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Parents' experiences of remote parent-mediated communication therapy for toddlers with autism: a qualitative study using Proctor's implementation outcomes framework

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Abstract

Background

Parent-mediated interventions, in which therapists guide caregivers to support their child's communication, are widely used in early autism care, and telehealth may improve access to them. Delivering therapy by videoconference, however, also moves part of the therapeutic work into the home, and families' experience of this format soon after diagnosis remains poorly understood. This study explored parents' experiences of remotely delivered Paediatric Autism Communication Therapy, focusing on acceptability, feasibility, appropriateness and fit with family life.

Methods

This qualitative study was nested in a multicentre randomised controlled trial in France. Fourteen parents of toddlers with autism who had completed the 12-month videoconference programme took part in semi-structured videoconference interviews, conducted within three months of completion by a researcher independent of the intervention. Data were analysed using thematic analysis informed by phenomenological principles, and themes were then mapped onto Proctor's implementation outcomes framework.

Results

Four themes were identified: limited alignment with the wider needs of the early post-diagnostic period; positive effects on parental skills, confidence and interactions; influence on family dynamics and routines; and the experience of remote delivery. Parents valued the accessibility of the format, the therapeutic alliance and video feedback, and reported continuing to use strategies after the programme ended. Acceptability was high, whereas appropriateness and feasibility were more variable, shaped by emotional readiness after diagnosis, unaddressed behavioural difficulties, the mental load of recording home videos, and technical problems.

Conclusions

Remote delivery of this parent-mediated intervention was perceived as acceptable and implementable, mainly through parental empowerment, but it partly shifted the burden of therapy onto households. Preparatory psychoeducation, explicit discussion of the programme's scope, technical support and hybrid formats may improve its fit with families' needs early after diagnosis.

Trial registration:

ClinicalTrials.gov, NCT04244721. Date of registration: January 28, 2020

1. Background

Early intervention for children with autism spectrum disorder (ASD) has become a widely accepted standard of care, supported by a growing body of evidence demonstrating its positive impact on developmental outcomes [1, 2]. Among the available models, parent-mediated interventions (PMIs), in which professionals guide parents to engage in supportive interactions with their child, have gained considerable attention and have demonstrated effectiveness, notably on socio-communication skills [1]. PMIs occupy a distinctive position in child health services: professionals guide, observe and give feedback, but the day-to-day intervention is carried out by parents, in their own homes, within the ordinary routines of family life. Parents are therefore not passive recipients of care but active agents of its delivery [3], and their experiences, perceptions and engagement are key determinants of both the effectiveness and the successful implementation of these interventions.

In recent years, a notable shift towards telehealth and remote delivery models has emerged, a trend significantly accelerated by the COVID-19 pandemic [4, 5]. This transition has opened new possibilities for enhancing the accessibility and flexibility of services, particularly for families facing geographical, logistical or other barriers to in-person care [6]. Yet moving an intervention onto a screen also shifts further work onto the household: someone has to find a quiet room, look after siblings, keep a connection stable, and film and upload interactions. This work is largely invisible in outcome data, and whether remote PMIs are experienced by families as an easing of burden or as a transfer of it remains an open question.

These questions are particularly relevant for complex interventions such as Paediatric Autism Communication Therapy (PACT), a PMI in which clinicians guide caregivers to identify and foster communication-promoting behaviours through video-feedback techniques [7, 8]. Evaluating complex interventions requires examining both their efficacy and their implementation across diverse real-world settings [9, 10], and qualitative research plays a crucial role in providing contextualised insights into participants' lived experiences that outcome

data alone cannot capture [11]. Such insights are especially needed at the point where PMIs usually begin. Families are typically offered them soon after their child's diagnosis, a period often marked by uncertainty and urgent informational needs. Existing qualitative work on PMIs has largely examined in-person delivery [12] or settings with different service configurations [13, 14], and how families experience a remote, structured, communication-focused PMI in the immediate aftermath of diagnosis has not yet been described.

This study constitutes the qualitative component of an ongoing randomised trial evaluating a videoconference-delivered adaptation of PACT for toddlers with ASD [15]. It aimed to explore parents' experiences of this remote PMI, focusing on implementation outcomes, including acceptability, feasibility and perceived fit with families' needs and daily realities, and on what facilitates or hinders parental engagement. We used Proctor's implementation outcomes framework [16] to organise these accounts, applying it from the parents' standpoint, as the agents through whom the intervention is enacted in everyday life. In doing so, this study seeks to inform the optimisation of remotely delivered PMIs for young children and to contribute to more responsive, equitable and sustainable autism care pathways.

