# Supporting Parents' Playfulness With Their Preschool Children Using Generative AI

Isobel Voysey
Department of Computer Science, University of Oxford
Oxford, UK
isobel.voysey@cs.ox.ac.uk

Trisha-mae Capistrano
Department of Experimental Psychology, University of Oxford
Oxford, UK
trisha-mae.capistrano@psy.ox.ac.uk

Jun Zhao
Department of Computer Science, University of Oxford
Oxford, UK
jun.zhao@cs.ox.ac.uk

## Abstract

Playful interactions between parents and their young children are highly beneficial for the parent-child relationship and the child's social, emotional, and cognitive development. However, parents may struggle to initiate these interactions. To support them, we have developed In-Between, an app that takes brief input from the parent about their situation and uses generative AI to devise three suggestions to kick off a playful interaction: a story starter, a playful question, and a game idea. We share some reflections from initial conversations with parents and outline the research plan moving forwards.

## CCS Concepts

• **Social and professional topics** → **Children**; • **Human-centered computing** → *Human computer interaction (HCI).*

## Keywords

preschool children, parents, connectedness, play

**ACM Reference Format:**
Isobel Voysey, Trisha-mae Capistrano, and Jun Zhao. 2026. Supporting Parents' Playfulness With Their Preschool Children Using Generative AI. In *Proceedings of the 25th Interaction Design and Children Conference (IDC '26), June 22–25, 2026, Brighton, United Kingdom.* ACM, New York, NY, USA, 6 pages. https://doi.org/10.1145/3773077.3812174

## 1 INTRODUCTION

Play in its many forms is critical in early childhood [7, 41, 44]. Play contributes to the development of social and emotional skills [15, 51] and is also a key activity through which parents and young children spend positive time with each other, develop their relationship, and grow closer [1, 47]. Importantly, play need not be formal, requiring a specific location or toys; playful interactions (acting in a joyful, engaging, creative way) can happen during everyday routines and have similar benefits [41, 47, 48].

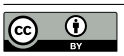
Despite the benefits of playful interaction, many parents face barriers to engaging in these moments consistently. Modern life, particularly for parents, is often characterised by busy schedules and competing responsibilities related to work, finances, caregiving demands, and household tasks [38]. Within this context, parents' beliefs about play itself and the kinds of play that are valuable can impact the frequency of play [13]. Parents' initiation of and involvement with play can also be negatively affected by low creative self-efficacy and uncertainty about how to play [17, 32, 42]. These factors can make it difficult for parents to create moments of playful interaction and connection in everyday life.

In conjunction, smartphone use is becoming more widespread in early childhood contexts among both parents and children. Large-scale surveys indicate near-universal exposure to smartphones and tablets in early childhood, which are often used by parents as distractors or "digital pacifiers" to keep children calm or to occupy them while parents complete other tasks [16, 25, 27, 28, 30]. Such high levels of screen-time at a young age have led to concerns about appropriate development of executive functioning, creativity, and social relationships [27, 28, 30]. At the same time, parents themselves are using smartphones to seek social connection and cope with the monotony of parenting [8, 29], but this can lead to fewer and lower quality interactions as they are less sensitive and responsive to their children [5, 20, 33]. In these cases, smartphones interfere with the parent-child relationship and reduce feelings of connection [29, 31].

Fortunately, research suggests that it is not smartphone use itself that is detrimental, rather how it is used. For example, parents who used their phones to look up relevant information that would enhance their children's experience of a museum reported higher connectedness than those who used their phones for irrelevant purposes [31]. Furthermore, advances in generative AI provide ways to support parents creativity by generating ideas that can be customised to where they are and what they are doing. Therefore, we seek to investigate how generative AI can be used to facilitate playful interactions between parents and children.

In this project, we have developed In-Between, a smartphone-based app that provides suggestions for three different playful interaction starters using brief input from the parent. The app provides immediate, context-driven suggestions that require no preparation, materials, or prior planning, with the intention to minimise additional demands on parents' time and mental load by embedding playful interaction within moments that already occur in daily life.

In this paper, we present the concept of the In-Between app, our reflections on demonstrating and discussing the app with parents of preschool children at an early years centre, and outline plans for future work. We contribute to the community by presenting a novel way to support parent-child connectedness through play by focusing on facilitating parental playfulness.




