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Adapting parent engagement strategies for an evidence-based parent-mediated intervention for young children at risk for autism spectrum disorder

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Abstract

Aims: Aims included (a) characterizing provider feedback on parent engagement strategies integrated into a parent-mediated intervention for toddlers at risk for autism spectrum disorder (ASD) and (b) identifying provider characteristics that predict attitudes about parent engagement strategies.

Methods: A mixed method approach was utilized, including gathering quantitative data via survey (breadth) and collecting qualitative data via interview (depth). Acceptability, utility, appropriateness, sustainment, generalizability, and perceived effectiveness were examined. Fourteen agency leaders and 24 therapists provided input.

Results: Providers perceived the integration of parent engagement strategies as having a positive impact on implementation. Providers considered the strategies to be acceptable, appropriate, and effective, though barriers of time and complexity were noted. Provider characteristics did not consistently predict attitudes about the engagement strategies.

Conclusions: Incorporating parent engagement strategies into parent-mediated interventions for ASD is well-received

by providers and may improve quality of service delivery for families served in early intervention for ASD.

KEYWORDS

autistic disorder, diffusion of innovation, early intervention (education), parents, perception, professional-family relations

1 | INTRODUCTION

Parent and caregiver (hereafter referred to as parent) treatment engagement is a critical element of treatment effectiveness, in particular, for child and family focused interventions (Gopalan et al., 2010; Haine-Schlagel & Walsh, 2015; Karver, Handelsman, Fields, & Bickman, 2006; Nock & Ferriter, 2005). Parent engagement refers broadly to parent involvement in treatment and/or parent behaviors that promote their child's involvement in treatment. Parent engagement has been conceptualized as including five domains, relationship, expectancy, attendance, clarity, and homework (Becker, Boustani, Gellatly, & Chorpita, 2018), and can also be organized into two components: attitudinal and behavioral (e.g., Haine-Schlagel & Walsh, 2015; Staudt, 2007). Attitudinal engagement includes expectations about treatment, perceptions of benefits of treatment, and the therapeutic relationship (e.g., Becker et al., 2018; Staudt, 2007). Behavioral engagement refers to observable behaviors such as attending treatment sessions and active participation in the treatment itself, including participation in session activities and discussions and homework completion (Haine-Schlagel & Walsh, 2015). While attendance is a necessary component of behavioral engagement, in-session participation is important to provide opportunities to enhance learning and utilization of new skills (Nock & Ferriter, 2005). Further, effort between sessions by parents increases the likelihood that new learning is generalized to achieve a treatment's desired outcomes (Karver et al., 2006; Kazantzis, Whittington, & Dattilio, 2010).

Parent engagement is particularly critical for the effectiveness of parent-mediated interventions for young children with autism spectrum disorder (ASD; e.g., Oono, Honey, & McConachie, 2013; Schreibman et al., 2015; Stahmer, Schreibman, & Cunningham, 2010). Early intervention is crucial for promoting positive developmental outcomes for children with ASD (Dawson et al., 2012; Schertz, Odom, Baggett, & Sideris, 2013; Zwaigenbaum et al., 2015). Parent-mediated interventions that focus on teaching parents to integrate evidence-based strategies into day-to-day routines involving their young child are considered state-of-the-art. These interventions can enhance parent knowledge and self-efficacy and increase intervention intensity as parents can continue to teach their children skills in the home (Burrell & Borrego, 2012; Oono et al., 2013; Pickard, Kilgore, & Ingersoll, 2016). Additionally, engaging parents early in the intervention process increases parents' sense of competence and empowerment (Stahmer et al., 2017). In both the early intervention and special education service contexts, parents report parent-mediated interventions to be the most effective and positive services they received (Hume, Bellini, & Pratt, 2005; Ingersoll & Dvortcsak, 2006).

Although parent-mediated interventions are a value and mandate of public early intervention systems, such interventions are not widely implemented in the community (Campbell & Sawyer, 2007; Maglione, Gans, Das, Timbie, & Kasari, 2012; Stahmer, Collings, & Palinkas, 2005; Thomas, Ellis, McLaurin, Daniels, & Morrissey, 2007). Most studies of parent-mediated interventions have occurred in the context of research studies that generally include high resource, highly motivated families. Families participating in research studies may be different from those who receive services in the community. Providers likely face challenges implementing parent-mediated interventions in usual community services. Community early intervention providers may lack training and comfort working directly with parents given that their current training typically focuses on directly interacting with children and not on adult learning or parent-mediated strategies (Bailey, Buysse, Edmondson, & Smith, 1992; Fleming,

Sawyer, & Campbell, 2011). For example, data examining early intervention providers' use of participation-based practices with parents indicated that even after specific professional development (group sessions and self-study) aimed at promoting parent involvement in early intervention sessions, 40% of interventionists continued to provide primarily child-directed services (Campbell & Sawyer, 2007). Close examination of provider perspectives on involving parents in early intervention often reveals a disconnect between recommended practices and implementation, with providers reporting limited frequency and confidence in working directly with caregivers (Peterson, Luze, Eshbaugh, Jeon, & Kantz, 2007; Sawyer & Campbell, 2012). Furthermore, parents often face challenges that can make it difficult for them to fully engage in their child's treatment. Parents of young children with ASD face many stressors that can impede their ability to participate effectively in parent-mediated approaches (e.g., Baker-Ericzen, Brookman-Frazee, & Stahmer, 2005; Davis & Carter, 2008). For example, factors such as recent diagnosis (Moh & Magiati, 2012), difficulty accessing services (Carter, de Martínez-Pedraza, & Gray, 2009), and severe child symptomology (Zaidman-Zait et al., 2014) are all known to particularly heighten parental stress for those with young children. To address such stressors, the field has called for specific attention to better parental support in the context of intervention received by families (Stahmer & Pellecchia, 2015). Furthermore, studies of parent follow-through at home after participating in parent-mediated ASD interventions have demonstrated parents' difficulties with using intervention strategies with the same intensity as the intervention period once treatment has ended (Moore & Symons, 2009, 2011) successfully make changes in their interaction style with their child after treatment (i.e., improve dyadic synchrony), data demonstrate that these changes in synchrony may not be sustained over time (Pickles et al., 2016). Taken together, these barriers may lessen the potential impact of parent-mediated intervention on children's developmental outcomes.

