ORIGINAL PAPER

Breaking Barriers: Promoting Parent-Child Engagement with Co-Produced Activity Packs for 1-to-3-Year-Olds

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Abstract
Parent-child activities support children's socio-emotional and cognitive development, yet numerous barriers limit engagement, particularly among families experiencing socio-economic disadvantage. This study uniquely investigates and addresses these challenges by integrating insights from parents and early years practitioners. Through online workshops, 118 parents and 127 practitioners identified barriers relating to opportunity (e.g., time constraints, access to resources, and worries about mess and damage), capability (e.g., gaps in knowledge and expectations) and motivation (practitioners in particular emphasized the importance of parental confidence and positive experiences of play). To address these barriers, three co-designed activity packs were distributed to over 1000 families. The packs featured simple, clearly explained, play-based activities requiring minimal setup, along with resources and guidance tailored to diverse family needs. Emphasizing the process over outcomes, the packs aimed to boost parental confidence, bridge knowledge gaps, and support parent-child interactions. Feedback from 23 parents and interviews with 10 practitioners highlighted the packs' positive impact on parental perceptions of play, their confidence in supporting child development, and their ability to overcome practical constraints. Practitioners played a pivotal mediating role, fostering trust, addressing concerns, and encouraging participation through personalized interactions. This study offers a scalable, cost-effective intervention model that directly addresses practical and psychological barriers to parent-child engagement. The findings have significant implications for policymakers, emphasizing the need for targeted, evidence-based solutions that combine resource provision with practitioner support. Such approaches are essential for fostering equity in early childhood development and improving outcomes for children across diverse populations.

Highlights
- This is the first piece of evidence addressing barriers to engaging in parent-child activities relating to capability, motivation and opportunity.
- Co-produced activity packs offer a novel, practical solution to enhance parent-child interaction and overcome identified engagement barriers.
- Providing clear, simple play ideas with necessary materials boosted parental confidence and interaction.
- Practitioners helped mediate by offering guidance, reassurance, and encouragement to families.
- These activity packs offer a new, scalable, evidence-based solution that would be highly relevant for policymakers to address barriers and promote parent-child engagement.

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Introduction

Parents play a crucial role in children's development across the lifespan, and in the first five years in particular. Through talking, singing, reading and playing with their child, parents are able to support young children as they acquire and practise new skills in ways that can positively influence

children's preparedness for school and capacity for educational achievement, as well as foster their social and emotional wellbeing (Hendry et al. 2022; 2023; Khanolainen et al., 2020; Lehrl et al., 2020; Melhuish et al., 2008; Rosen et al., 2020; Wood, 2002). Specifically, parent-child shared reading positively influences children's language skills (Aram & Shapira, 2012; Brown et al., 2022; Williams et al., 2015; Wing-Yin Chow & McBride-Chang, 2003), empathy development and pro-sociality (Aram & Shapira, 2012; Williams et al., 2015), and mental wellbeing (Wong et al., 2022). Exposure to toys that promote symbolic play (e.g., animal figures) and fine motor skills (e.g., blocks) relates to children's early language skills (Tomopoulos et al., 2006). Young children from homes which score highly on a measure of home environment quality (encompassing access to toys, art materials, and books, and time spent by parents and children engaging in reading, talking and playing together) tend to have higher scores on a range of language, motor and socio-emotional indices (Rubio-Codina, 2016).

Although there is substantial evidence demonstrating the importance and benefits of parent-child engagement in a range of activities for infants' cognitive development, there exists considerable variation in the extent to which parents initiate these activities. The COM-B model provides a framework through which to understand this variation by focusing attention on three essential conditions of behaviour systems: capability, opportunity, and motivation (Michie et al., 2011).

Prior Research on Factors Influencing Variation in Parent-Child Activities

Parent-child activities have been linked with socioeconomic circumstances (SEC; Rosen et al., 2020). UK parents of preschool children experiencing socio-economic disadvantage report being less likely to engage in learning-related activities compared with parents from more-advantaged backgrounds (Toth et al., 2020). Recent research has demonstrated that many families provide a socio-cognitively supportive home environment despite economic hardship (DeJoseph et al., 2021). Nevertheless, during times of crisis and stress parents from less-advantaged backgrounds report being less likely than more-advantaged respondents to engage in parent-child activities in general, and reading with their child in particular (Fung et al., 2023; Hendry et al., 2022).

One factor proposed as mediating relations between SEC and variation in parent-child activities is access to physical resources. Economic disadvantage constrains parents' ability to provide access to toys, books and other materials and facilities that can support a range of enriching activities

(Cooper & Stewart, 2021; Duncan et al., 2014; Rosen et al., 2020). Within the COM-B model, this constitutes a barrier to physical opportunity.

Parental attitudes and knowledge -a facet of psychological capability within the COM-B model- have also been identified as an important influence over parent-child activities. The frequency with which parents of under 5-year-olds engage in enriching activities with their child is associated with parental endorsement of statements relating to the importance of early learning (Hembacher & Frank, 2020). Similarly, Hendry et al. (2022) reported that parental endorsement of items relating to the importance of supporting Early Learning, Affection and Attachment was positively associated with parent-report of engagement in parent-child activities. In turn, parental attitudes are associated with SEC. List and colleagues (2021) report that parents from more-advantaged backgrounds are more likely to believe that parental investments influence child development.