*IDC '26, Brighton, United Kingdom*

ACM ISBN 979-8-4007-2283-7/2026/06
https://doi.org/10.1145/3773077.3812174

# 2 BACKGROUND

## 2.1 Parental playfulness

Positive parent-child relationships in early childhood are strongly associated with healthy social, emotional, and cognitive development [1, 51]. Play is one key way parents and children build and strengthen these relationships, with playful interactions and engagement between children and parents having shown to strengthen connectedness, imagination, creativity, and mutual enjoyment between parents and children [6, 47, 52]. A growing body of research highlights the importance of parental playfulness, a parent's ability to respond with creativity, flexibility, humour, and joy during interactions. Parental playfulness has been associated with children's own playfulness, creative thinking, emotional expression, adaptability, emotion regulation, and psychosocial adjustment [15, 47, 52]. It has also been linked to reduced child negativity, improved self-regulation, stronger vocabulary development, and enhanced peer competence [7, 34, 39]. Parental playfulness can be supported by instructional courses [40, 43, 46], but it remains to be seen how technology can be used to support spontaneous moments of parental playfulness.

## 2.2 Parent-child connection and play using technology

The child-computer interaction research community has sought to investigate and promote connection between parents and children using technology, particularly when parents and children are physically separated [45, 53]. Another common research topic is parent-child co-reading [10, 19]. Reading with a parent has been shown to be beneficial for children's language development and growing the parent-child bond [23], so researchers have investigated a variety of technologies to support this activity, such as AI-generated questions [10, 19].

The literature also reflects the value of play; various tools have been designed to support children's play and to integrate play into other activities, like learning coding and mathematics [11, 21, 35], encouraging physical activity [24, 37], or other skills [12, 14, 18, 49]. At the moment, work largely focuses on structured play, rather than spontaneous play [38]. Several of these works involve the parent in the playful interaction, but most position parents and caregivers in instructional or supporting roles (e.g., [22, 49]), rather than as fellow players [4]. This project aims to address a gap in using technology for parent-child connectedness through play by focusing on supporting the parent's play.

# 3 IN-BETWEEN APP DESIGN AND DEVELOPMENT

The initial concept for the application was designed by a group of researchers and parents of young children at an innovation hackathon focused on supporting the early years of childhood. Our driving aim was to use technology to support connection without creating yet another activity that parents have to fit into their busy schedule.

## 3.1 Design principles

The first two principles are adopted from the Playful by Design toolkit [36], recontextualised to include parents as well as children, and the third is inspired by the mindfulness principle of being present in the moment.

*Enhance imagination.* Given that parents tend to turn to their smartphones in moments of boredom or monotony [8, 29], the app should provide opportunities for parents to reimagine life in these moments through a creative lens, which can ultimately support their wellbeing and emotion regulation [46]. It should also provide opportunities for children to engage in pretend play by presenting intriguing imaginaries.

*Enable open-ended play.* The app should prioritise creativity rather than prescriptive, highly structured activities. Instead of producing a fully realised story to read or activity to complete, the app should leave room for parent and child input. The open-ended nature of play should also serve as support for children's agency—they get the opportunity to make meaningful choices about the direction in which they want to take the playful interaction. Recent work studying children's agency in interactions with AI has highlighted the role that parents have to play in facilitating children's agency [50], so the app should position parents as mediators between children and generative AI and through the parents provide opportunities for children to exercise their agency.

*Ground in the moment, not distract from it.* Mindful parenting has been shown to be positively correlated with parents' optimism and mental health, positive parenting styles, and child development outcomes [2, 26]. However, technology is often seen as a barrier to mindful parenting as it can divert attention away from present-moment interactions, with frequent phone use while with children being linked to reduced feelings of social connection and a diminished sense of meaning in time spent with children [8, 29, 31]. This highlights the importance of finding ways technology can be used to support parents in bringing their attention to the present and to their children. Given this, the app should draw attention to the present moment, helping both parents and children pause, notice, and engage with their immediate surroundings together. In addition, the app should be brief and involve minimal screen use, acting as a catalyst for offline interaction and connection.

## 3.2 Design implementation

The In-Between application takes user inputs about the setting in which the parent and child find themselves and generates three suggestions for playful interaction. The overall user flow is shown in Figure 1, and a typical user interaction from opening the app to suggestion generation takes less than three minutes.

Upon launching the application, users see a welcome screen. The first input screen allows them to select which child(ren) they are with. In the back-end we store a minimal profile for each child with their age to be used as context in the large language model (LLM) prompt. Subsequently, users are invited to select where they are and then prompted to enter a brief description of something they can see to provide further context to be used in suggestion generation.