Fortunately, some strategies do exist to address these challenges and facilitate parent engagement in parent-mediated interventions for ASD, such as parent-professional collaboration and problem solving (Brookman-Frazee, 2004; Burrell & Borrego, 2012). However, these strategies have not been widely studied or implemented. In contrast, many strategies have been examined to facilitate parent engagement in child mental health treatment, as evidence by several recent reviews (e.g., Becker et al., 2015; Haine-Schlagel & Walsh, 2015; Pellecchia et al., 2018). Systematic effort is needed to integrate specific engagement strategies into evidence-based parent-mediated interventions for ASD specifically (Pellecchia et al., 2018).

One promising set of strategies for increasing parent engagement, initially designed for community-based child mental health treatment is the *Parent And Caregiver Active Participation Toolkit* (PACT; Haine-Schlagel, Martinez, Roesch, Bustos, & Janicki, 2018). Two foci of the toolkit are (a) collaborative homework planning to encourage homework completion, and (b) encouraging provider collection and use of parent input into the service delivery. The original toolkit included (a) a set of evidence-informed engagement strategies for use by therapists (referred to as the "ACEs" for alliance, collaboration, and empowerment); (b) a DVD and accompanying workbook to promote parents' participation and collaborative partnership with the therapist; (c) a worksheet to encourage collaborative homework planning (referred to as the "Action Sheet"); and (d) motivational messages sent to parents between sessions. The original training included an in-person workshop, group webinar consultations, an individual consultation, and weekly emails containing training tips. PACT was recently evaluated in a randomized pilot study with families of children ages 4–13 with disruptive behavior problems served in outpatient child mental health clinics (Haine-Schlagel et al., 2018). Results supported the toolkit's potential impact on several engagement outcomes important for the delivery of evidence-based parent-mediated interventions (Haine-Schlagel, Martinez, Roesch, Bustos, & Janicki, 2018). For example, parents working with therapists who utilized PACT demonstrated increased collaborative planning for homework between sessions compared to parents in the control condition. Further, therapists who received training in PACT demonstrated more extensive use of strategies to promote parent strengths and effort than therapists who did not receive PACT training. These positive preliminary results suggest that the toolkit may show promise for use with evidence-based parent-mediated interventions more broadly, including for parents of children with ASD. In addition, PACT's focus on the process of service delivery rather than a specific curriculum indicates it may be well suited for adaptation for structured evidence-based programs.

The current study describes a collaborative effort to adapt and integrate PACT tools into a parent-mediated intervention for young children at risk for ASD, *Project ImPACT for Toddlers* (PI^T; Rieth, Stahmer, & Brookman-Frazee, 2018). *Project* Improving Parents As Communication Teachers (*ImPACT*; Ingersoll & Dvortscak, 2010) is an evidence-based parent-mediated intervention for children with ASD. *Project ImPACT for Toddlers* (PI^T) was adapted specifically for toddlers 12-36 months of age through a collaborative community partnered participatory research process by a group of researchers, providers, funders, and parents of children with ASD known as the BRIDGE Collaborative (Brookman-Frazee, Stahmer, Lewis, Feder, & Reed, 2012; Rieth, Stahmer, et al., 2018; Stahmer et al., 2017). The team applied the exploration, preparation, implementation, sustainment (EPIS) framework (Aarons, Hurlburt, & Horwitz, 2011; Moullin, Dickson, Stadnick, Rabin, & Aarons, 2019) to guide adaptation efforts. In addition to specifying four distinct phases of the implementation process, EPIS identifies outer and inner context factors that are key to implementation. EPIS also considers innovation factors, or how the intervention fits with the needs and constraints of the service setting (outer context), as well as provider and client population (inner context).

Adaptation is often required to maximize fit, thereby improving use, across both contexts (Bauman, Cabassa, & Wiltsey Stirman, 2017; Botvin, 2004; Chambers & Norton, 2016). Previous studies of parent and provider feedback on *Project ImPACT* materials found that community providers and parents perceived the intervention to be feasible and valuable; however, stakeholders in the exploration and preparation phases reported that parents would benefit from increased collaboration with the provider to support homework completion and tailoring of the intervention (Pickard et al., 2016; Stahmer et al., 2017). Additionally, in the implementation phase, provider feedback included requests to incorporate strategies to engage parents in the sessions more effectively (Stahmer, Brookman-Frazee, Lee, Searcy, & Reed, 2011). Taken together, these previous studies of feedback about *Project ImPACT* strongly suggested the need to adapt and integrate parent engagement strategies such as those from PACT into the PI^T intervention.

The current study describes an effort to adapt and integrate elements of PACT into PI^T, with a focus on provider attitudes about the adaptation. Provider attitudes about an intervention are a key determinant of innovation adoption and use (Beidas et al., 2014; Nelson & Steele, 2007). Provider characteristics are thought to influence these attitudes, and some previous studies have documented links between provider characteristics such as demographics, training background, and clinical experience and attitudes about evidence-based practices (Aarons et al., 2010; Nakamura, Higa-McMillan, Okamura, & Shimabukuro, 2011; Reding, Chorpita, Lau, & Innes-Gomberg, 2014). Addressing provider attitudes are especially relevant in the current study context given prior data suggesting early intervention providers' perceptions regarding potential caregiver benefit and confidence engaging caregivers (Sawyer & Campbell, 2012).

The current study capitalizes on a train-the-trainer pilot study of PI^T to achieve two aims. First, the current study examines the impact on implementation and service outcomes of using community partnered participatory research to adapt and integrate PACT tools into PI^T (Aarons, Sklar, Mustanski, Benbow, & Brown, 2017; Proctor et al., 2011). It is hypothesized that early intervention providers will consider the adapted PACT tools to be acceptable, useful, appropriate, sustainable, and generalizable to other populations served across both survey and interview responses. It is also hypothesized that providers will perceive the adapted PACT tools to be effective in enhancing both provider skills in delivering parent-mediated interventions and parent engagement in the intervention across both survey and interview responses. Barriers and facilitators of these implementation and service outcomes will also be examined. Second, the current study examines whether participant characteristics (demographics, training background, and current professional role) predict attitudes about the PACT tools.