Interventions designed to improve the quantity and quality of parent-child activities in the early years, by increasing awareness of the importance of such activities and access to relevant resources, have shown promise. In a systematic review, De Bondt et al. (2020) found that book giveaway programmes promoted the home literacy environment, and were associated with improvements in children's literacy-related skills. Programmes which provided books *and* advice to parents were the most effective in supporting children's outcomes (De Bondt et al., 2020; Dowdall et al., 2020), and were particularly effective when targeted to families from lower-SES backgrounds (De Bondt et al., 2020). In a UK study by Armstrong and Ross (2022), art boxes were provided to encourage collaborative art activities between parents and their children (0–3 years). The study revealed improvements in the parent-child connection, including increased time spent engaged in playful activities, enhanced shared attention, and greater levels of eye contact.

One potential limitation of these interventions is that they have tended to focus on a narrow range of activities, potentially undercutting two important considerations; firstly, engaging in a range of activities may best promote development (Gregoriadis & Evangelou, 2022), and secondly, that activities are more likely to be impactful and sustained if they build on parents' and child's interests and preferences (Dunst, Raab, & Hamby, 2016; Leibham, et al., 2005; Renninger, & Hidi, 2019). This second factor relates to the motivation component of the COM-B model.

With this in mind, we aimed to develop and evaluate a novel intervention to promote parental engagement in a diverse range of parent-child activities. We took a collaborative approach involving direct consultation with both parents and early years practitioners, grounded in the prior

research summarised above, to first gain deeper insights into how capability, opportunity, and motivation conditions currently shape parent-child activities, then develop solutions to key barriers to capability, opportunity and motivation, and finally to evaluate the impact of these solutions on parents' perceptions and attitudes.

Methods

In this study, we engaged several distinct participant groups across different phases. Families who attended the consultation workshops were different from those who received the activity packs, and a subset of the latter group provided feedback. Additionally, two groups of practitioners were involved: one group participated in the consultation and co-production workshops, while another group distributed the packs, with a smaller subset being interviewed for feedback. These distinctions are explained in more detail in the relevant sections below.

Consultation and Co-Production

Workshops

Three online workshops on the topic 'What can parents do to support their child's development?' were held in September 2021. Two sessions were targeted to parents and were advertised via social media. The third session was targeted to practitioners who work with parents with young children, particularly those from socio-economically disadvantaged backgrounds and was advertised via the project charity partners (i.e., Peeple, Home Start, The Literacy Trust, Oxfordshire County Council).

Participants were given the option to participate in the online sessions with their webcams off and to contribute anonymously in the interactive elements of the workshop. At the end of each workshop participants were invited to complete an optional online questionnaire to collect some background information and feedback on the workshops (Ethics committee approval ref R77397 and R83430). To assess families' socioeconomic backgrounds, participants were asked to provide their highest level of education and postcode. The postcode data was used to compute an Index of Multiple Deprivation decile group for each participant (Ministry of Housing, Communities and Local Government, 2019).

The full workshop agenda is presented in the Supplementary Materials (SM1); this report focuses on responses to the prompts around parent-child activities. Using the interactive online tool Padlet, we presented workshop participants with 12 categories of activities (see SM2 for details), mapped to the ones used in Hendry et al. (2022),

and asked participants to provide a) examples of the kinds of things they do in that category, and b) barriers to doing this activity. For practitioners, we asked them to think in particular about barriers for the parents that they work with from socio-economically disadvantaged backgrounds.

Two researchers (AH, IAC) independently conducted a content analysis (Krippendorff, 2018) on the Padlet[1] contributions related to barriers. The contributions were transcribed verbatim into a spreadsheet, after which each researcher identified a sub-theme that best characterized each contribution. The sub-theme labels were iteratively refined during the coding process. Subsequently, overarching themes encompassing all sub-themes were identified, with the aim of limiting the overarching themes to fewer than ten. Contributions from the two parent sessions were combined, while contributions from practitioners were analysed separately. After completing the independent coding, the coding spreadsheets were reviewed in consensus meetings (conducted separately for the parent and practitioner data). In cases where items were mapped to different sub-themes or where different sub-theme labels had been proposed, a third researcher (NGG) suggested a resolution. All suggested resolutions were endorsed by both independent coders.

Resource development

The research team presented to the project collaborators a summary of the barriers that were identified in the workshops, and jointly identified the barriers that could feasibly be addressed via the project; aiming for coverage across behaviour systems (i.e., touching on capability, opportunity, and motivation). Following an initial high-level scoping meeting, AH drafted a detailed scoping document of resources which could address the target barriers, and support children's cognitive, physical and social-emotional development, drawing on activity ideas contributed by parents and practitioners in the workshops, as well as prior knowledge and expertise (as a cognitive developmental psychologist specialising in executive function development, and former creator of informal learning resources).

This scoping document was iteratively refined with input from the project collaborators drawing on their expertise in language development (NGG), supporting literacy skills (The National Literacy Trust) and enriching the home learning environment (Peeple, Home-Start, AH). In phase 1 of the project, 500 resource packs were created to this specification (250 of set 1, 250 of set 2), as detailed in SM3.