2. Methods

This qualitative study aimed to explore parents' experiences of a videoconference-delivered parent-mediated intervention and to examine these experiences through the lens of implementation outcomes. It was conducted in three French centres and constitutes the qualitative component of an ongoing multicentre randomised controlled trial (NCT04244721), whose protocol has been published [15]. The study is reported according to the Consolidated criteria for Reporting Qualitative research (COREQ) (Additional file 1). Because this qualitative study is nested within a randomised controlled trial, it also adheres to the CONSORT 2025 statement (Consolidated Standards of Reporting Trials) for the items relevant to its design, including trial registration, protocol, setting, eligibility, recruitment and participant flow; the completed CONSORT 2025 checklist is provided as Additional file 2. Items specific to randomisation, blinding and quantitative trial outcomes do not apply to this qualitative component and will be reported, in accordance with CONSORT, in the main trial publication.

2.1 Participants and Sampling

The participants for this qualitative study were drawn from families in the trial's intervention arm who had completed their final assessment. The trial protocol, including the semi-structured interviews with parents reported here, was approved by the Comité de Protection des Personnes Sud-Est III, Bron, France (reference 2018-067 B; national registration number ID-RCB 2018-A02516-49), and all parents gave written informed consent before participating.

Families were eligible within three months of that final assessment and before any trial results were disseminated, so that accounts of the intervention were not coloured by knowledge of its measured effects. Purposive sampling aimed for maximum variation in the child's age, symptom severity, the gender of the parent trained in PACT, and study centre.

2.2 Intervention Description

PACT is an evidence-based parent-mediated intervention in which therapists guide caregivers to notice and extend the behaviours that promote socio-communicative development within natural dyadic interaction [7, 8, 17]. It follows a six-stage developmental sequence, from parent–child synchrony and responsiveness (stages 1–2) through language modelling and comprehension (stages 3–4) to communication initiation (stage 5) and, for verbal children, conversational expansion (stage 6); progression between stages is criterion-based.

In this adaptation, the intervention was delivered entirely by videoconference (Lifesize, a platform compliant with healthcare data-protection requirements at the time the trial began). Parents received 18 one-hour sessions over 12 months, fortnightly for the first six months and monthly thereafter.

The adaptation's central feature was an asynchronous video-feedback loop. Before each session, parents recorded a 10-minute interaction with their child at home and uploaded it via a secure link. During the session, the therapist shared their screen and reviewed the footage with the parent, selecting clips that illustrated effective strategies and progress towards agreed goals. This process supported parental reflective capacity, a central mechanism of PACT, while using digital tools to bridge clinical and home environments.

At the end of each session, parent and therapist jointly set two or three individualised goals, and parents were encouraged to practise PACT strategies for at least 30 minutes a day, embedded in everyday routines. As the programme advanced, home videos were recorded in a wider range of contexts to support generalisation.

Therapists were speech and language therapists, occupational therapists, clinical nurses, psychologists and child and adolescent psychiatrists, all specialised in autism and formally trained and supervised in PACT by the intervention's originators. Fidelity was supported by regular inter-site meetings and by the scoring and feedback of videotaped sessions throughout the trial. The pilot study of this remote format and the trial protocol have been published [15, 18].

2.3 Data Collection

Eligible families were invited by email to a semi-structured videoconference interview. Interviews were conducted by a master's-level student trained in qualitative interviewing and not involved in delivering the intervention. The interview guide (Additional file 1) was developed from the existing literature on PMIs in autism [12] and on telehealth delivery of psychotherapeutic interventions, and explored how families came to take part, how the sessions and home practice went, what worked and what did not, what had changed for the parent, child and family, and what they would change. Interviews lasted 30 to 45 minutes and were audio-recorded with participants' consent. Field notes were taken during some interviews where relevant.

2.4 Thematic analysis

A thematic analysis informed by a phenomenological sensibility was conducted using NVivo software (version 1.7.1). Interviews were transcribed verbatim and read repeatedly to ensure analytical immersion. Participants were contacted for clarification only when specific passages were unclear during transcription.

Using an inductive approach, two researchers independently coded the first seven interviews line by line to generate preliminary codes and themes, which were subsequently refined in discussion with a third researcher. The coding framework was then applied to the remaining interviews, with team meetings held every three interviews to review and consolidate the framework and to verify that it accurately captured the nuances of the data. Data collection continued until theoretical saturation, which was confirmed when three additional interviews yielded no new themes or codes.