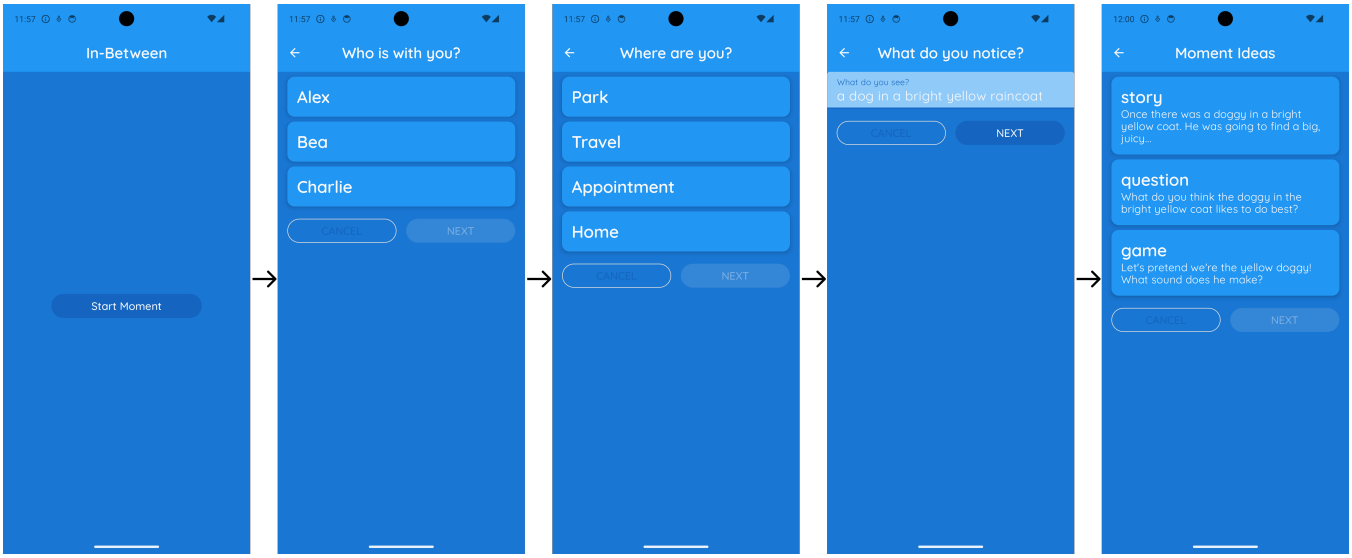



**Figure 1: A visual representation of the user interaction flow in the In-Between application from panel to panel**

These inputs are cleaned and used in a prompt to an LLM (currently Gemini 2.5 Flash). An example prompt is given in Appendix A. The prompt specifies the model should return three suggestions: 1) the start of a story, 2) a playful question the parent can ask the child, and 3) a game idea. The suggestions promote creative, imaginative play and incorporate verbal and physical elements.

To ensure the appropriateness of the LLM response, we include child's age and interaction setting in the prompt and select the model according to child safety benchmarks (Gemini 2.5 Flash is currently the highest scoring Google model on Korabench[1]). Further development will add content filters, transition to higher-scoring models (e.g., Claude Haiku 4.5), and incorporate an LLM-as-a-judge layer to evaluate output safety and appropriateness and trigger re-generation where necessary.

The application has been developed in Android Studio and integrated with Google Firebase.

## 4 REFLECTIONS ON INITIAL CONVERSATIONS WITH PARENTS

In this project, we are partnering with an early-years charity that runs drop-in centres across London and elsewhere in the UK. To get an initial sense of how the app might be used by parents of young children, we visited a centre and spoke informally to several parents, showing them the app and asking about their experiences of playfulness with their children. Here we present our reflections on these initial conversations and how they are shaping the project moving forward.

*Structured play versus spontaneous play.* While talking about playfulness, we realised that some of our language would need to change. Parents initially talked about structured play, usually with toys, books, or games, rather than joyful, creative, spontaneous interactions. We then started to use the term silliness, asking "when are you silly with your child?", which elicited more examples of informal playful interactions.

*Importance of physical play.* Parents mentioned the importance of physical forms of play, like rough-and-tumble play, particularly for fathers, which is reflected in existing research [39]. We also noted that many children of that age seem to have boundless energy. Based on parental feedback, we are going to additionally generate a suggestion for a physical activity the parent and child can do.

*An app for parents, not children.* Given the proliferation of apps targeted at very young children, as well as the idea that play is for children but not adults, it makes sense that some parents assumed that children were the primary users and offered feedback on ways the app design can cater more to children (e.g, through the use of more images and colour). We thus recognised the importance of emphasising the intended use of the app: to be used quickly by the parent to generate an idea, after which the phone is put away and the interaction continues face-to-face, instead of used by children independently as another "digital pacifier". Several parents appreciated this approach due to their existing concerns around increased screen time for children.

*Target age.* None of the research team currently have a child under five, so it was helpful to interact with preschool children and be reminded of the capabilities of children of different ages. Following this experience, we have decided to focus the target age range to three to five years old, as one- and two-year-olds are unlikely to have the language skills to engage well with the story or question prompts. Despite narrowing the age range, there is still a vast difference between a three-year-old and a five-year old. As such, further work needs to be done to assess how well LLMs tailor responses for different ages.