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[1] Padlet was chosen given that it is a user-friendly interface that allows participants to easily contribute in real-time, supports anonymous inputs for honest feedback, visually organizes responses for clarity, and fosters collaboration through commenting and interaction.

Resource distribution

Resource packs were distributed to families in Oxford by project partners Home-Start and Peeple, and other local charities and community groups. Distribution was prioritised in local areas identified as among the 20% most deprived in England based on Index of Multiple Deprivation (IMD) scores. Distributing partners were given the choice of which packs to distribute, and to whom, based on their knowledge of the families they support. Once most of the packs had been distributed in Phase 1, interviews were conducted with representatives from seven of the distributing partners to capture feedback on the resources. This feedback was used to refine the resource packs for Phase 2 of the project rather than being collected as research data, and is, therefore, not detailed here. During Phase 2, a third type of pack was developed, and an additional 600 packs were created: 250 of Set 1, 100 of Set 2, and 250 of Set 3. These packs were also primarily distributed in areas identified as among the 20% most deprived in England.

Evaluation

Interviews

All 17 practitioners who had distributed packs to families in phase 2 of the project were invited to participate in an interview, of whom 10 responded and were interviewed. Interviews took place online and lasted, on average, 40 min. Interviewees' services/settings were: nurseries ($n = 2$), a childminder ($n = 1$), parent groups/family support ($n = 4$), a stay-and-play group ($n = 1$), a (1:1) family support network ($n = 1$), and family services in the local authority ($n = 1$).

The interview explored practitioners' thoughts on the activity packs, including how they were perceived and used by parents, if/how they were supportive of playful activities at home, potential impact on children's learning and development, what went well, and any challenges they had faced (see SM4 for the interview guide). To help practitioners feel comfortable with offering open reflections, the interviewer (NL) was an 'outsider' to the core project team and had not been involved in the resource development. All interviews were recorded digitally. Transcriptions were automatically generated then checked against the recordings and amended where necessary. A thematic analysis (Braun & Clarke, 2012) was conducted using Nvivo 12. An outline coding frame was developed based on the interview guide foci. This framework supported a structural coding process (Saldaña, 2016) but was developed inductively during coding. The coded transcript was reviewed by another member of the research team (NGG) to serve as an audit of the analysis. This process allowed for a discussion to clarify and refine the code definitions, ensuring consistency and accuracy in the interpretation of the data.

Questionnaires and photographs

Parents were encouraged to provide feedback on the packs in the form of photographs of the resources being used, and/or responses to a questionnaire (see SM5). Questionnaire responses could be contributed online (via a QR code included in the resource packs) or via paper form (included in the resource packs). The questionnaire included some optional questions relating to demographic characteristics (see SM5). Photographs could be submitted via the online form or, with written consent, via the practitioner who had shared the packs. Parents were incentivised to provide feedback by the offer of a voucher for a second, different, activity pack (which could be collected from The Oxford Brookes BabyLab or The Oxford BabyLab) if they provided feedback through any of the channels described above. Ethical approval for this evaluation phase was provided by The University of Oxford (R83430).

Results

Consultation and Co-Production

Workshops

Of 118 people attending the parent workshops, 76 completed the evaluation questionnaire. Eighty-eight per cent of respondents reported being a mother, 3.9% said they were a father, and 7.8% replied 'other' (foster carer $n = 2$; teacher $n = 1$; early years professional $n = 2$; grandparent $n = 1$). As shown in Table 1, whilst participants from a range of socioeconomic backgrounds attended the workshops, our sample was skewed towards highly-educated parents living in the least deprived areas of the UK.

Of 127 people attending the practitioner workshops, 70 completed the evaluation questionnaire. Practitioners' roles included: ECEC professionals ($n = 16$), paid family support ($n = 51$), volunteer family support ($n = 11$), early years charity managers ($n = 2$), childcare and early years consultants ($n = 2$). Importantly, although our parent sample was somewhat skewed towards more-advantaged families, 84% of the practitioners in our study reported working with families living in areas of social and/or economic disadvantage. Through their perspectives and experiences, we aimed to represent the realities of these families as accurately as possible.

The verbatim barriers reported by parents and practitioners, and the themes and sub-themes identified through content analysis are presented in SM4, and summarised in

Table 1 Parent workshop respondent background characteristics

	Mean (SD)	Median	Min, Max
Index of Multiple Deprivation decile group[a]	7.33 (2.61)	8	1, 10
Highest level of education reached[b]	2.53 (0.58)	3	1, 3