As part of member checking, a summary of the preliminary findings was shared with participants, and their feedback was incorporated into the analysis to ensure that the themes accurately reflected their lived perspectives.

2.5 Analyses within the framework of Proctor's implementation outcomes

Themes and subthemes were subsequently mapped onto Proctor's implementation outcomes framework [16] (Table 2). This mapping was performed after the thematic analysis was complete, as an interpretive overlay rather than a coding frame, and is presented in narrative terms rather than as counts or scores.

Table 2
Mapping of qualitative themes to implementation outcomes based on Proctor's framework

Themes / Subthemes	Acceptability: Parents' satisfaction, perceived value of the intervention	Appropriateness: Perceived fit with families' needs, goals, and context	Feasibility: Practicality, burden, compatibility with daily routines	Adoption / Engagement: Uptake, continued participation, use of strategies	Fidelity: Intervention delivered as intended or need for adaptations	Sustainability: Continued use of strategies after program's completion
1. PACT does not address all needs during early post-diagnostic period	**High**	**Mixed**	**Constrained**	**Mixed**	**Adaptation indicated**	**NA**
1.1 Emotional state requiring support	PACT experienced as containing, reassuring	Emotional readiness low; mismatch with intervention timing	Emotional overload reduced capacity for sessions	NA	Suggests pre-intervention emotional support	NA
1.2 Need to accept/understand diagnosis	Supportive alliance appreciated	Program difficult to start while processing diagnosis	NA	Engagement increased later, once acceptance improved	Timing misaligned → need for preparatory psychoeducation and timing adaptations	NA
1.3 High and varied expectations	Acceptability shifted as expectations clarified	Initial mismatch between expectations and PACT scope	NA	NA	Clearer early framing required	NA
1.4 Family disruption / reorganisation	NA	Limited relevance during chaotic period	Strongly impacted feasibility	NA	Strongly impacted implementation	NA
2. Impact on parental skills and attitude	**High**	**Strong fit**	**Supported**	**Strong**	**Preserved**	**Clear**
2.1 Increased confidence and empowerment	Evidence of high acceptability	Good fit with parents' goals	NA	Increased self-efficacy supported adoption	PACT's core mechanisms transferable as intended	Empowerment contributed to long-term use
2.2 Improved communication & interaction skills	"little tricks," clear goals valued	Strong fit with developmental priorities	Easy to integrate in daily play	Frequent practice between sessions	Fidelity supported by structured goals	Skills persisted post-programme
2.3 Better understanding of the child	Acceptability enhanced through insight	Strong relevance to family needs	NA	Improved understanding reinforced engagement	NA	Contributed to routine long-term adaptation
3. Impact on family dynamics	**Moderate**	**Mixed**	**Mixed**	**Moderate**	**Adaptation needed**	**Some evidence**
3.1 Involvement of extended family	Positive when occurs	Fit reduced when only 1 caregiver trained	Easier when extended family involved	Partial adoption by relatives	Suggests multi-caregiver adaptation	NA
3.2 Stress integrating PACT into family life	Acceptability depends on logistical issues	NA	Major feasibility barrier (time, mental load)	NA	NA	NA

Themes identified in the qualitative analysis were mapped to the implementation outcomes described by Proctor et al. after the analysis was complete. Theme-level entries (in bold) summarise the direction of parents' accounts in narrative terms; they are not counts, scores or ratings. NA indicates that no relevant data emerged for the corresponding domain.

