WORKING PAPER · NO. 2025-123

The Promise of Digital Technology and Generative AI for Supporting Parenting Interventions in Latin America

Ariel Kalil, Michelle Michelini, and Pablo Ramos

SEPTEMBER 2025

THE UNIVERSITY OF CHICAGO
BECKER FRIEDMAN INSTITUTE
FOR ECONOMICS

5757 S. University Ave.
Chicago, IL 60637
Main: 773.702.5599
bfi.uchicago.edu

The Promise of Digital Technology and Generative AI for Supporting Parenting Interventions in Latin America

September 16, 2025

Ariel Kalil, Michelle Michelini, Pablo Ramos
University of Chicago
Word Count: 4,549

Abstract

Nearly half of young children in low- and middle-income countries fail to reach their developmental potential by age five, and disparities are particularly stark in Latin America. Parenting interventions have been proven to enhance early childhood development (ECD) in specific domains; however, traditional in-person models are costly and challenging to scale. This paper reviews the growing evidence on digital parenting programs in the region, including those using SMS, WhatsApp, mobile apps, and emerging AI-based tools. Experimental studies have demonstrated that low-cost digital tools can enhance parental engagement, alleviate stress, and, in some cases, improve children's cognitive and language outcomes. However, most evaluations remain limited by small samples, short time horizons, and scarce evidence on child-level impacts or long-term effects. We highlight the challenges of engagement, equity, and scalability, and present the Chat2Learn program in Peru, a next-generation model that leverages conversational AI. We conclude with recommendations for rigorous evaluations, hybrid delivery models, and embedding digital parenting supports into government systems.

Introduction

Nearly half of children in low- and middle-income countries (LMICs) fail to reach their full developmental potential by the age of five (Attanasio et al., 2025). Araujo et al. (2015) find that in five Latin American countries, children in the wealthiest quartile outperform those in the poorest by over 0.75 standard deviations on receptive language assessments. Recent longitudinal evidence from five Latin American countries (Chile, Colombia, Mexico, Peru, and Uruguay) shows that socioeconomic (SES) gaps in language and cognition emerge early, persist into adolescence, and rarely narrow without intervention (Attanasio et al., 2025). Carneiro and Toppeta (2022) also utilize recent data to document socioeconomic gradients in math and reading achievement test scores among elementary school

children across 16 Latin American countries. There are substantial differences across countries in these gaps, as well as variations in how they evolve. In particular, Peru remains one of the least mobile (and most persistently immobile) countries in Latin America (i.e., the relationship between parental education and child test scores is the largest in the region), which motivates the development of the Next-Generation Model "Chat2Learn-Peru," as described further below.

Parenting interventions in the region have boosted early childhood development (ECD); meta-analyses indicate treatment impacts approximately three times the size on children's cognitive and language skills in LMICs compared to high-income countries (Jeong et al., 2021). Yet, traditional parenting programs with in-person support models (e.g., home visits, parenting groups) are resource-intensive and face challenges related to take-up, persistence, and scalability (Bloomfield et al., 2025; Jäggi et al., 2025).

Digital technology has emerged over the past decade as a promising delivery channel for parenting programs, a shift that was accelerated by the disruption of in-person services during the COVID-19 pandemic. These digital parenting interventions aim to promote nurturing home environments – for example, by sending activity ideas, developmental tips, and reminders to encourage responsive caregiving. Informed by insights from behavioral economics, digital messaging interventions can help to mitigate the kinds of psychological barriers to effective parenting which are especially prevalent in disadvantaged settings – barriers such as cognitive load, misbeliefs, inattention, and present bias (Ajzenman & Boo, 2019; Mayer et al., 2018). While early trials show feasibility and some promising outcomes, more evidence of effectiveness is needed, particularly on child developmental indicators. Jäggi et al. (2025) recently published a thorough review of digital parenting interventions across LMICs. The authors found only three evaluations that test program impacts on objective child outcomes, and none of these studies found effects. Nonetheless, growing government investment in the region in early childhood development and a commitment to cutting-edge program evaluation offer a fertile ground for innovation. Embedded labs within government agencies—supported by Innovations for Poverty Action (IPA) or the University of Chicago's Development Innovation Lab—illustrate this trend. Examples of embedded labs working on ECD initiatives include MINEDULab and MEFLab in Peru, and ICBFLab in Colombia (IPA, 2025; Gobierno del Perú, n.d.).

Digital tools hold promise for helping parents modify their behavior to engage more effectively in their children's learning. Busy caregivers often face cognitive barriers, including present bias, fatigue, inattention, uncertainty about what to do, and competing priorities, which make it challenging to adhere to routines such as reading to and talking with children or engaging in other learning activities (Kalil & Mayer, 2025). These challenges are often even more severe in low-resource households (Kalil & Ryan, 2020). Digital technology can be especially suited to help

parents overcome these behavioral hurdles. As a complement to more intensive, in-person parenting interventions, digital tools can provide just-in-time support for everyday parenting decisions and behaviors by offering personalized and contextualized guidance, positive reinforcement, and information to correct misbeliefs in real-time, and to sustain engagement and learning in between in-person home visits or group parenting classes. Attanasio et al. (2025) document that wealthier households in the region engage in more frequent reading and interactive activities with children, supporting the idea that digital nudges targeting daily caregiver–child interactions directly address key mechanisms behind persistent SES gaps.