[a]1 = Most deprived area, 10 = Least deprived area

[b]1 = A Level or vocational equivalent or below, 2 = Undergraduate 3 = Post graduate or professional equivalent
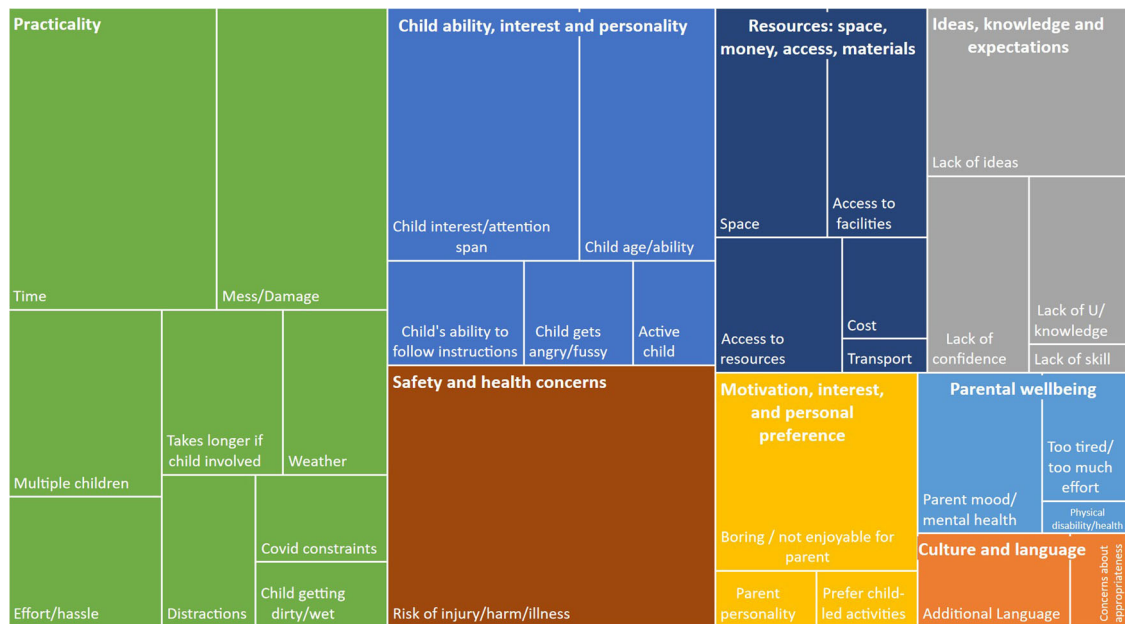
Fig. 1 Treemap of the barriers to parent-child activities as identified from the parent workshops. The size of each square corresponds to the frequency of occurrence for each item and the colours group barriers into different themes (cf., SM4 for more details)

Figs. 1 and 2. These show that parents identified issues relating to physical opportunity (in particular time, and concerns about mess or damage) most frequently as a barrier to engaging in a range of parent-child activities. Another common theme was children's ability, interest and personality (i.e., children not having the interest, attention span or ability to engage in the activity for long). Although ostensibly this challenge related to the child's psychological capability and motivation, the practitioner interviews indicated that the parent's own psychological capability (specifically their knowledge and understanding of child development and the value of 'little and often' play) may be relevant here, as some parents may under-estimate their child's ability or interest, or over-estimate the degree to which an activity needs to be structured or outcome-focused in order to be beneficial.

Indeed, practitioners identified ideas, knowledge and expectations as a primary barrier; in particular parents' lack of confidence, and their understanding of the benefits of different activities, and the importance of play. Practitioners also frequently mentioned resources (access to time, space, money and materials) as a barrier, as well as practicalities such as worries about mess or damage, or parents having other demands on their time.