Themes / Subthemes	Acceptability: Parents' satisfaction, perceived value of the intervention	Appropriateness: Perceived fit with families' needs, goals, and context	Feasibility: Practicality, burden, compatibility with daily routines	Adoption / Engagement: Uptake, continued participation, use of strategies	Fidelity: Intervention delivered as intended or need for adaptations	Sustainability: Continued use of strategies after program's completion
3.3 PACT becoming part of everyday life	Acceptability enhanced by natural implementation in daily life	Good fit once routines stabilised	Easy once integrated	Very strong adoption (automatic use)	NA	Clear evidence of sustainability
3.4 Behavioural challenges interfering with PACT	Reduced satisfaction when crises dominated	PACT perceived as not addressing behaviour	Hard to apply strategies during crises	Engagement reduced when behaviour overwhelmed communication focus	Indicates need for complementary modules	NA
4. Experience of the remote intervention	**High**	**Good fit**	**Improved**	**Sustained**	**Preserved**	**NA**
4.1 Accessible & ecological format	Very high acceptability	Good fit for families far from services	Feasibility improved substantially	Encouraged engagement	NA	NA
4.2 Transferability to remote model	Remote video-feedback highly acceptable	Good fit for core PACT features	Technically feasible for most	Consistent engagement	Fidelity largely preserved	NA
4.3 Mental load related to video submission	Acceptability reduced by pressure to "perform"	NA	Filming = significant burden	Occasional disengagement	Suggests adaptation of filming requirements	NA
4.4 Technical limitations	Acceptability decreased during disruptions	NA	Feasibility reduced by poor connection	Engagement continued but with difficulty	Need for tech support	NA
4.5 Absence of in-person contact	Acceptable but felt incomplete	Limited relevance for families wanting live observation	NA	NA	Suggests adaptations with a hybrid delivery format	NA

Themes identified in the qualitative analysis were mapped to the implementation outcomes described by Proctor et al. after the analysis was complete. Theme-level entries (in bold) summarise the direction of parents' accounts in narrative terms; they are not counts, scores or ratings. NA indicates that no relevant data emerged for the corresponding domain.

Acceptability was taken to mean parents' satisfaction with the intervention and the value they placed on it; adoption, their initial and continued engagement and their active use of its strategies in everyday practice; appropriateness, the perceived fit of the intervention with families' needs, goals and circumstances; feasibility, its practicality, burden and compatibility with daily routines; fidelity, the extent to which the intervention was delivered and enacted as intended and whether adaptations were needed; and sustainability, the continued use of its strategies after the programme ended.

2.6 Reflexivity

This study was conducted by a multidisciplinary team with diverse professional backgrounds and varying degrees of familiarity with PACT. The interviews were conducted by a female master's student in developmental psychology (MG), trained in qualitative methods and not involved in the intervention, which we believe supported an open rapport and reduced the pressure on participants to give favourable accounts.

Coding and thematic analysis were led jointly by MG and a female child and adolescent psychiatrist with a PhD in public health, experienced in qualitative research, not trained in PACT, and holding a broadly favourable view of PMIs. To support triangulation and minimise interpretative bias, regular analytical discussions were held with a third researcher, a female neuropsychologist with a PhD in cognitive science, experienced in autism research, trained in PACT and familiar with qualitative methods. Although not involved in

delivering the intervention, she had met some families for assessment purposes during the trial; this proximity was explicitly considered in team discussions.

In addition, preliminary findings were presented to a group of clinicians working with families of young autistic children, several of them PACT-trained, which prompted further critical reflection and refinement of the analysis. Combined with member checking, this process helped ensure that the final themes remained grounded in parents' lived experiences while incorporating diverse clinical and scientific viewpoints.

2.7 Patient and public involvement

Parents of autistic children contributed to the study beyond their role as participants through member checking: a summary of the preliminary findings was returned to all participating parents, who were invited to say whether the themes reflected their experience, and their feedback was incorporated into the final thematic structure. The study was not, however, co-designed with autistic people, parents or community organisations; parents were not involved in formulating the research question, developing the interview guide or conducting the initial coding.

2.8 Use of large language models

A large language model (Claude, Anthropic) was used to assist with English-language editing. The authors reviewed and edited all content and take full responsibility for the manuscript.

3. Results

3.1 Population

Participants were included between February 2023 and February 2024. Twenty-one parents were approached and seven did not respond.

We included 14 participants: eleven mothers and three fathers, from three French centres: Lyon (n = 9), Toulouse (n = 3) and Bordeaux (n = 2). The children concerned were twelve boys and two girls, with a mean age of 31.9 months (range 22.4–36.5). Eight had no spoken language at the start of the intervention. The mean nonverbal developmental quotient on the Mullen Scales of Early Learning was 62.9 (range 37.6–115.9) and the mean adaptive level on the Vineland Adaptive Behavior Scales was 68.4 (range 39–105). Participant characteristics are summarised in Table 1.

3.2 Thematic analysis

Our analysis identified four themes capturing parents' perspectives on the benefits, challenges and overall impact of the intervention on their child and family life. To protect anonymity in a small sample drawn from three centres, quotations are not attributed to individual participants.

Theme 1. PACT Does Not Address All Needs During the Early Post-Diagnostic Period

Many parents described the months after their child's diagnosis as emotionally intense and destabilising. PACT was generally well received, but it did not meet the full range of what families needed at that moment.