[1]https://korabench.ai

# 5 FUTURE WORK

## 5.1 Study 1

*5.1.1 Study design.* Following this feedback on the app, we intend to conduct an initial lab study which will involve observing parent-child pairs as they try out the In-Between app and engage with one of the generated prompts. The aim is to understand families' first experiences with the app, how the app supports playful interaction in a controlled but naturalistic setting, and to identify any improvements for future research studies.

*5.1.2 Participants.* We will recruit approximately 10-15 parents or caregivers of children aged 3-5 years. Participants will be recruited through a Babyzone Hub where the study will take place. This will be an environment already familiar and frequently visited by the families, allowing for a comfortable participation format.

*5.1.3 Procedure.* After completing the information and consent process, parent-child pairs will be invited to use the app to generate playful suggestions, choose one of the suggestions, and try it together. During this interaction, researchers will observe and take notes using both structured (e.g., the Parent Playfulness Scale [3] and the Parent-Child Interaction System [9]) and open-ended formats. After completing the activity, participants will complete a short post-task survey assessing mood, perceived fun, and appropriateness of the prompts and take part in a brief discussion about their experience using the app and engaging in play.

## 5.2 Study 2

*5.2.1 Study design.* After the lab study, we plan to conduct a mixed-methods field study to examine how families use the In-Between app in real-world contexts and how it impacts playful interaction and parent-child connectedness over time.

*5.2.2 Participants.* We will recruit 20–30 families through Babyzone, particularly through their four Hubs in London. Inclusion criteria include: having at least one child aged 3-5, access to an Android device, the ability to read and write in English, and willingness to use the app over a four-week period. The primary participant will be the main caregiver, though other family members will be welcome to download and use the app.

*5.2.3 Procedure.* The study will unfold over four phases: recruitment and onboarding, pre-study data collection, real-world app use and data collection, and post-study data collection.

*Phase 1: Recruitment and onboarding.* Participants will be recruited through Babyzone. Information sheets will be provided in advance, and informed consent will be obtained online. During onboarding, parents will be supported in downloading the app, setting up an account, and entering basic information about their child(ren).

*Phase 2: Pre-study data collection.* Participants will complete a baseline questionnaire assessing demographic information and parent-child connectedness. A subset of participants will also attend a focus group to discuss their current experiences of playfulness and how they use technology in everyday parenting.

*Phase 3: App use and diary data collection.* Participants will be asked to use the app at least three times per week for four weeks. Each interaction with the app will be automatically logged, including selected inputs (e.g., child, scenario), generated suggestions, which suggestion was chosen, and basic contextual metadata such as time of day. This will allow us to examine patterns of use, frequency of engagement, and how prompts are selected and acted upon. On days when the app is used, parents will be prompted to complete a short in-app survey (approximately 2 minutes). This will function as a lightweight diary, capturing immediate reflections on each interaction. Parents will report their own and their child's mood before and after the interaction, rate the appropriateness and enjoyment of the prompts, and optionally provide a brief free-text reflection. These entries will allow us to understand moment-to-moment experiences and identify patterns across interactions. Weekly check-ins will be used to address any technical issues and support continued engagement.

*Phase 4: Post-study data collection.* At the end of the four-week period, participants will complete a follow-up questionnaire on parent-child connectedness. The same subset of participants will take part in post-study focus groups to reflect on their experience using the app, including when and how they used it, perceived benefits, and suggestions for improvement.

# 6 CONCLUSION

This paper explores how smartphones and generative AI may be used to support, rather than interfere with, play and parent-child connectedness in early childhood. We present In-Between, a generative AI–supported mobile app that provides brief, context-sensitive suggestions to help parents initiate playful interactions during everyday moments. Designed to require minimal effort, preparation, or materials, the app aims to lower barriers to play by embedding it into existing life. Preliminary engagement with parents suggests this approach is both feasible and welcomed, highlighting the potential of AI to scaffold parental playfulness. This work contributes an early design direction for leveraging everyday technologies to support connection and spontaneous play in the lives of parents with young children.

# 7 SELECTION AND PARTICIPATION OF CHILDREN

No children directly participated in this research. However, parents who elected to come to talk to us brought along their children. While we talked to the parents, the children could do what they liked and tended to amuse themselves by playing. Our conversations took place in a sensory room, so there were a variety of sensory activities and toys to play with as well as space to move around. Parents were able to interrupt the conversation at any point to tend to their child.

## Acknowledgments

Thanks to Babyzone for their support of this project and inviting us to visit one of their Hubs. This work was partially supported by the UK Research and Innovation (UKRI) Cross Research Council Responsive Mode project CHAILD - Children's Agency In the age of AI: Leveraging InterDisciplinarity (MR/Z505882/1).