2 | METHOD

2.1 | Broad study context & design

Data were drawn from participants in a training study of PI^T. The broader study involved implementation of a train-the-trainer approach to implementing PI^T evaluated in a multiple probe design (Horner & Baer, 1978;

Rieth et al., 2018). In the larger study, participating agencies identified individuals as "agency trainers," who then participated in PI^T training with the research team. Training covered the clinical content of PI^T and strategies to enhance parent engagement, as well as information on how to conduct training with other providers. Participation involved weekly, 2-hr meetings across a period of 12 weeks. The final two sessions of training focused explicitly on engaging parents and utilizing the adapted PACT tools described below. Each agency trainer then returned to their agency and provided training on PI^T content and delivery to direct service providers (hereafter referred to as therapists) at their agency, with support as needed from the research team. The research team selected a train-the-trainer design to build community capacity to sustain the intervention after the study concluded. Additional details on the training content and study design are available (Rieth et al., 2018; Rieth, Stahmer, Dickson et al., 2018).

The current study examines data from qualitative feedback interviews and a quantitative feedback survey solicited from both agency trainer and therapist participants after they received training and had delivered PI^T to families for at least 3 months in their day-to-day practice. All data collection procedures were approved by the University of California, San Diego Institutional Review Board and relied on by participating institutions. All study procedures conformed to the U.S. Federal Policy for the Protection of Human Subjects.

2.2 | Description of PI^T

As indicated earlier, PI^T is a community-adapted, naturalistic, developmental behavioral intervention based on *Project ImPACT* (Ingersoll & Dvortscak, 2010), specifically designed for use with toddlers age 12–36 months. *Project ImPACT* is an evidence-based parent training intervention that utilizes a blend of developmental and naturalistic behavioral techniques to promote children's social communication, social engagement, imitation, and play. The intervention focuses on teaching parents to promote their child's social communication using a blend of developmental and naturalistic behavioral intervention strategies. *Project ImPACT* is recommended for use with children approximately 3 to 6 years old, depending on child functioning. PI^T was developed to reflect necessary adaptations and applicability to toddlers with or at risk for ASD (ages 12–36 months) while maintaining the fundamental components of *Project ImPACT*. Specific modifications based off a mixed methods needs assessment included incorporating content in the following areas: (a) early communication development, with emphasis on pre-verbal, gestural, and developmentally appropriate communication skills; (b) early social, imitation and play development; (c) individual differences in children's motor and sensory development; (d) an emphasis on dyadic engagement; and (e) strategies to engage parents in the intervention process, drawn from PACT as described below. Examples and recommendations were also adapted to promote appropriate application with toddlers, particularly the incorporation of therapeutic techniques within families' daily routines. A more detailed description of the adapted intervention can be found in Stahmer et al. (2019).

2.3 | Description of PACT adaptations

The original PACT materials included training on a set of Alliance, Collaboration, and Empowerment (ACEs) engagement strategies, a DVD and accompanying workbook, a worksheet to facilitate collaborative homework planning, messages sent between sessions, and a training package. The BRIDGE Collaborative selected and adapted some PACT tools in collaboration with the PACT developer (R. H.-S.) and then integrated them into PI^T training and materials (see Table 1 for a description of the selection and adaptation process). Selected tools included (a) ACEs training for providers; (b) enhancements to the PI^T homework sheet based on PACT's collaborative homework planning sheet; and (c) PACT's parent strengths worksheet.

TABLE 1 Adaptation of PACT for project impact for toddlers (PI^T)

Original PACT tool	Original PACT tool description	Adaptation for PI^T by the BRIDGE collaborative
Alliance, Collaboration, and Empowerment (ACEs) Engagement Strategies	Training on 10 evidence-informed strategies to build Alliance, Collaboration, and Empowerment (ACEs): (a) Reflectively listen; (b) Convey parent–therapist partnership; (c) Communicate positive regard; (d) Give suggestions, not directions; (e) Ask for input on intervention strategies; (f) Incorporate input into sessions; (g) Involve parent in session activities; (h) Collaboratively plan homework; (i) Focus on strengths and effort; (j) Jointly identify/problem solve barriers.	The Collaborative removed one strategy (strategy #7: involve parent in session activities) given the parent is the focus of PI^T and this strategy was considered redundant.
Action Sheet	Worksheet for use in every session to help therapist, parent, and child collectively review homework from previous session, session goals/topics, and decisions on future homework. Focused on feasibility of homework including discussion of potential challenges to homework completion and possible solutions to those challenges.	The Collaborative enhanced the existing PI^T Activity Planner homework sheet to include prompts to talk about what will be difficult about practicing between sessions and to brainstorm possible solutions.
Workbook (I Have Strengths as a Parent Activity)	Included information about PACT, participation tips, and four activities parents complete during early sessions and review with therapist. Activities include (a) My Point of View, (b) I Have Strengths as a Parent, (c) How Do I Feel About Participating in Therapy?, and (d) Speaking Up With My Child's Therapist. Parents return Activities to therapist, who utilizes the ACEs to reinforce and expand content.	Given PI^T includes many handouts, the Collaborative decided to select only one activity to incorporate into the intervention. "I Have Strengths as a Parent" was selected because the Collaborative wanted to encourage parent empowerment as much as possible. Providers learning the intervention also complete an "I Have Strengths as a Therapist" version during training, to promote empowerment for them as well.
DVD	A 27-min video with testimonials from parents and therapists.	N/A (The Collaborative did not select this tool because the mental health treatment focus of the content was not appropriate for the PI^T context and it was outside the scope of this pilot study to create a new DVD.)
Messages	Brief motivational messages sent to parents between sessions.	N/A (The collaborative did not select this tool because the resources were not available to implement messages in this pilot study.)
Training Package	Included: (a) Manual with training vignettes and electronic materials; (b) 8-hr in-person workshop with	The Collaborative: (a) created an ACEs handout with sample language; (b) designed two of the 12 training

TABLE 1 (Continued)

Original PACT tool	Original PACT tool description	Adaptation for PI^T by the BRIDGE collaborative
	continuing education credits that included creation of an ACEs Reminder Card that therapists were prompted to refer to throughout the training period; (c) Eight 1-hr group consultations via live webinar and 1–2 individual phone consultations with performance-based feedback over 4 months; and (d) Weekly training tips sent via text or e-mail.	sessions (last didactic and last coaching) to include ACEs content; (c) wrote ACEs tips that were inserted throughout other five didactic training sessions; (d) included prompts to view the ACEs Reminder Card at the beginning of each intervention session guide; and (e) inserted prompts throughout each session guide for providers to utilize ACEs (specific language provided; marked by a spade to key the trainee in to focus on ACEs).