Subtheme 1.1. A Difficult Emotional State Requiring Support

Parents described a strong need for psychological support during this period of adjustment:

It was complicated in the sense that we didn't know, we were in the unknown. We didn't have the tools to help him, to understand him, to meet his requests and needs, and we just couldn't manage.
Many nonetheless described PACT as an emotional anchor. Beyond its stated objectives, it offered a space to ask questions, to be listened to, and to find reassurance in the regularity of the sessions. For several, this therapeutic relationship provided guidance and emotional validation during a period marked by uncertainty and overwhelm:

I just needed support, really just support, advice, guidance. For me, I saw this as a rich experience, rich in information and exchanges, and a way not to feel alone at home.
Subtheme 1.2. The Need to Accept and Understand the Diagnosis

The emotional impact of the diagnosis often complicated early engagement. Several parents described a period of denial or confusion, and found it hard to begin a structured programme while still working out what the diagnosis meant for their child and their family. This phase was marked by blurred expectations, ambivalence, and a sense of being "in-between", not yet ready to engage fully or to articulate the support they needed:

It was complicated in the sense that we had to accept it, the realisation… well not the realisation, but the awareness of our son's disability. It just wasn't the best time for us, really.

Subtheme 1.3. High and Varied Expectations

Expectations were diverse and sometimes urgent. Some parents wanted broad guidance on behaviour or emotional regulation; others were focused on communication. Where expectations fell outside PACT's scope, some were initially disappointed, though many later reinterpreted the programme more positively as its purpose became clearer:

Like I said, it did bring me something positive, even if it wasn't what I thought it would bring me, let's put it that way.

How expectations evolved often depended on what other support the family had. For some, the alliance built during PACT became a route into more general parental guidance, making the programme an entry point into a wider care trajectory rather than a self-contained intervention.

Subtheme 1.4. Family Disruption and Reorganisation

The diagnosis often unsettled routines and relationships, siblings included. Parents described this early period as chaotic and overwhelming, with competing demands and the difficulty of balancing work, caregiving and everyday tasks amid emotional strain and frequent episodes of distress from the child:

Chaotic [laughs], chaotic… I have three children, we were homeschooling, we were looking for a house, and we had just found out about [child's name]'s particularities, knowing that he didn't sleep, so day and night were completely mixed up. For him, and for me as well. Honestly, it was chaotic. We were just taking things day by day, doing our best for everyone, and my husband and I no longer had a couple's life… everything revolved around [child's name].

This disorganisation was usually described as temporary but intense, a phase in which balancing the intervention, work and family life felt close to impossible.

Theme 2. Impact of PACT on Parental Skills and Attitude

The intervention had a lasting impact on how parents saw themselves and related to their child, fostering a shift in both skills and mindset.

Subtheme 2.1. Increased Confidence and Parental Empowerment

Parents described feeling more confident and competent, not only because of the techniques they had learned but because the programme helped them recognise and trust abilities they already had. Several realised they were already using developmentally supportive behaviours. Video feedback and positive debriefing validated these, while the therapist's practice of naming strengths before introducing new strategies reinforced their sense of self-efficacy:

Yes, it really gave me back confidence, confidence in my abilities as a mother, in my ability to communicate with him. I think that's hugely positive.

Subtheme 2.2. Improved Communication and Interaction Skills

Through small, achievable goals and focused guidance, parents reported becoming markedly better at engaging meaningfully with their child. Beyond speech, many became attentive to forms of communication they had previously overlooked: gesture, gaze, body movement, facial expression and cues of shared attention. This awareness helped them capture their child's attention and fostered richer interactions:

The little tricks and goals were positive, they help you pay attention and slowly build interaction and connection with your child.

Several described a shift in what they understood communication to be, recognising that spoken language is only one part of a broader process and that non-verbal exchange can be equally meaningful. Comparing early and later interaction videos was described as particularly powerful, making their child's progress visible and reinforcing their motivation:

Just before the call, I was watching some old videos, and it's true, he's made incredible progress. A year ago, he was only saying a few words, and gradually, we managed to get him to say more and more, to communicate better and better. Now he can play with adults, he can play easily. He looks people in the eyes.