Resource development, distribution and refinements

The project collaborators agreed to address the barriers most frequently identified by creating a series of activity packs. Each pack encompassed tangible materials like paints and toy animals, alongside 10 activity ideas, and a companion storybook. The activities were designed with an emphasis on simplicity and fun such that each activity should take no more than 5 mins to set up, and 5 mins to clear up, and be play-focused not outcome-focused. Easy-read activity cards included suggestions for adapting and extending each activity (see Fig. 3). This approach aimed to encourage parents to modify and expand upon the initial activities to suit their child's interests and developmental ability. Each activity was accompanied by a concise explanation of how it supports children's skill development. In this way, the packs directly addressed barriers relating to capability (parental understanding of their important role in fostering their child's development, and knowledge of age-appropriate ways to support child development), opportunity (time, materials, space), and motivation (aiming to elicit positive experiences of play for both parent and child). To ensure a cohesive visual experience, illustrations from
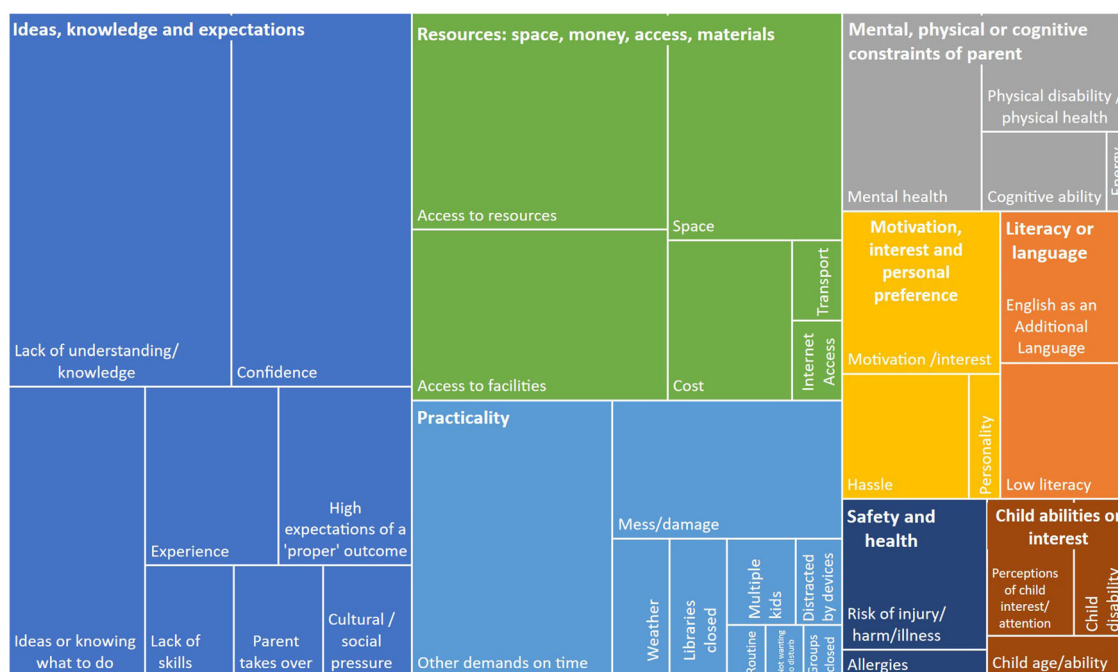
Fig. 2 Treemap of the Barriers to parent-child activities as identified from the practitioner workshops. The size of each square corresponds to the frequency of occurrence for each item and the colours group barriers into different themes (cf., SM4 for more details)
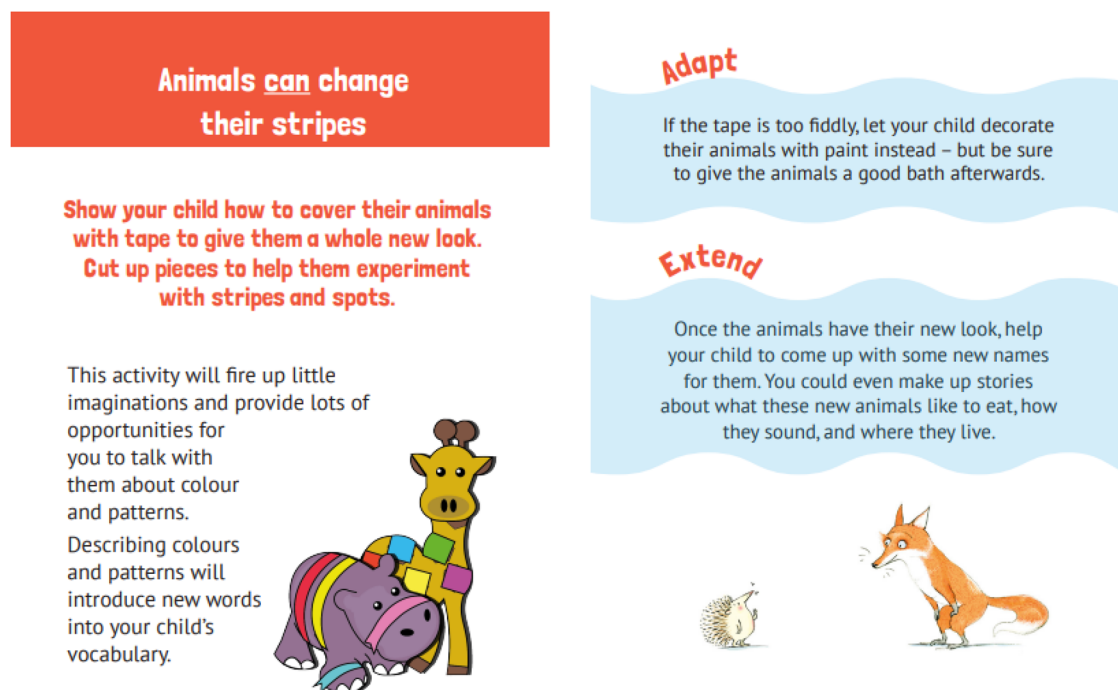
Fig. 3 Example of an activity included in "The not-too messy animal play pack"

the companion storybook were integrated into the activity cards.

Three activity packs were scoped, of which two (250 of each set) could be produced within the budget constraints for Phase 1: *The colourful chalk, talk and walk pack*, and

The not-too-messy animal play pack. These packs were distributed to families from December 2021 to March 2022. Audio versions of the activity ideas in English (to support families with low literacy levels) and 8 commonly spoken languages in Oxford were provided online (see www.pla

yfulpacks.uk), and accessible via QR codes on the back of the activity cards.

Interviews with distributing practitioners indicated that parents found the packs appealing and engaging. The packs were considered to promote and enhance parent-child activities, and build parental confidence. No substantive changes to the resources were suggested, but respondents were enthusiastic about the idea of further outdoor play activities; in phase 2 we, therefore, also produced a third pack; *The Little Explorer pack*. Respondents highlighted the important role of the practitioner in explaining the value of play and the different ways the packs could be used. To facilitate these conversations, one of our project partners (Peeple) produced a video for distributing partners, outlining the importance of 'unpacking the pack' with parents, and we added a supplement to each pack explaining how an example activity supports development. This 'deconstructed play' exemplar was intended to give practitioners a framework to discuss the benefits of parent-child activities, highlight the evidence base for the packs, and encourage parents to reflect on the 'why' as well as the 'how' of play, so they feel confident to apply this approach to other activities.