Abbreviation: PACT, Parent And Caregiver Active Participation Toolkit.

2.4 | Participants

Agencies providing early intervention services in two counties were identified. All eligible agencies that were approached by the research team agreed to participate. Agency eligibility criteria included (a) provides early intervention services to children at-risk for ASD under 30 months; and (b) employs three or more providers with a master's degree or equivalent credentials. Twelve publicly funded community agencies participated. Agency types included school-based early intervention (n = 2), infant and early childhood services (n = 7), a speech-language clinic (n = 1), a children's hospital ASD-specific clinic (n = 1), and a federally qualified health center (n = 1). All agencies provided services within California Early Start, which provides services mandated by Part C of IDEA (IDEA, 2004). Publicly available data indicate that race/ethnicity for families receiving California Early Start services are as follows: 10% Asian, 5% Black or African American, 58% Hispanic/Latino, 3% two or more races, and 25% White. These demographics are expected to roughly parallel the populations served by participating agencies.

2.4.1 | Agency trainers

Fourteen agency leaders at 12 participating agencies served as agency trainers (ATs). Each agency designated a "leader" who agreed to participate in PI^T training with the research team, and subsequently serve as a trainer to at least three therapists at their own agency (train-the-trainer model). Eligibility requirements for ATs were as follows: (a) a master's degree or equivalent credentials in a relevant field or specialty; (b) at least 2 years of experience working with toddlers at risk for ASD; (c) at least 1 year of experience conducting parent-mediated intervention; (d) agency employment for at least 1 year; and (e) direct and regular contact with at least three eligible providers. More ATs were enrolled than the number of participating agencies due to the large size of one organization (a County Office of Education). The role of ATs within their agencies varied, with some ATs serving in a supervisory/director capacity at their agency and others who were simply established and experienced direct service providers. ATs did not have prior experience with the PI^T intervention specifically. However, all but one AT reported receiving prior training in either Applied Behavior Analysis–based interventions (n = 5, 36% of ATs), developmental/relationship-based interventions (n = 4, 29% of ATs), or both (n = 4, 29% of ATs). These approaches are the general models from which PI^T was created (Ingersoll & Dvortscak, 2010), and thus familiarity with these component parts may have supported ATs in learning PI^T and teaching others. Full AT demographics are displayed in Table 2.

TABLE 2 Participant demographics

Characteristic	Agency trainers (*n* = 14) n (%)	Therapists (*n* = 24) n (%)
Race/ethnicity		
(May select more than one)		
Caucasian/White	8 (57)	11 (46)
Hispanic/Latinx	3 (21)	7 (29)
Asian American/Pacific Islander	–	4 (17)
Filipino American	2 (14)	–
African American	1 (7)	–
Multiracial	–	5 (21)
Other	3 (21)	2 (8)
Primary discipline		
Early childhood education	3 (21)	11 (46)
Child development	2 (14)	2 (10)
Applied behavior analysis	2 (14)	4 (17)
Physical therapy	1 (7)	–
Speech and language pathology	2 (14)	5 (25)
Psychology	1 (14)	–
Other Specialty	3 (21)	2 (10)
Age		
Under 30	2 (14)	5 (21)
31–40	7 (50)	11 (46)
41–50	1 (7)	4 (17)
51–60	3 (21)	4 (17)
Over 60	1 (7)	–
Caseload		
Fewer than 10 families		
11–20 families		
21–30 families		
Over 31 families		
	M (SD)	**M (SD)**
Years early intervention experience	15.2 (12.4)	11.1 (10.6)
Years ASD experience	15.1 (12.3)	11.1 (9.93)
Years parent coaching experience	13.7 (13.8)	13.1 (9.2)

2.4.2 | Therapists

A total of 45 therapists enrolled in the study, with 24 therapists providing feedback data in the current sample. Eligibility criteria were as follows: (a) a master's degree or equivalent degree or credentials in a relevant field or specialty; (b) agency employment for at least 6 months; and (c) provision of direct services to infants and toddlers with social communication concerns. A total of three therapists per agency were initially enrolled in the 13 training groups (one agency had two ATs jointly leading a larger training group); therapists invited to participate were selected by each agency and then enrolled on a first come, first serve basis. The number of therapists who completed training at each agency ranged from one to three; three was the maximum number of therapists per agency for the study to keep training groups manageable. Similar to ATs,

therapists did not have prior experience with the PI^T intervention specifically, but all reported prior training with the approaches of Applied Behavior Analysis-based interventions (n = 10, 42% of therapists), developmental/relationship-based interventions (n = 5, 21% of therapists), or both (n = 9, 38% of therapists). Full therapist demographics for those in the current sample are displayed in Table 2. Of the 45 therapists who enrolled in the larger study, five discontinued participation after enrollment but before receiving training, one during training and six after receiving training but while implementing PI^T with a family (implementation phase). All therapists who discontinued participation at any point ended employment with the agency during the study period.

2.5 | Procedures

2.5.1 | Agency trainer training

ATs received training in three groups of four to five individuals. Training took place over a period of approximately 6 months and included the following components: (a) didactic training in the PI^T curriculum and parent-mediated intervention strategies; (b) group practice with feedback in PI^T and parent-mediated methods; and (c) ongoing coaching and fidelity monitoring while delivering PI^T with a family. All ATs received training from expert mentors on the research team. All mentors were senior clinical researchers (and licensed psychologists) who received training in *Project ImPACT* from the original intervention developers and were significant contributors to the PI^T adaptations and resource creation. The training format involved each AT group attending six, 2-hr didactic sessions over the course of 12 weeks (i.e., Weeks 1, 3, 5, 7, 9, and 11) which included content review, video examples and interactive activities related to the intervention content. On alternating weeks (i.e., Weeks 2, 4, 6, 8, 10, and 12), ATs participated in hands-on coaching sessions in which they implemented the PI^T strategies with child and family volunteers and received in-vivo feedback from mentors. Training also included a focus on effectively training providers in the PI^T curriculum, including assessing fidelity of the intervention and providing coaching and feedback.