Subtheme 2.3. Better Understanding of the Child

Many parents gained a deeper, more individualised understanding of their child's behaviour and needs. Over time, they became more aware of how tailored responses could prevent or defuse difficult situations: anticipating transitions, using distraction during distress, or recognising when the child needed space and calm. These subtle adjustments in attitude and expectations often led to observable improvements in behaviour:

We learn to better understand him. I'm much more patient now. I try to explain things even more, to prepare him even more when we go out or do something. I really take my time, I do everything I can to adapt to him.

Theme 3. Impact of PACT on Family Dynamics

Beyond the sessions themselves, the programme gradually influenced broader aspects of family functioning, including daily routines, the involvement of the extended family, and the management of stress.

Subtheme 3.1. Involvement of the Extended Family

Parents described sharing the strategies learned through PACT with other family members to create a more consistent and supportive environment for their child, aligning practices across contexts:

Yes, of course I'm the main parent in the program, but I talk to his father every day — after every session, at dinner, I explain what I learned, what we could do better for [child's name]. And it doesn't stop with my husband, I tell my sister, my mother — they live nearby. I tell my family, really.

Not all parents managed this. Some regretted that their partner or relatives had not attended sessions, even though this was technically possible, and that the intervention had remained centred on a single parent. For these families, the inability to include others was a missed opportunity to build a shared understanding around the child:

The only thing that bothers me, really, is that it ended up being almost an exclusive relationship between [child's name] and me. I kind of regret that the rest of the family wasn't included… If I had one criticism, it would probably be that.

Subtheme 3.2. Stress Associated with Integrating PACT into Family Life

Some parents found it difficult to maintain the routines encouraged by PACT, citing limited time, competing demands and mental load. Finding a quiet moment for the session, setting up the environment, or managing other children during home practice could be burdensome:

What holds me back… it's my own schedule, my mental load. It's not that I don't want to do it, I just don't always have the time or haven't been able to do it enough.

Subtheme 3.3. PACT Becoming Part of Everyday Life

Conversely, as they progressed through the intervention, many participants described its principles becoming integrated into their everyday parenting without conscious effort:

It's automatic now. So yes, I know we're still using it, but I don't even realize it anymore.

Parents also experienced the regularity and structure of the sessions as reassuring: a predictable rhythm that brought continuity and stability during a period of uncertainty.

Subtheme 3.4. Behavioural Challenges Interfere with PACT

While PACT was valued for improving communication and parent–child interaction, several parents were frustrated that it did not address behavioural difficulties that strongly affected daily life. Tantrums, opposition, intense repetitive behaviours and sensory difficulties were sometimes prominent enough to interfere with the use of PACT strategies:

It was really focused on understanding the child and how to make ourselves understood. That's what most of the videoconference sessions were about. But it didn't really solve the other problems.

Parents recognised the importance of improving communication, but some felt that a clearer focus on managing disruptive or distressing behaviour would have made the intervention more immediately helpful.

Theme 4. Experience of the Remote Intervention

Overall, parents viewed the telehealth format positively, citing improved accessibility and ecological validity, while noting several practical and relational challenges.

Subtheme 4.1. A More Accessible and Ecological Format

Parents widely appreciated being able to stay at home, describing telehealth as more practical and less stressful. Without travel or complex logistics, they could approach the sessions more calmly, and many felt that being in their own environment supported their emotional availability:

It's a whole different kind of logistics. We're at home, in our own cocoon. There's no stress from traveling or anything like that, honestly, I find that visioconference brings real comfort.

Subtheme 4.2. Transferability of the Intervention to the Remote Model

Parents identified the key components of PACT — video feedback, the positive and supportive tone of debriefing, the therapeutic alliance, and the clear focus on communication — and described them as useful, even transformative, despite the physical distance:

The fact that we could rewatch the videos and that the therapist could point out very specific moments, that was really informative. Those are the moments that stick with you.

Many parents were surprised by the quality of the therapeutic relationship established by videoconference, describing it as warm, trusting and responsive. The emphasis on collaborative reflection rather than directive teaching was seen as particularly effective in sustaining engagement:

I had an excellent relationship with [therapist's name], and that's what gives you back confidence in what you're doing. Honestly, I think it's a great human adventure — it's really something special.

Subtheme 4.3. Mental Load Related to Video Submission

Submitting videos was sometimes experienced as an additional burden: finding the time, setting up the interaction, and ensuring that the child was in a suitable emotional state for filming. In some cases, this created pressure to "perform" or to capture an idealised interaction rather than a natural moment:

It's kind of a mental load, remembering to make the video. I had to set aside 10 minutes and say, 'Okay, for 10 minutes I need to play with [child's name] in a fixed way while filming.'