## References


[1] Atiye Adak Özdemir, Emel Tok, Dilara Harmandar Ergül, and Özge Özcan. 2025. Does Maternal Play Participation Foster Playfulness in Children? The Mediating Role of Positive Parent–Child Relationships. *Early Child Development and Care* 195, 15-16 (Dec. 2025), 1628–1650. doi:10.1080/03004430.2025.2605121

[2] Nigela Ahemaitijiang, Huiting Fang, Yaxuan Ren, Zhuo Rachel Han, and Nirbhay N. Singh. 2021. A Review of Mindful Parenting: Theory, Measurement, Correlates, and Outcomes. *Journal of Pacific Rim Psychology* 15 (Jan. 2021), 18344909211037016. doi:10.1177/18344909211037016

[3] N Atzaba-Poria, NJ Cabrera, A Menashe, and E Karberg. 2014. The parental playfulness scale. *Unpublished manuscript, Ben-Gurion University of the Negev, Beersheba, Israel* (2014).

[4] Lizzy Bleumers, Karen Mouws, Jonathan Huyghe, Maarten Van Mechelen, Ilse Mariën, and Bieke Zaman. 2015. Sensitivity to Parental Play Beliefs and Mediation in Young Children's Hybrid Play Activities. In *Proceedings of the 14th International Conference on Interaction Design and Children*. ACM, Boston Massachusetts, 170–177. doi:10.1145/2771839.2771857

[5] Katrin Braune-Krickau, Larissa Schneebeli, Jessica Pehlke-Milde, Michael Gemperle, Ramona Koch, and Agnes von Wyl. 2021. Smartphones in the Nursery: Parental Smartphone Use and Parental Sensitivity and Responsiveness within Parent–Child Interaction in Early Childhood (0–5 Years): A Scoping Review. *Infant Mental Health Journal* 42, 2 (2021), 161–175. doi:10.1002/imhj.21908

[6] Jean-François Bureau, Khachadour Bandk, Audrey-Ann Deneault, Jessica Turgeon, Harshita Seal, and Patricia Brosseau-Liard. 2023. The PPSQ: Assessing Parental, Child, and Partner's Playfulness in the Preschool and Early School Years. *Frontiers in Psychology* 14 (Dec. 2023). doi:10.3389/fpsyg.2023.1274160

[7] Natasha J. Cabrera, Elizabeth Karberg, Jenessa L. Malin, and Daniela Aldoney. 2017. The Magic of Play: Low-Income Mothers' and Fathers' Playfulness and Children's Emotion Regulation and Vocabulary Skills. *Infant Mental Health Journal: Infancy and Early Childhood* 38, 6 (2017), 757–771. doi:10.1002/imhj.21682

[8] Madelyn Aracely Chatton. [n. d.]. THE EXPERIENCE OF SMARTPHONE USE AMONGST PARENTS OF 0-3 YEAR OLDS. ([n. d.]).

[9] Kirby Deater-Deckard, Maria V Pylas, and Stephen A Petrill. 1997. The Parent-child interaction system (PARCHISY). *London: Institute of Psychiatry* (1997).

[10] Griffin Dietz Smith, Siddhartha Prasad, Matt J. Davidson, Leah Findlater, and R. Benjamin Shapiro. 2024. ContextQ: Generated Questions to Support Meaningful Parent-Child Dialogue While Co-Reading. In *Proceedings of the 23rd Annual ACM Interaction Design and Children Conference*. ACM, Delft Netherlands, 408–423. doi:10.1145/3628516.3655809

[11] Stefania Druga, Thomas Ball, and Amy Ko. 2022. How Families Design and Program Games: A Qualitative Analysis of a 4-Week Online in-Home Study. In *Interaction Design and Children*. ACM, Braga Portugal, 237–252. doi:10.1145/3501712.3529724

[12] Aisha Faisal Iskanderani and Edgar Rodríguez Ramírez. 2021. Toy Design for Emotion Regulation: Current and Potential Research Opportunities: Toy Design for Emotion Regulation. In *Interaction Design and Children*. ACM, Athens Greece, 652–654. doi:10.1145/3459990.3463399

[13] Kelly R. Fisher, Kathy Hirsh-Pasek, Roberta Michnick Golinkoff, and Shelly Glick Gryfe. 2008. Conceptual Split? Parents' and Experts' Perceptions of Play in the 21st Century. *Journal of Applied Developmental Psychology* 29, 4 (July 2008), 305–316. doi:10.1016/j.appdev.2008.04.006