Following the initial 12-week training, 12 weeks of ongoing coaching and fidelity monitoring began, with each participant implementing PI^T with families in his or her own agency. ATs received ongoing coaching from expert mentors via three group and three individual coaching sessions during this time. Once these activities were complete, ATs began conducting training with the therapists at their own agency.

2.5.2 | Therapist training

ATs conducted training of enrolled therapists at their agency. The therapist training process was designed to mirror the AT training process, including (a) a 12-week PI^T training period with alternating didactic and coaching sessions, led by ATs at their home agencies; and (b) a 12-week period of PI^T implementation and ongoing coaching with clients on their current caseload. Following the initial 12-week training, ATs provided ongoing supervision and coaching to providers as they utilized PI^T with clients on their caseload. The frequency and intensity of supervision was at the discretion of the AT. Expert mentors provided ongoing consultation and coaching to ATs throughout therapist training as needed/requested by the AT.

2.5.3 | Follow-up

For both ATs and therapists, a follow-up assessment was completed 3 months after their completion of training (both the training and coaching/fidelity phases). The follow-up assessment included an implementation survey and a brief interview to gather feedback on the intervention itself as well as the training process. The interviews were

conducted over the phone and were audio recorded for later analyses. Interviews lasted an average of approximately 17.36 min. The implementation survey was completed online and consisted of 67 questions. Both measures are described in detail below.

2.6 | Measures

2.6.1 | Demographics

At baseline, all participants reported on their sociodemographic characteristics, including gender, age, race, ethnicity, and educational and professional history.

2.6.2 | Implementation survey

Using a five-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*), participants rated the extent to which they found the training and intervention feasible, acceptable, appropriate, and sustainable. This survey was adapted from several sources examining implementation of evidence-based practices in other disciplines (Halliday-Boykins, Chapman, Rowland, Armstrong, & Schoenwald, 2005; Haug, Shopshire, Gruber, & Guydish, 2008; Lehman, Greener, & Simpson, 2002). The four survey questions specifically about PACT adaptations (called "ACEs" here) are the focus of this study and are listed here along with the construct they each represent: (a) "*ACEs training is a valuable part of the PI^T training process*" (Utility); (b) "*I use the ACEs with other families in my practice, even when I am not using PI^T*" (Generalizability); (c) "*The ACEs portion of the PI^T training was easy to understand and use*" (Facilitator); and (d) "*The ACEs portion of the PI^T training helps interventionists improve their ability to collaborate effectively with parents/caregivers*" (Perceived Effectiveness). In addition to being analyzed separately, these four items were combined into one attitudes score regarding the PACT tools (Cronbach's $\alpha = .82$; higher scores reflect more positive attitudes).

2.6.3 | Semistructured therapist interview

A trained member of the research team who was not involved in the training of ATs or therapists conducted all interviews. Interviews were guided by a series of questions related to implementation outcomes, including utility, acceptability, and appropriateness. The interview guide questions were developed simultaneously with the survey. The four survey questions specifically about the adapted PACT tools (called "ACEs" here) are the focus of this study and are listed here along with the construct they each represent: (a) *What do you think was most useful about the ACEs component of PI^T?* (Utility); (b) *What was most challenging about using the ACEs?* (Barrier); (c) *How are you currently using ACEs?* (Sustainment); and (d) *How do you envision incorporating ACEs into your organization or agency?* (Sustainment).

2.7 | Data analysis plan

2.7.1 | First study aim: Mixed method feedback about PACT enhancements

For the first study aim, mixed method analyses were conducted to examine several implementation and service outcomes associated with the PACT enhancements (Aarons et al., 2017; Proctor et al., 2011). Mixed method designs combine qualitative and quantitative results to better understand a research question compared to either approach alone (Palinkas, 2014).

Quantitative analyses

Quantitative analyses for the first study aim were conducted using SPSS. Descriptives and frequencies were calculated for individual scores.

Qualitative analyses

Qualitative interview data were analyzed using a coding, consensus, and comparison methodology (Willms et al., 1990), which followed an iterative approach rooted in grounded theory (Glaser & Strauss, 1967). Interview transcripts were entered, coded, and analyzed in QSR-NVivo 2.0, a program frequently used in qualitative research (Tappe, 2002). After transcription, two interviews were randomly selected and examined jointly by two members of the research team to elicit a priori and emergent codes within the interviews and generate a codebook. Segments of the texts, ranging from sentences to paragraphs, were assigned specific codes that enabled members of the research team to consolidate interview data into analyzable units. A senior member of the research team reviewed the codes for accuracy and comprehensiveness relative to the interviews. Two members of the research team then independently coded one additional transcript and codes were checked for consensus and accuracy by a senior team member. Following this process, all interviews were coded, with 27% of interviews coded by both team members and checked for agreement. A review of double coded transcripts was conducted until members of the research team reached consensus as to which codes should be applied to specific segments of text. Adjustments were made to independently coded transcripts based on consensus discussions, and any areas of discrepancy or concern were discussed with the team. Emergent themes were identified and assigned a code by considering the frequency of and salience with which (i.e., importance or emphasis) a participant discussed it.

Integration of quantitative and qualitative analyses

When applicable, qualitative data and corresponding quantitative data were analyzed using a complementarity approach in which the data were compared side by side to determine commonalities and/or differences across the two methods (Palinkas, 2014).

2.7.2 | Second study aim: Predictors of attitudes about PACT enhancements

Pearson correlations or independent samples *t* tests in SPSS were utilized to examine associations between provider demographic characteristics or training background and the attitudes about PACT enhancements composite attitudes score from the Implementation Survey.

3 | RESULTS

3.1 | Perceptions of agency trainers and therapists

Themes regarding participants' perceptions of the PACT enhancements to PI^T were distilled from both the qualitative and corresponding quantitative data (quantitative data were only available for some themes). The results are divided into two categories with exemplar quotes: (a) implementation and service outcomes of PACT enhancements, including acceptability, utility, appropriateness, sustainment, generalizability, and perceived effectiveness (Aarons et al., 2017; Proctor et al., 2011); and (b) determinants of implementation and service outcomes. Some themes were unique to one stakeholder group (ATs or therapists) while others were consistent across the two groups.

3.1.1 | Implementation and service outcomes of PACT enhancements

Therapist qualitative interviews were the primary data source for assessing implementation and service outcomes. Two quantitative survey items and three interview questions pertained to implementation outcomes.

