a different language than you?
    b. Can you give me an example of that?

2. Persons
    a. What do you do when a family’s race/ethnicity/nationality (REN) is different you’re your own?
    b. Can you give me an example of that?

3. Metaphors
    a. How do traditionally underserved families (TUF) tend to understand and implement the vocabulary/concepts that are used in PLAY?
    b. What do you do about that?
    c. Can you give me an example?

4. Content
    a. What do you do when a family’s cultural knowledge, such as their cultural values and traditions, are different than your own?
    b. How do they impact PLAY?
    c. What do you do about that?
    d. Can you give me an example?

5. Concept
    a. How do TUF tend to understand and implement the constructs of PLAY, such as the structure of the method, the time commitment, the activities, the techniques, and the methods?

   b. What do you do about that?
   c. Can you give me an example?

6. Goals
   a. What do you do when the goals of PLAY coincide or conflict with the goals of TUF?
   b. Can you give me an example of that?

7. Methods
   a. In what ways do you adapt PLAY due to consideration of traditionally underserved families' culture?
   b. Can you give me an example?

8. Context – When answering the following question, please keep in mind the following definition of "acculturation" from Dictionary.com: the process of sharing and learning the cultural traits or social patterns of another group who share a different culture than your own. As described by Wikipedia, this "different culture than your own" is from "the overarching host culture," which in this case is mainstream American culture.
   a. In what ways do you consider and support the degree to which that particular family has acculturated into mainstream American culture?
   b. Can you give me an example?

Family/Caregiver Characteristics

9. Location of home
   a. When working with families who live in rural areas, how does the location of their home impact PLAY?
   b. What do you do about that?
   c. Can you give an example?

10. Characteristics of home
    a. When working with TUF, how do the characteristics of the home itself, such as the size of the home, the number of people present, the furniture, etc., impact PLAY?
    b. What do you do about that?
    c. Can you give an example?

11. Socio-economic status (SES)
    a. When working with families with a low socio-economic status (SES), how does their SES impact PLAY?
    b. What do you do about that?
    c. Can you give an example?

12. Technology
    a. When working with TUF, how does their access to technology, such as Wi-Fi or devices, and/or their technological knowledge and capabilities impact PLAY?

    b. What do you do about that?
    c. Can you give an example?

13. Education level
    a. When working with TUF, how does a low education level of the family/parents/caregivers impact PLAY?
    b. What do you do about that?
    c. Can you give an example?

Modality

14. Degree to which PPCs agree/disagree that each of the following modalities through which they may deliver PLAY sessions facilitates or creates a barrier to using PLAY with TUF (2 scales per modality)
    a. In-person
    b. Video conference
    c. Telephone

Theory of Change

15. What are some stressors that appear to impact traditionally underserved families' ability to implement PLAY?
    a. How/why do these stressors impact families' ability to implement PLAY?
    b. Can you give an example?

16. What have you noticed about the level of family/community supports TUFs have?
    a. How do they impact families' ability to implement PLAY?
    b. Can you give an example?

17. When working with TUF, what has helped caregivers be able to increase their capacity during PLAY?
    a. When working with TUF, what has made it difficult for caregivers to increase their capacity during PLAY?
    b. Can you give some examples of each of these?

18. How has working with TUF influenced how you implement PLAY (with all families)?
    a. Can you give an example?

COVID

19. How has COVID impacted your work with TUF?

Conclusion

20. We have talked a lot about using PLAY with traditionally underserved families – what have I missed?

   a. Given your years of experience, what else should I know to help me understand how to best use PLAY with traditionally underserved families?

Thank you so much for your time today. You have my email and phone number in case you have any further comments or questions about the study. May I contact you if I need to ask any clarifying or follow-up questions? Gift cards…

Thank you again – I greatly appreciate your participation. Have a great day.