[14] Daniel Fitton, Janet Read, Megan Grace Baxter, Tamar Portnoy, and Helena Daffern. 2025. BabyHCI: Evaluating the Experience for Babies and Caregivers in the Context of an iPad App to Encourage Babbling. In *Proceedings of the 24th Interaction Design and Children*. ACM, Reykjavik Iceland, 944–949. doi:10.1145/3713043.3731511

[15] Wing Kai Fung and Kevin Kien Hoa Chung. 2025. Interrelationships among Parental Play Support and Kindergarten Children's Playfulness and Creative Thinking Processes. *Thinking Skills and Creativity* 58 (Dec. 2025), 101907. doi:10.1016/j.tsc.2025.101907

[16] Zulfu Genc. 2014. Parents' Perceptions about the Mobile Technology Use of Preschool Aged Children. *Procedia - Social and Behavioral Sciences* 146 (Aug. 2014), 55–60. doi:10.1016/j.sbspro.2014.08.086

[17] Rebecca Giallo, Karli Treyvaud, Amanda Cooklin, and Catherine Wade. 2013. Mothers' and Fathers' Involvement in Home Activities with Their Children: Psychosocial Factors and the Role of Parental Self-Efficacy. *Early Child Development and Care* 183, 3-4 (April 2013), 343–359. doi:10.1080/03004430.2012.711587

[18] İpek Gürbüzsel, Tilbe Göksun, and Aykut Coşkun. 2022. Eliciting Parents' Insights into Products for Supporting and Tracking Children's Fine Motor Development. In *Interaction Design and Children*. ACM, Braga Portugal, 544–550. doi:10.1145/3501712.3535303

[19] Kunlei He, Julian Levine, Kelsyann Cervera, Santiago Ojeda-Ramirez, Ying Xu, and Mark Warschauer. 2024. A Home Study of Parent-Child Co-Reading with a Bilingual Conversational Agent. In *Extended Abstracts of the CHI Conference on Human Factors in Computing Systems*. ACM, Honolulu HI USA, 1–8. doi:10.1145/3613905.3650836

[20] Alexis Hiniker, Kiley Sobel, Hyewon Suh, Yi-Chen Sung, Charlotte P. Lee, and Julie A. Kientz. 2015. Texting While Parenting: How Adults Use Mobile Phones While Caring for Children at the Playground. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*. Association for Computing Machinery, New York, NY, USA, 727–736. doi:10.1145/2702123.2702199

[21] Hui-Ru Ho, Bengisu Cagiltay, Nathan Thomas White, Edward M. Hubbard, and Bilge Mutlu. 2021. RoboMath: Designing a Learning Companion Robot to Support Children's Numerical Skills. In *Interaction Design and Children*. ACM, Athens Greece, 283–293. doi:10.1145/3459990.3460709

[22] Hui-Ru Ho, Nathan Thomas White, Edward M. Hubbard, and Bilge Mutlu. 2023. Designing Parent-child-robot Interactions to Facilitate In-Home Parental Math Talk with Young Children. In *Proceedings of the 22nd Annual ACM Interaction Design and Children Conference*. ACM, Chicago IL USA, 355–366. doi:10.1145/3585088.3589358

[23] Tzipi Horowitz-Kraus, Liana S. Magaliff, and Bradley L. Schlaggar. 2024. Neurobiological Evidence for the Benefit of Interactive Parent–Child Storytelling: Supporting Early Reading Exposure Policies. *Policy Insights from the Behavioral and Brain Sciences* 11, 1 (March 2024), 51–58. doi:10.1177/23727322231217461

[24] Hongfei Ji, Yuhan Yuan, and Qiao Jin. 2025. "Jump, Stop, Jump Again": Exploring AI-Supported Physical Activity Play at Home with Parents and Children. In *Companion Proceedings of the Annual Symposium on Computer-Human Interaction in Play (CHI PLAY Companion '25)*. Association for Computing Machinery, New York, NY, USA, 215–221. doi:10.1145/3744736.3749349

[25] Hilda K. Kabali, Matilde M. Irigoyen, Rosemary Nunez-Davis, Jennifer G. Budacki, Sweta H. Mohanty, Kristin P. Leister, and Robert L. Bonner. 2015. Exposure and Use of Mobile Media Devices by Young Children. *Pediatrics* 136, 6 (Dec. 2015), 1044–1050. doi:10.1542/peds.2015-2151

[26] Zahra Bondar kakhki, Ali Mashhadi, Seyed Amir Amin Yazdi, and Shirin Saleh. 2022. The Effect of Mindful Parenting Training on Parent–Child Interactions, Parenting Stress, and Cognitive Emotion Regulation in Mothers of Preschool Children. *Journal of Child and Family Studies* 31, 11 (Nov. 2022), 3113–3124. doi:10.1007/s10826-022-02420-z