Acceptability

The main theme regarding acceptability was that the PACT enhancements content and training were acceptable, and ATs reported enjoying both (Table 3). No acceptability theme emerged from the therapist interviews.

Utility

Survey data from both sets of participants indicated high scores on the item, "*ACEs training is a valuable part of the Project ImPACT for Toddlers training process*" (see Table 4). Themes that emerged from the interviews supported the idea that the PACT enhancements are helpful to support improvements in providers' parent-mediated intervention delivery skills. During the interviews, both ATs and therapists described the PACT enhancements as a helpful reminder to approach their work with parents as a partnership (see Table 3). Both ATs and therapists also discussed the utility of the PACT enhancements for supporting providers who are learning first how to deliver parent-mediated interventions (see Table 3).

Appropriateness

The main theme regarding appropriateness was that the PACT enhancements strongly fit both provider and parents needs and values. Both ATs and therapists reported that the PACT enhancements filled a need for providers with backgrounds that do not typically focus on supporting behavior change in parents (e.g., speech-language pathology, applied behavior analysis). ATs also commented that the PACT enhancements fit the needs of the communities they serve such as the need to empower parents from disadvantaged backgrounds.

Sustainment

Two sustainment themes were identified in the interviews (see Table 3). The first sustainment theme focused on ideas for how to use the PACT enhancements with future families. Both ATs and therapists described ways to continue using the PACT enhancements such as increasing the number and intensity of trainings for staff. The second sustainment theme, put forth by the ATs, focused on using the PACT enhancements in clinical supervision.

Generalizability

As seen in Table 3, both ATs and therapists talked about how they have generalized their use of the PACT enhancements beyond their PI^T families to other families on their caseload Survey data from both groups of stakeholders indicated moderately high scores on the item, "*I use ACEs with other families in my practice, even when I am not using Project ImPACT for Toddlers*" (see Table 4).

Perceived effectiveness

Both ATs and therapists across the quantitative and qualitative data perceived the PACT enhancements to be effective in changing provider practices, in particular to increase providers' collaboration with families. Survey data from both stakeholder groups indicated high scores on the item, "*The ACEs portion of the Project ImPACT for Toddlers training helps interventionists improve their ability to collaborative effectively with parents/caregivers*" (see Table 4). Interview responses are consistent with these quantitative results. Both ATs and therapists commented on how the PACT enhancements have helped them to collaborate more with families on treatment goals and implementation of treatment strategies (see Table 3).

TABLE 3 Exemplar quotes from agency trainer and therapist interviews

Theme	Agency trainers	Therapists
Implementation/service outcomes		
Acceptability		
Liked PACT (ACEs) Content	"…I just loved the setup of the whole thing. I loved the empowerment part, you know collaboration, all the things I love the mindset that it creates with the parent. I love that there are very concrete things that you are given to do. Some different ideas, some questions to ask."	–
Liked PACT (ACEs) Training	"I really liked the [training] session that was directed towards ACEs. I think that you know how it's incorporated into every session is really nice…"	–
Utility		
Helpful reminder to partner with parents	"…it's just a really easy way to remember that it's a collaborative relationship, to work with the families."	"I think it is a good reminder to be treating the, you know, treating it like a partnership with the parents… just a reminder all three parts of that are important and how to keep that as part of every session."
Develops parent-mediated Intervention delivery Skills	"And I can recognize where for our staff that aren't… good at that they would probably benefit a lot if I shared nothing else with them from the study, the ACEs is something that I think that every therapist could benefit from kind of knowing about and understanding."	"So I think a huge strength of this program is to train people who have had really limited training and experience… this is so specific that I think that's a huge benefit."
Appropriateness		
Fit for parents	"…I think that including them [parents] and making them feel empowered was probably one of the most important things we can do. Especially with the families that we serve here at (neighborhood), we are a disadvantaged community so we really need to make them feel empowered to make choices and I actually found out my therapists were really receptive to those. They actually really liked the ACES. They actually like a lot of them told me like wow I haven't ever used that kind of language, like the ACEs language that we started practicing."	
Fit for providers	"… I think the specifics, I liked how there was one whole session about it [ACEs] because it is powerful and it is needed and I think it's one of the areas at least in my experience with ABA programs that is lacking as far as training our	"Yeah, we, as speech therapists, don't really get any training in terms of working with families. We sort of learn about it and then it's time for like, "okay, that's what you do." And then we kind of have to figure it out in terms of the actual

(Continues)

TABLE 3 (Continued)

Theme	Agency trainers	Therapists
	staff or people who work with these families…"	stuff with the child it's very similar to what we're already doing but it helps to keep it a little more organized and it really helps to explain it to the families and work with the families. So for me that was the most beneficial part of the actual training and if there was a little more of that that would have been better."
Sustainment/scale out		
Using PACT (ACEs) with New Families	"I think it's very important, so if we were able to, perhaps like maybe make a training or something and maybe that's even something that I could kind of spear head if they allow me to. I think that would be really helpful, not just for Project ImPACT *[for Toddlers]* but for the agency in general. 'Cause it's- you know we all serve families and it's an important part of that process."	"…in the future I think that having more and more of us trained with this protocol is going to help us approach our clients in a different way and our families in a way that promising language development in a social context is going to become more natural."
Using PACT (ACEs) In Supervision	"I actually use it more for supervision… for me, because I don't do a lot of parent training at all, and so I use it more as a supervisory kind of way. And using it more as a practice. You know like hey we're working together with you on these things and then how do we come up with this idea and what have you tried and what have you not tried. So yes, I've translated it more to supervision."	N/A
Generalized use of strategies	"I think how I'm using it is just more, I'm trying to think. Like we just kind of like when we talk to parents and with our staff we just kind of check in with them you know. Just at the very beginning to see how can we work together on this or like what can we do to kind of encourage them to do things on their own instead of just you know relying on us to tell us what to do."	"Well I think it's been great for other families that are not in Project Impact *[for Toddlers]* just using the same central language and how they're gonna be collaborators and helping children's learning and development just using the same key words and, you know… seeing the partnership that makes it more effective."
Perceived Effectiveness		
Increased collaboration with families	"Just collaborating with families asking them about what techniques, what goals they want to work on and practice. Just collaborating with parents."	"…before we would go in there with a plan and kind of different activities. Like oh today we are working on gross motor and the parents would be there with us but not so involved. Just kind of watching. And since the ACEs…I explain things to them a little bit more. Have them get more involved."