Evaluation

Practitioner interviews

The interview findings are elaborated on in detail in SM6. Summaries relating to the key barriers identified in the workshops are presented below, with themes identified through the interview coding in italics.

Reducing physical barriers to opportunity Practitioners reported that, broadly, the packs were well-received and well-used by parents, and provided *support for shared play*. *Ease of use* was identified as a key factor in this success and this ease was attributed to the simple, clearly-explained ideas (and for some families, the translation into their home language), the provision of the resources needed for each activity, and the non-messy approach which made the activities suitable for days when parents have "nothing left in the tank". For a few parents (particularly those with bicycles) the bulky nature of one of the packs caused a practical barrier in terms of transporting it home, and the backpacks (containing the Little Explorer packs) were considered more convenient and easier to manage in this regard. For other parents the size of the box was a positive feature, allowing for its intended use as a paint tray and easy storage of resources. Additionally, the physical nature of the packs was identified as acting as a visual prompt, inviting busy parents to engage in the activities.

Increasing motivation to engage in parent-child activities Practitioners felt the packs held the potential to impact parents' negative perceptions about play, overcome barriers, build confidence and offer new possibilities. This was attributed to the simplicity of the activity explanations, the resources provided, and the manageability of the ideas. Although a few parents showed initial concerns relating to the capacity for mess with paint activities and how much time using the pack would take, for the most part, these activities seemingly motivated some parents to experiment with paint and in doing so, realise it was actually manageable. Nevertheless, for a few parents – specifically, those living in rented properties who cannot afford to pay for damage repairs – practitioners noted that the perceived risk of using paints in the home, however well-contained, was a barrier to engagement with one of the packs. Practitioners also reported that for a small minority of parents, time constraints and/or other family priorities meant that parents did not engage with the packs.

Enjoyment was identified as a key theme, related to a recognition of the value of play that was considered likely to lead to a positive cascade of effects including building the parent-child relationship. Nevertheless, a minority of families were perceived to rely on the packs for their child's independent play, rather than to support parent-child activities. Relatedly, some practitioners noted that some parents were resistant to the packs –and to the idea of parent-child activities in general– either because they see education through play as the role of nurseries, or because they would rather go to a playgroup and socialise.

Reducing barriers relating to ideas, knowledge and expectations Practitioners noted the packs' utility in *stimulating ideas*, including amongst families where parent-child play is not the norm. Although two activities in particular – den-making and painting – were repeatedly mentioned as enjoyable, the choice offered through the range of ideas for play was in itself seen to be a positive feature. Moreover, practitioners noted that many parents built on the suggestions for *extending play*, which built confidence and a sense of ownership, thereby further increasing motivation for play. The benefits of the packs were felt to apply both for parents who may have limited interactions with their child, and for parents who tend towards formal 'educational' activities. Some practitioners also mentioned that the packs had provided them with helpful ideas to supplement their own provision.

All practitioners referred to the strong opportunities for learning and development offered by the packs and the potential for a positive impact on children's development. Practitioners identified potential benefits in a range of domains, with language skills being most commonly cited,

Table 2 Parent-respondent demographics

	Mean (SD)	Median	Minimum, Maximum	*n*
Neighbourhood Index of Multiple Deprivation[a]	4.65 (2.62)	3	2,8	20
Parent's highest level of education reached[b]	1.84 (0.90)	2	1,3	19
Child age (months)	32.45 (11.59)	31.5	12,57	20

[a]1 = Most deprived area, 10 = Least deprived area

[b]1 = A Level or vocational equivalent or below, 2 = Undergraduate 3 = Post graduate or professional equivalent

and noted that some parents had reported that their child's attentional skills had developed through engagement with the packs. The books were appreciated by practitioners as a well-pitched support for parent-child interaction, with one practitioner noting that the books were a useful cue to developmental progression and might help parents transition to age-appropriate activities.

The role of the practitioner, and evaluation The packs were identified as being in *philosophical harmony with settings and services*, complementary with their own ethos of encouragement for play at home. Practitioners described different approaches to sharing the packs with parents, often linked to their service/setting type, with some emailing information in advance, then handing the packs over, and others arranging group or one-to-one activities using the packs. A common focus of these discussions was *offering explanations and encouragement*, and in some cases *offering reassurance* that there were 'no strings attached', that feedback was voluntary, and that parents could pick and choose what they wanted to do from the packs. The video created by a project partner discussing 'unpacking the pack' with parents was highlighted by one practitioner as particularly useful regarding the *importance of mediation*.

Although the core project partners and many additional settings were highly enthusiastic about the packs, the practitioner co-ordinating pack circulation reported some challenges with engaging other settings, such as not receiving a response to participation invitations or settings declining with no explanation. Two practitioners reported parents experiencing challenges engaging with the materials due to English not being their first language, and despite there being translations of the materials available on the project website, there were requests for these, indicating some practitioners were not aware of them.