[27] Ahmet Osman Kılıç, Eyup Sari, Husniye Yucel, Melahat Melek Oğuz, Emine Polat, Esma Altinel Acoglu, and Saliha Senel. 2019. Exposure to and Use of Mobile Devices in Children Aged 1–60 Months. *European Journal of Pediatrics* 178, 2 (Feb. 2019), 221–227. doi:10.1007/s00431-018-3284-x

[28] S. J. Kim, S. M. Cho, and K. Y. Lim. 2017. The Effects of High Exposure to Smartphone from Ages 3 to 5 Years on Children's Behaviors. *European Psychiatry* 41, S1 (April 2017), S214–S214. doi:10.1016/j.eurpsy.2017.01.2188

[29] Barbara Knitter and Martina Zemp. 2020. Digital Family Life: A Systematic Review of the Impact of Parental Smartphone Use on Parent-Child Interactions. *Digital Psychology* 1, 1 (May 2020), 29–43. doi:10.24989/dp.v1i1.1809

[30] Hulya Kulakci-Altintas. 2020. Technological Device Use Among 0–3 Year Old Children and Attitudes and Behaviors of Their Parents Towards Technological Devices. *Journal of Child and Family Studies* 29, 1 (Jan. 2020), 55–61. doi:10.1007/s10826-019-01457-x

[31] Kostadin Kushlev and Elizabeth W. Dunn. 2019. Smartphones Distract Parents from Cultivating Feelings of Connection When Spending Time with Their Children. *Journal of Social and Personal Relationships* 36, 6 (June 2019), 1619–1639. doi:10.1177/0265407518769387

[32] Izabela Lebuda, Dorota M. Jankowska, and Maciej Karwowski. 2020. Parents' Creative Self-Concept and Creative Activity as Predictors of Family Lifestyle. *International Journal of Environmental Research and Public Health* 17, 24 (Jan. 2020), 9558. doi:10.3390/ijerph17249558

[33] Dafna Lemish, Nelly Elias, and Diana Floegel. 2020. "Look at Me!" Parental Use of Mobile Phones at the Playground. *Mobile Media & Communication* 8, 2 (May 2020), 170–187. doi:10.1177/2050157919846916

[34] Chunyan Liang and Xinwen Bi. 2025. Paternal Involvement and Peer Competence in Young Children: The Mediating Role of Playfulness. *Frontiers in Psychology* 16 (March 2025). doi:10.3389/fpsyg.2025.1477432

[35] Yu-Yu Liu and Ole Sejer Iversen. 2022. Computational Thinking through Tangible Play: Understanding Social Dialogues in Children's Learning. In *Interaction Design and Children*. ACM, Braga Portugal, 596–603. doi:10.1145/3501712.3535288

[36] Sonia Livingstone and Kruakae Pothong. 2021. Playful by Design: Free play in a digital world. (2021).

[37] Stefan Manojlovic, Laurens Boer, and Paula Sterkenburg. 2016. Playful Interactive Mirroring to Support Bonding between Parents and Children with Down Syndrome. In *Proceedings of the The 15th International Conference on Interaction Design and Children*. ACM, Manchester United Kingdom, 548–553. doi:10.1145/2930674.2935987

[38] Kevin Marshall. [n. d.]. Designing Technology to Promote Play Between Parents and Their Infant Children. ([n. d.]).

[39] Atara Menashe-Grinberg and Naama Atzaba-Poria. 2017. Mother–Child and Father–Child Play Interaction: The Importance of Parental Playfulness as a Moderator of the Links Between Parental Behavior and Child Negativity. *Infant Mental Health Journal: Infancy and Early Childhood* 38, 6 (2017), 772–784. doi:10.1002/imhj.21678

[40] Carina Omoeva, Rafael Contreras Gomez, Rachel Hatch, Frances Aboud, Ania Chaluda, Given Hapunda, Karma Choden, Francis Sichimba, Ksenija Krstić, and Jill Popp. 2025. Do Playful Parenting Programs Implemented at Scale Improve Caregiver Practices and Child Development? *Children* 12, 9 (Sept. 2025). doi:10.3390/children12091241

[41] Play In Education, Development And Learning. 2019. EVIDENCE BRIEF - Parents, Play and Emotional Wellbeing.