TABLE 3 (Continued)

Theme	Agency trainers	Therapists
Implementation/service outcome determinants		
Barriers		
Challenges with PACT (ACEs) language initially	"I didn't want to sound too like robotic or anything… But I mean I think over time as I kind of practiced it, it was fine. Like I just naturally said it. But at first it was a little like "whoa" this is, I mean it sounds kind of like "oh yeah how do you think we can do this?" Like it didn't feel as if I was just talking and conversing."	"…how I would use it [ACEs] sometimes in the beginning, I felt I sounded awkward. I had to practice saying the phrases so that they sounded right."
Placement of PACT (ACEs) training not optimal	"I know I wanted to do it a little differently… was to move the ACEs or the family parent participation part to the beginning… because I kind of feel like as you're rolling out this is the intent of the curriculum, to have that foundation beforehand, before going in and then when the ACE reminders pop up, it's kind of like oh yeah."	–
Challenges with Parents readiness to partner	"…Some parents, when I would have them decide, "What strategies do you want to practice?" They didn't know how to respond or they didn't respond."	"I think the most challenging was… maybe some parents who have a harder time … like coming up with goals or focusing on the task that we are doing."
Challenges Incorporating PACT (ACEs) with Project ImPACT for Toddlers	"…you have all these other things to cover, I think that was difficult but I think it was helpful to remember the sort of positivity of building that collaboration and allowing parents to feel empowered at that moment. But I do think it was challenging to introduce…"	"…I think there were parts of it [ACEs] in there that we could use but probably just, I think over all the big umbrella probably overwhelmed at first, you know doing the pieces. So I started doing it a second time and it made a little bit more sense because I'm a very visual learner." "…let's say we are working on coming up with goals and I'm going over the social communication check list or what have you and I would say like, "What do you think about this? Does this sound good?" and they would say "Well yeah this is good but… this is, this is, this is…" And now they are telling me a whole other story. So it's hard it was kind of tough to redirect them back…Yeah so it just took a little bit longer."
Facilitators		
PACT (ACEs) Provided Useful Language	"I think probably the thing that I'm getting most feedback that I found useful was it's just the one sheet that has all the ideas about how to phrase things. That's the thing that people use the most I think. They'll reference the others ones that are throughout… but	"This is kind of funny because I just pulled it [ACEs Sample Language Handout] out again a couple weeks ago, I actually go back to it regularly and refer to it because it just gives you some nice language in terms of asking questions to families, and "what do you think about

(Continues)

TABLE 3 (Continued)

Theme	Agency trainers	Therapists
	that one is very helpful because you can just stick it in there when you go in for your visit. It's right there, it helps reminds you to use some of that language."	this, how are you feeling about this" kind of open-ended questions, and it's a good resource for me to kind of go back to often. I go back to it often actually."

Abbreviation: ACE, alliance, collaboration, and empowerment; PACT, Parent And Caregiver Active Participation Toolkit enhancements for PI^T.

3.1.2 | Determinants (barriers and facilitators) of implementation and service outcomes

Both the interviews and the survey assessed perceived determinants of PACT enhancements implementation as part of PI^T. Both determinants that serve as barriers and as facilitators were identified.

Barrier: Timing of PACT enhancements training

As exemplified in Table 3, the ATs perceived that the placement of the PACT enhancements training within the overall PI^T training protocol was not optimal. More specifically, several ATs commented they wanted the training earlier in the protocol to allow therapists to develop a foundation in working collaboratively with parents as they are learning the intervention. No therapists, however, reported this as a barrier.

Barrier: Low initial comfort level with PACT enhancements

As shown in Table 3, both ATs and therapists commented on initial challenges with feeling comfortable using the ACEs language. However, both stakeholder groups indicated that their comfort level increased with practice. Expanding on the qualitative data pertaining to experience with ACES across different phases of the intervention, post implementation survey questions indicated that providers found ACES easy to understand, suggesting improved comfort level (see Table 4).

Barrier: Challenges incorporating PACT enhancements into the actual PI^T intervention protocol

Both ATs and therapists reported challenges to utilizing the PACT enhancements in the context of delivering PI^T given the time-limited nature of sessions and the amount of content to cover (see Table 3).

TABLE 4 Survey results from agency trainers and therapists

Survey item	Construct	Agency trainers (n = 14)	Therapists (n = 17)
ACEs training is a valuable part of the PI^T training process.	Utility	4.00 (0.68)	4.18 (0.64)
I use the ACEs with other families in my practice, even when I am not using PI^T.	Generalizability	4.00 (0.68)	4.18 (0.64)
The ACEs portion of the PI^T training helps interventionists improve their ability to collaborate effectively with parents/caregivers.	Perceived Effectiveness	4.36 (0.74)	4.35 (0.70)
The ACEs portion of the PI^T training was easy to understand and implement.	Facilitator	3.93 (0.92)	3.94 (0.83)

Note: Possible range = 1–5. ACEs refers to the PACT parent engagement enhancements.
Abbreviation: ACE, alliance, collaboration, and empowerment; PI^T, project ImPACT for toddlers.

Barrier: Challenges related to parent readiness to serve as a partner

Some ATs and therapists reported that the parents they were working with had difficulties knowing how to respond to requests for their input (see Table 3).

Facilitator: PACT enhancements were easy to understand and use

Survey data from both stakeholder groups indicated high scores on the item, "*The ACEs portion of the Project ImPACT for Toddlers training was easy to understand and use*" (see Table 4).

Facilitator: PACT enhancements provided useful language for collaborating with parents

Both ATs and therapists identified adapted PACT training materials as useful in providing exemplars of how to incorporate the PACT enhancements into their interactions with parents (see Table 3).

3.2 | Predictors of attitudes about PACT enhancements

Overall, the quantitative attitudes composite scores regarding PACT enhancements to PI^T were positive ($M = 4.06$; $SD = 0.66$). Demographic and background characteristics of ATs and therapists were examined as predictors of PACT enhancements attitudes. Provider age and ethnicity were not associated with attitudes. Experience working with children with ASD had a modest positive association ($r = .34$) but was not statistically significant. Attitudes regarding the PACT enhancements did not vary for ATs versus therapists, but providers with a generalist background (child development, early intervention) had significantly more positive attitudes regarding the PACT enhancements ($p = .041$) than providers with a specialist background (e.g., speech-language pathology, physical therapy).