Almost every practitioner interviewed referred to challenges with *Gathering feedback* from parents, which in some cases meant they felt they could not gain a strong sense of how families had used the packs or how they felt about them. There was only one report of minimal issues with gathering feedback from parents. In this case, the practitioner worked with groups as well as with families during home visits, and had established a routine of discussing the packs and reminding parents to give feedback.

Parent feedback

Direct feedback was gained from 23 parents; one provided photos only; 22 completed the feedback form online (*n* = 9) or via print copy (which was passed back to the team via distributing partners; *n* = 13). Five parents submitted photographs of the packs in action; these are presented at www.playfulpacks.uk/gallery, alongside images taken during the first phase of the project (with consent from parents to share online) to inspire other families to use and adapt the activities.

As shown in Table 2, respondents were broadly from less-advantaged backgrounds, tending to live in some of the more deprived areas of Oxford. However, some respondents did live in non-deprived areas and were highly educated.

As shown in Table 3, the parents who provided feedback on the packs found them useful in terms of getting new practical ideas and understanding how the activities can support their child's development. Parents reported that the packs looked appealing, were age-appropriate and fun (for parent and child), and encouraged them not only to spend more time doing activities with their child, but also to increase the range of activities that they do with their child.

In answer to the prompt, 'Please let us know if the activity pack has made a difference in any other way?', six parents commented that they were appreciative to be given the packs, and/or noted the specific activities that their child enjoyed and why. Five parents noted that the pack provided opportunities and encouragement to sit down and read or play together:

> "…it made me focus on this child specifically, and I put time aside to do this with her when there were no other children or distractions around so that we had each other's full attention. I enjoyed that a lot, and think I will try and make sure that happens more often."

Three parents commented that they appreciated that the packs were supporting their child's learning or skill development with one parent specifically saying "*I found the explanations of why an activity was good for development helpful*". Another parent noted that the packs were

Table 3 Summary responses to Likert-rating questions

Question	Mean (SD)	Median	Minimum, Maximum
How useful was this activity pack in terms of getting new practical ideas on what to do with your child (1 = Not at all useful, 5 = Very useful)	4.18 (0.85)	4	2,5
How useful was this activity pack in terms of helping you to understand how these activities can support your child's development (1 = Not at all useful, 5 = Very useful)	4.27 (0.77)	4	3,5
The activity pack looked appealing (1 = Strongly disagree, 4 = Strongly agree)	3.50 (0.51)	4	3,4
The activity pack was suitable for the age of my child (1 = Strongly disagree, 4 = Strongly agree)	3.59 (0.59)	4	2[a],4
The activity pack: - Had fun activity ideas (1 = Strongly disagree, 4 = Strongly agree)	3.59 (0.50)	4	3,4
The activity pack has encouraged me to spend more time doing activities with my child (1 = Strongly disagree, 4 = Strongly agree)	3.09 (0.68)	3	2,4
The activity pack has increased the range of activities that I do with my child (1 = Strongly disagree, 4 = Strongly agree)	3.23 (0.61)	3	2,4
The activity pack has increased my confidence in supporting my child's development (1 = Strongly disagree, 4 = Strongly agree)	3.23 (0.43)	3	3,4
I enjoyed doing the activities with my child (1 = Strongly disagree, 4 = Strongly agree)	3.59 (0.50)	4	3,4
My child enjoyed the activities (1 = Strongly disagree, 4 = Strongly agree)	3.45 (0.60)	4	2,4

[a]The one respondent who disagreed with the statement 'The activity pack was suitable for the age of my child' noted that their child was 4 years old, which was above the target age for the resources

reassuring, and one parent commented that the activities had inspired further games and play.

In answer to the prompt, 'Do you have any suggestions on how we can improve these activity packs?' six parents specifically said they liked the packs as they were, and eight left the field blank (having completed all other sections). Two parents made specific suggestions for additional resources (crayons or pencils and a colouring book; and a map of local areas for free activities). Two parents suggested that a magnifying glass be included rather than a bug pot in the Little Explorers pack. One parent requested links to buy more of the resources provided while another suggested that the packs be more theme-based.

Discussion

Via direct engagement with parents and early years practitioners, our study sought to investigate and address the barriers hindering parents' engagement in a variety of activities with their toddler or pre-schooler. Parents predominantly cited practical issues such as time constraints and concerns about mess or damage. Within the COM-B model (Michie et al., 2011), these can be considered barriers to physical opportunity. Practitioners (who were asked to reflect in particular on their experiences working with families experiencing socio-economic disadvantage), however, highlighted knowledge gaps and expectations as greater barriers than access to resources, emphasizing the importance of parental confidence and understanding of activity benefits i.e., pertaining to psychological capability and reflective motivation within the COM-B model. This

contrast is especially relevant given that many parents also felt their children lacked the interest, attention span, or ability to engage in a variety of activities.