[42] Rosa Román-Oyola, Verónica Figueroa-Feliciano, Yoliannie Torres-Martínez, Jorge Torres-Vélez, Keyshla Encarnación-Pizarro, Samariz Fragoso-Pagán, and Luis Torres-Colón. 2018. Play, Playfulness, and Self-Efficacy: Parental Experiences with Children on the Autism Spectrum. *Occupational Therapy International* 2018 (Oct. 2018), 1–10. doi:10.1155/2018/4636780

[43] Viktoria Sargsyan, Harriet Walea, Bal Mahat, Robert Tamale, Ramdhani Chaudhary, Janet Birungi, Sabina Marasini, Nisha Thapa, Bihari Sharan Kuikel, Biraj Karmacharya, and Muneera A. Rasheed. 2024. Effect of a Playful Parenting Programme on Early Childhood Development and Care Outcomes of Young Children in Vulnerable Communities: Findings from a Quasi-Experimental Study. *BMC Pediatrics* 24, 1 (Nov. 2024), 767. doi:10.1186/s12887-024-05161-8

[44] Mirjam Schneider, Irina Falkenberg, and Philipp Berger. 2022. Parent-Child Play and the Emergence of Externalizing and Internalizing Behavior Problems in Childhood: A Systematic Review. *Frontiers in Psychology* 13 (May 2022). doi:10.3389/fpsyg.2022.822394

[45] Ji Youn Shin, Minjin Rheu, Jina Huh-Yoo, and Wei Peng. 2021. Designing Technologies to Support Parent-Child Relationships: A Review of Current Findings and Suggestions for Future Directions. *Proc. ACM Hum.-Comput. Interact.* 5, CSCW2 (Oct. 2021), 441:1–441:31. doi:10.1145/3479585

[46] M. Shorer, N. Ben-Ami, S. Ezra, A. Nahari, and S. Cohen. 2025. Can We Guide Parents to Be Playful? The Effect of Stimulated Parental Playfulness on Children's Emotional Expression. *Early Child Development and Care* 195, 3 (Feb. 2025), 147–162. doi:10.1080/03004430.2025.2465635

[47] Maayan Shorer, Ori Swissa, Pedut Levavi, and Anael Swissa. 2021. Parental Playfulness and Children's Emotional Regulation: The Mediating Role of Parents' Emotional Regulation and the Parent–Child Relationship. *Early Child Development and Care* 191, 2 (Jan. 2021), 210–220. doi:10.1080/03004430.2019.1612385

[48] M. Shorer, N. Zilker, A. Salomon, and N. Spiegelman. 2023. Parental Playfulness as a Mediator of the Association between Parents' Emotional Difficulties and Children's Psychosocial Adjustment. *Early Child Development and Care* 193, 9-10 (July 2023), 1173–1187. doi:10.1080/03004430.2023.2243395

[49] Kiley Sobel, Kate Yen, Yi Cheng, Yeqi Chen, and Alexis Hiniker. 2019. No Touch Pig!: Investigating Child-Parent Use of a System for Training Executive Function. In *Proceedings of the 18th ACM International Conference on Interaction Design and Children*. ACM, Boise ID USA, 339–351. doi:10.1145/3311927.3323132

[50] Isobel Voysey, Vidminas Vizgirda, Sarah Turner, Leslye Denisse Dias Duran, Zaki Pauzi, Manolis Mavrikis, Carina Prunkl, and Jun Zhao. 2026. Agency in Child-AI Interaction: A Review of How It Is Conceptualised, Studied, and Supported in HCI. (Feb. 2026). https://hal.science/hal-05500673 To appear at IDC 2026.

[51] Amiya Waldman-Levi and Anita Bundy. 2016. A Glimpse into Co-Occupations: Parent/Caregiver's Support of Young Children's Playfulness Scale. *Occupational Therapy in Mental Health* 32, 3 (July 2016), 217–227. doi:10.1080/0164212X.2015.1116420

[52] Aruna Wu, Yue Tian, Shuo Chen, and Liying Cui. 2024. Do Playful Parents Raise Playful Children? A Mixed Methods Study to Explore the Impact of Parental Playfulness on Children's Playfulness. *Early Education and Development* 35, 2 (Feb. 2024), 283–306. doi:10.1080/10409289.2022.2148072

[53] Svetlana Yarosh, Stephen Cuzzort, Hendrik Müller, and Gregory D. Abowd. 2009. Developing a Media Space for Remote Synchronous Parent-Child Interaction. In *Proceedings of the 8th International Conference on Interaction Design and Children*. ACM, Como Italy, 97–105. doi:10.1145/1551788.1551806

# A Appendix

An example of a prompt provided to the LLM is as follows:

```
Generate three brief, engaging activities for a parent
    with two children aged 3 and 5 who are travelling
    and notice a dog in a bright yellow raincoat.
    Provide: 1) The opening sentence of a story for the
     child to finish, 2) An open-ended conversation
    question for the parent to ask the child, 3) A game
     idea that does not require any physical tools or
    materials. Keep each simple and under 20 words. The
     suggestions must be appropriate to the child's age
     and the context (e.g., not unduly disrupt or upset
     others). Return your answer in YAML format, with
    three fields: \"story\", \"question\", and \"game\".
```