4 | DISCUSSION

The current study examined the implementation of adapted parent engagement strategies as part of an evidence-based parent-mediated intervention for young children with or at risk for ASD. Data supported the first hypothesis that providers would perceive the integration of adapted PACT tools as having a positive impact on PI^T implementation. More specifically, both agency trainers and therapists considered the PACT enhancements to be acceptable, useful, appropriate, sustainable, and generalizable. Both groups also considered the PACT enhancements to be effective in enhancing provider skills in delivering parent-mediated interventions. Across service roles, although providers found the strategies challenging at first, they considered training on parent engagement strategies to be useful and generalizable. Additionally, participant demographics did not predict attitudes about the PACT enhancements, although generalist providers had significantly more positive ratings of the PACT enhancement than those from specialist backgrounds.

Providers reported using the PACT tools to better partner with parents and that these engagement strategies improved their parent-mediated intervention delivery skills, an area of great need in early ASD intervention (Stahmer & Pellecchia, 2015). This is important given the beneficial effect of partnership on both parent engagement and child outcomes (Brookman-Frazee, 2004; Ruble & Dalrymple, 2002). Providers in supervisory positions had more positive attitudes about the engagement strategies in their interviews but not in the survey data. Perhaps supervisors had more experience articulating how the engagement strategies supported collaboration with families as well as with the therapists they trained. Of particular interest is the difference between ATs and therapists regarding placement of the PACT enhancements training within the overall intervention training protocol. ATs, who had much more overall experience with the intervention, and wanted the engagement training earlier, whereas therapists reported finding it challenging to master the intervention content as well as attending to the delivery process. This distinction suggests that the implementation of parent engagement strategies within the context of

structured parent-mediated interventions may require attention to the optimal placement of the engagement training within the broader training protocol, including consideration of provider prior training and experience.

Providers' reported barriers to using the PACT enhancements, included needing practice with the strategies and needing time to incorporate additional reflection and collaboration into intervention sessions. Considering how to structure sessions to maximize time for both content and reflection with parents is an excellent next step. Additionally, tracking time spent on using the PACT enhancements over time may be important. As providers become more comfortable and skilled with the strategies, it may become easier for them to more seamlessly incorporate them into skill building activities.

The lack of significant associations between most of the provider characteristics and their attitudes about the PACT enhancements as measured by the feedback survey is consistent with some previous research (e.g., Brookman-Frazee, Garland, Taylor, & Zoffness, 2009; Burgess et al., 2016). However, the results preliminarily suggest that professional focus (generalist vs. specialist) may play a role in providers' experiences receiving training on parent engagement strategies. This finding is of interest given the wide range of service providers across multiple disciplines that deliver early intervention for children with ASD. Specialists such as speech-language pathologists, occupational therapists, and physical therapists may lack the necessary foundational training to be comfortable integrating parents into their intervention delivery with tools such as the PACT enhancements (Rieth, Haine-Schlagel et al., 2018). Because family-centered care is a core value of general early intervention models (Bailey et al., 2006), it may be that those with generalist backgrounds receive more education related to working with parents than specialists who are trained in more depth for discipline-specific issues (e.g., articulation for speech and language pathologists, hand control for occupational therapists). It may also be that the adaptation of parent engagement strategies from the mental health context such as described here may possibly require further tailoring for early interventionists from different backgrounds. While further investigation is warranted, the current study's preliminary findings suggest that while all providers found the PACT enhancements acceptable, appropriate, and useful, those from specialist backgrounds may potentially require additional supports when receiving training in parent engagement strategies.

Several study strengths and limitations should be noted. Study strengths include the collection of both qualitative and quantitative data to capture both the depth and breadth of providers' perceptions about the adapted parent engagement strategies and the ability to examine perceptions of both ATs and therapists receiving training. Study limitations include a lack of ability to empirically test the impact of the PACT enhancements on both parent engagement and desired clinical outcomes separate from the intervention itself, as well as the absence of parent feedback on how receiving PI^T with PACT enhancements may differ from previous services they have received (both parent or child-focused). Also, given the train-the-trainer design of this study, the fidelity to training on the PACT enhancements for the therapists and their experience of training with the AT is less known, which may account for some of the variability in findings between ATs and therapists. Additionally, long-term follow-up data to assess how providers' perception of the engagement enhancements and the degree to which they utilize the strategies may change over time are unavailable to understand more fully the impact of the PACT enhancements. The influence of broader agency characteristics and practices (e.g., caseload size, on-going training efforts) on AT and therapist perspectives on PACT is unknown, as limited agency information was collected in the current study. Further methodological limitations include the small number of survey items and interview questions specifically related to the PACT enhancements and the response rate of therapists to both the interview and survey. It is possible that therapists who were willing to respond hold systematically different views than those who did not respond, and therefore future efforts should attempt to gather more comprehensive feedback from providers who receive specific training in evidence-based parent engagement strategies.

Primary avenues for future research include (a) consideration of how to optimally translate parent engagement training for providers into online formats to facilitate access to the information; (b) further refinements or supports for how to tailor training in engagement strategies to better meet provider prior training and experience; (c) conceptualization of such training in parent engagement strategies as a potential stand-alone implementation strategy to enhance workforce readiness to implement parent-mediated interventions broadly; and (d) examination of whether provider use of parent

engagement strategies improves parent engagement, fidelity to the intervention (both PACT and PI^T strategies), use of homework strategies, and child outcomes over and above the intervention alone. Specifically, researchers should examine how the PACT strategies operate across a broad range of demographics, as socioeconomic status is known to influences caregivers' reported ASD service needs (Pickard & Ingersoll, 2015).

Given the importance of parent engagement in early intervention for children with ASD, developing effective strategies to help providers engage parents successfully in the intervention process is paramount. This may be especially important for providers working with traditionally underserved families who tend to be even less engaged in intervention (Kasari, Gulsrud, Paparella, Hellemann, & Berry, 2015; Pellecchia et al., 2018). Parents of children with ASD report that increasing provider-family partnerships is a facilitator to engagement in care (Stahmer, Reith, et al., 2019). Therefore, this examination of provider perceptions of adapted and integrated parent engagement strategies into evidence-based early intervention represents a first step toward improving access to care for families and potentially improving outcomes for children with ASD.

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