In response, we developed tailored activity packs to address these barriers. The packs offered simple, engaging activities that could be easily integrated into daily life, directly addressing parental concerns about time and mess. The inclusion of activity adaptations and extensions aimed to bridge the knowledge gap identified by practitioners, while explanations linking activities to child development were included to boost parental confidence. Additionally, the emphasis on the process over the product helped alleviate concerns about overly high expectations for outcomes, fostering a supportive environment for parent-child interactions. Packs were primarily distributed in areas of Oxford experiencing high levels of socio-economic advantage, although it should be noted that the sub-set of parents who provided feedback likely over-represented less disadvantaged families.

The feedback obtained through practitioners' interviews and parents' questionnaires supports the efficacy of increasing motivation by increasing the number of positive experiences of parent-child play through actively addressing opportunity and capability-related barriers to engaging in parent-child activities, rather than simply telling parents that it is important for them to play with their child. The positive responses obtained from both groups indicated that tailoring interventions to directly tackle these barriers yielded encouraging outcomes. The practitioners reported a notable shift in parental attitudes and engagement, indicating that the inclusion of clear explanations linking activities to child development significantly enhanced parental understanding

and confidence, and motivation to engage in parent-child activities. This finding aligns with existing research emphasizing the influential role of parental beliefs on parental engagement and children's outcomes, and the suggestion that simple educational policies alone may not be sufficient to induce robust behavioural changes and child outcome improvements (List et al., 2021). Moreover, parents' questionnaires echoed this sentiment, with parents appreciating the approach that didn't just advocate but provided tangible solutions that empowered them to engage more effectively with their children.

Although these results indicate positive changes in parents' knowledge, attitudes, and practices, future studies should also evaluate the impact of such interventions on children's developmental outcomes. Understanding how these changes in parental behaviour translate into tangible benefits for children's development is crucial for refining and optimizing these interventions.

Furthermore, it's crucial to acknowledge that for certain families, the barriers hindering parent-child activities are considerably high and entrenched, to an extent where even resource packs as a supplement to advisory materials might not suffice. In such cases, additional investments in support workers and community programs, as part of a multifaceted approach that combines resource provisions with in-person support, might be necessary to bridge the gap for families encountering substantial hurdles in engaging with their children (Pellecchia et al., 2018).

Practitioners' role as mediators played a crucial part in the success of implementing the activity packs by building parental trust and confidence. Practitioners explained the significance of the activity packs to parents, emphasizing the benefits and dispelling misconceptions or concerns. Practitioners also assured parents of the ease of use of the activities, and reassured hesitant parents about taking part in research and what accepting the free packs might entail. Practitioners' diverse approaches in disseminating the packs aligned with their service or setting types, and practitioners tailored their interactions to suit the specific needs of the families they served. This personalized approach facilitated a deeper understanding and resonance with the activity packs' objectives, in line with previous literature showing that interventions in community settings improve and maintain parental engagement (see Pellecchia et al., 2018 for a review).

The project encountered significant challenges in gathering direct feedback from parents. Prior research indicates barriers to parental engagement in interventions and evaluation include competing demands on parents' time and resources, communication and literacy barriers, and apprehensions about being judged or evaluated in some manner (see Lingwood, et al., 2020; Morawska & Sanders, 2006; Mytton et al., 2014; for a review). These factors collectively might have contributed to the challenges encountered in securing comprehensive feedback.

Despite these challenges, the overall positive reception of the packs underscores their potential as effective tools in promoting parent-child engagement. Future iterations could focus on refining dissemination strategies to reach a wider demographic, ensuring inclusivity and accessibility across diverse socioeconomic and linguistic backgrounds. Continued collaboration with practitioners and stakeholders remains pivotal for the ongoing refinement and enhancement of these strategies.

These findings bear substantial implications for policy formulation and implementation within early childhood development initiatives. By acknowledging and targeting the practical constraints and knowledge gaps faced by parents, policymakers and stakeholders can foster a more inclusive and supportive environment for parental engagement, thereby enriching the developmental experiences of children across diverse socioeconomic backgrounds. The study suggests that policies should not only raise awareness about the importance of parental involvement but also provide tangible solutions, such as the tailored activity packs developed in this study. These packs offer a cost-effective and scalable model that could be integrated into existing educational and social welfare systems, such as early childhood programs, health visitor services, or community outreach initiatives. In addition, the study highlights the importance of practitioner involvement in mediating these interventions. By training and supporting practitioners to engage more effectively with parents, policymakers can ensure that families receive personalized guidance, which is essential for the success of such initiatives. Furthermore, the study points to the need for a multifaceted approach that combines resource-based interventions with in-person support or community programs, which would complement and enhance current policies aimed at reducing inequalities and promoting child development. Ultimately, these activity packs represent a valuable tool for policymakers looking to address barriers to parent-child engagement and improve developmental outcomes for children across diverse socioeconomic backgrounds.

To conclude, to our knowledge this is the first piece of evidence highlighting and addressing the multifaceted barriers hindering parent-child engagement in activities. The project's emphasis on tackling practical concerns and knowledge gaps via physical resources and simple idea suggestions yielded positive responses, indicating the efficacy of actively mitigating these obstacles rather than solely advocating for increased engagement.

Data Availability

The authors confirm that the data supporting the findings of this study are available within the article and its supplementary materials.

Compliance with Ethical Standards

Conflict of Interest The authors declare no competing interests.

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