The pressure to produce a "good" or "representative" video sometimes added stress to an already demanding routine, and led some parents to question whether what they were showing reflected their child's usual behaviour or their real difficulties.

Subtheme 4.4. Technical Limitations

Although most families managed the technical aspects of telehealth, some experienced disruptions that affected the flow and quality of sessions, including unstable Internet connections, poor sound and difficulties uploading videos:

The connection was a disaster! We moved house during the study and had connection problems, so yes, that made it a bit difficult.

Many parents nonetheless showed flexibility and resourcefulness, changing devices, moving rooms or asking for technical help, which allowed most families to maintain their participation:

The technical problems never stopped us from participating. We always managed, we always found a way to do the session anyway.

Subtheme 4.5. The Absence of In-Person Contact: A Perceived Limitation

Some parents wished for a hybrid format combining the flexibility of telehealth with the depth of in-person observation. Because the therapist never met the child, some felt their understanding of the child's behaviour and daily functioning was limited:

I think it would've been different if she had seen our daily life… it wouldn't have been the same if we had met in person.

3.3 Cross-cutting implementation processes shaping parents' engagement with remote PACT

Read across the four themes, parents' accounts map onto the dimensions of Proctor's framework [16], as set out in Table 2.

Acceptability was consistently high, particularly in relation to the effects on parents' own skills and to the remote format. It fell when technical problems intruded or when filming became burdensome.

Appropriateness was more uneven. PACT fitted well when it aligned with families' developmental and relational priorities; fit weakened when parents were still absorbing the diagnosis, when they were primarily seeking help with behaviour, or when family life was in disarray. Timing within the post-diagnostic period emerged as the most important determinant of fit.

Feasibility depended on context. It improved where strategies could be folded into existing routines, and remote delivery removed substantial practical barriers, particularly for families distant from services. Against this, the mental load of filming, competing family demands and intermittent technical failure were real constraints.

Adoption and engagement were nonetheless strong. Parents reported using strategies frequently between sessions, and many described them becoming part of ordinary interaction with their child.

Fidelity of the core mechanisms appeared to be preserved in the remote format, while parents' accounts also identified where adaptation would help, such as preparatory psychoeducation or hybrid delivery. Sustainability was evident in parents' reports of continuing to use strategies after the programme ended.

4. Discussion

Summary of Findings

Parents experienced remote PACT as acceptable, largely appropriate and sustainable, and attributed this mainly to what it did for them rather than to what it did for their child: greater confidence, better communication skills, a more finely tuned understanding of their child's behaviour. Fit, adoption and feasibility were more variable, and were shaped by when in the post-diagnostic period the programme arrived, by what else was happening in the family, by behavioural difficulties the programme did not address, and by the specific demands that remote delivery placed on the household.

Comparison to Existing Literature

That PMIs strengthen parental confidence and communication skills, and that positioning parents as active agents is central to their effectiveness, is consistent with previous work [15, 19]. Our study adds that parents felt psychologically supported during the post-diagnostic period, which probably reflects PACT's strengths-based stance. Where an earlier synthesis found that parents often sought emotional support outside the therapy itself [12], remote PACT appeared to meet part of that need directly, and may have sustained engagement by doing so.

At the same time, parents' frustration with the programme's narrow scope early after diagnosis echoes findings that focused interventions do not address the wider emotional and practical needs of this period [20]. This matters particularly here, because our participants began PACT immediately after diagnosis. The tension is not that the intervention was poorly designed but that it arrived before some families were in a position to use it: a mismatch between service-defined and family-defined priorities, and an argument for staged or stepped approaches to early autism support [21]. Comparable reasoning has shaped adaptations of PACT in India [13] and Brazil [14], where psychoeducational components were added to address early family needs. Timing, on this evidence, may matter as much as content.

The positive reception of the remote format is consistent with evidence that telehealth improves access and reduces logistical stress [22]. Our findings qualify this in a way that seems important for services. The burden did not simply disappear; some of it moved. Travel and scheduling were replaced by filming, uploading and troubleshooting — work that falls on the household, is unevenly distributed within it, and is easiest for families with stable connectivity, adequate space and time to spare. Access gains and burden transfer therefore need to be weighed together rather than treated as a single positive.

Strengths and Limitations

The qualitative design allowed an in-depth account of parental experience, and purposive sampling sought a range of perspectives. Interviews were conducted by a researcher independent of the intervention, which should have reduced, though not removed, social desirability bias. Participants were interviewed before trial results were known, so their accounts were not shaped by knowledge of measured effects.

Several limitations qualify the findings. Despite purposive sampling, nine of the fourteen participants came from a single high-enrolling centre, and only three fathers took part; the range of perspectives is correspondingly narrower than intended, and the experience of fathers, in a programme that tends to centre on one parent, remains under-described. Seven of the twenty-one families approached did not respond, and their reasons are unknown; parents with less positive experiences may be over-represented among them. Interviews lasted 30 to 45 minutes, which constrains depth, and remote interviewing, while widening geographical reach, may have limited the capture of non-verbal cues. Finally, parents contributed to the interpretation of the findings but not to the design of the study or the interview guide, which may have narrowed the questions that were asked.

Applying Proctor's framework from the parents' standpoint may be contested among implementation researchers, since it was developed with organisational actors in mind. We would argue that the extension is warranted in PMIs specifically, where parents are not recipients of professional guidance but the people who translate the intervention into everyday interaction, and where some go on to support or train other parents. The mapping was nevertheless performed after the thematic analysis and is interpretive; we present it as a way of organising the findings for service planning, not as a measurement.

Implications for Future Practice

Four implications follow. First, timing and preparation. A preparatory psychoeducational phase would help families understand the diagnosis, identify their own priorities and enter the programme ready to use it [23], and could also connect parents with peers, which is itself a powerful source of motivation and shared learning [24, 25].

Second, an explicit negotiation of scope at the outset. Several parents' early disappointment stemmed from expectations that were never surfaced or discussed. PACT already sets goals collaboratively within sessions; extending that collaborative stance to the framing of the programme itself — what it is for, what it does not cover, what else exists — would allow families to make an informed choice rather than discover its boundaries by trial and error.

Third, practical support for the digital work. Anticipatory guidance, flexible filming requirements and accessible technical help are modest measures that would reduce the burden remote delivery creates, and would disproportionately benefit the families least equipped to absorb it. Hybrid models combining remote and in-person sessions would also respond to parents' wish for the therapist to see their child directly.

Fourth, the therapeutic relationship. Parents valued feeling heard and supported, and the alliance survived the distance. Training for clinicians delivering remote interventions should regard building rapport and trust online as a skill in its own right rather than an incidental property of the medium.

5. Conclusions

Remote PACT strengthened parents' skills and their interactions with their child, and did so without losing the alliance or the mechanisms that make the programme work in person. Its limits lay elsewhere: in arriving before some families were ready, in leaving pressing behavioural difficulties unaddressed, and in asking of households a quantity of practical work that is easy to overlook. Attending to these — through preparation, explicit negotiation of scope, technical support and flexible formats — would help such programmes fit the lives of families of newly diagnosed autistic children, rather than requiring those lives to accommodate the programme.

Abbreviations

ASD
autism spectrum disorder
CONSORT
Consolidated Standards of Reporting Trials
COREQ
Consolidated criteria for Reporting Qualitative research

COVID-19
coronavirus disease 2019
PACT
Paediatric Autism Communication Therapy
PMI
parent-mediated intervention.

Declarations

Ethics approval and consent to participate: The study was conducted in accordance with the Declaration of Helsinki and French regulations on research involving human participants. The trial protocol was approved by the Comité de Protection des Personnes Sud-Est III, Bron, France, a French research ethics committee (reference 2018-067 B; initial favourable opinion on 30 October 2018). The semi-structured interviews with parents reported here are part of the approved trial protocol (version 5, 25 October 2019). The trial was assigned the national registration number ID-RCB 2018-A02516-49 and is registered on ClinicalTrials.gov (NCT04244721). All participating parents gave written informed consent before taking part in this qualitative study.

Consent for publication: Not applicable. The manuscript contains no identifying individual data; all quotations are anonymised.

Availability of data and materials: The datasets generated and analysed during the current study are not publicly available because the interview transcripts contain potentially identifying information about participants and their children, but are available from the corresponding author on reasonable request.

Competing interests: The authors declare that they have no competing interests.

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Authors' contributions: Conceptualization: LJ, MMG, PA; Methodology: LG, LJ, MMG; Formal analysis LJ,MMG, PA, MG; Investigation MJO,TR,HP, ALTP,NB, OFC, MG; Writing - original draft MMG, LG; LJ and MMG had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. All authors read and approved the final manuscript.

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Tables

Tables 1 and 2 are available in the Supplementary Files section.

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