This review summarizes experimentally evaluated digital interventions aimed at changing parenting behavior and developing child skills in Latin America (see Appendix Table 1 for the list of studies included). This region is well-suited for rigorous, large-scale testing of digital parenting interventions, including those supported by generative AI. We only include results from experimental evaluations conducted in Latin America country contexts, published in peer-reviewed journals, excluding quasi-experimental and non-experimental studies. The review explores promising interventions, challenges, evidence gaps, and opportunities for further research to scale successful digital parenting programs. Digital parenting tools in Latin America have demonstrated proof of concept but are still limited by small sample sizes, short durations, and a lack of evidence specific to children. Future research should focus on rigorous, long-term evaluations that directly assess children's outcomes, compare hybrid versus fully digital delivery methods, and investigate how interactivity and personalization can maintain engagement without deepening existing inequities. For policymakers, digital tools should serve as complements to, rather than replacements for, traditional supports. When adapted for diverse caregivers, integrated into government systems, and evaluated transparently, they can extend the reach of early childhood development (ECD) services and help close persistent developmental gaps among disadvantaged children in the region.

Promising Interventions

Messaging With SMS/WhatsApp

One widely cited successful digital intervention is Crianza Positiva in Uruguay, a 6-month SMS- and audio message-based parenting program for families with young children. In a randomized trial with over 500 families, parents received thrice-weekly text/audio tips on positive parenting (focusing on attachment, stimulation, etc.). The program led to significantly improved parent–child communication quality (e.g., more turn-taking in conversations), as measured by videorecording and coding 10-minute sessions of free play (Balsa et al., 2023). It also increased the frequency of self-reported parental engagement in learning activities at home by

about 0.24 standard deviations and improved other parenting behaviors by roughly 0.25 SD (Balsa et al., 2023; Bloomfield et al., 2023). Evidence from a complementary evaluation suggests that combining the Crianza Positiva e-messages with group workshops had even more potent effects: interaction quality between parents and infants improved, with medium effect sizes in the affective (0.44 SD) and teaching dimensions (0.59 SD) (Balsa et al., 2024a). While a low-cost texting program can measurably improve parenting practices at scale, these findings highlight the potential of "blended" interventions, where low-cost digital messages build on more intensive face-to-face training.

A recent expansion in Uruguay combined weekly coaching phone calls, automated messages, a parenting chatbot, and an AI-based tool to assist vulnerable families with children 0–3 years old. This 8-month "omni-channel" intervention (reaching 1,360 low-income families) significantly increased the frequency of stimulating parent–child activities and reduced caregiver stress (Bloomfield et al., 2025). Participating families also reported accessing more social services to which they were entitled, such as cash transfers and employment support programs, as the program provided support for parents to help them access these government resources. However, none of the studies on Crianza Positiva in Uruguay measured the program's effect on child outcomes.

Other Latin American countries have piloted similar messaging programs. In El Salvador, an 8-week SMS/WhatsApp intervention (comprising a total of 27 messages) was conducted during the COVID-19 pandemic to teach stress-management and non-violent parenting techniques to over 3,000 caregivers. Short-term self-reported survey results showed that caregivers in the treatment group were 21 percentage points more likely to use recommended stress-reduction techniques and six percentage points more likely to practice positive parenting than the control group (Amaral et al., 2024). Among female caregivers, the program led to a small but significant decline in the reported use of physical punishment to discipline children (approximately 0.1 SD). Similarly, in Costa Rica, a 15-week text-message campaign for parents of preschoolers (691 parental networks; 4,496 children) improved children's cognitive development by 0.11 SD, as measured by phone-based adaptations of standardized assessments (Hernández-Agramonte et al., 2024). The gains appear to be linked to greater parental involvement in home learning, suggesting that even one-way SMS nudges can influence parenting practices.

In Brazil, researchers developed the "Play Educatively" (Brincar Educativamente, or BEM) program – an 8-week online parenting workshop delivered via WhatsApp videos and texts – to coach low-income mothers on integrating play into daily chores. An RCT with a small sample of 129 parent-child pairs found that the BEM program yielded gains in child language development of 0.20 SD and a reduction in intrusive parenting behaviors of 0.35 SD (Solís-Cordero et al., 2023). Caregivers who

received the video lessons and texts were more responsive and less controlling during play, indicating improved interaction quality, measured by videorecording and coding a 5-minute parent-child play interaction.

The limitation of all these studies, however, is that the programs were not tested at scale with a significant portion of eligible families nationwide, and parenting outcomes are self-reported.

Mobile Apps

Interactive mobile applications have also shown some promise. In Peru, a tablet-based app intervention was designed to support community health workers in coaching parents. The CHEST app provided age-tailored educational videos and health messages that home visitors shared with caregivers during visits. In an evaluation with 186 families, integrating the app into home visits led to significant improvements in caregivers' knowledge of child health and development – mothers scored 1.26 SD higher on knowledge tests when their visitor used the app, compared to those receiving standard visits (Westgard & Orrego-Ferreyros, 2022). Health workers embraced the digital tool (using it in most visits), and its use was linked to better teaching of health concepts to families. While child health outcomes from this pilot have yet to be reported, the CHEST case illustrates how digital aids can enhance existing ECD services and quickly bolster parenting knowledge. However, the small sample size also limits the generalizability of the findings from this study.

In Uruguay, a nationwide behavioral messaging intervention was implemented with 4,098 families to boost preschool attendance through the government's existing mobile app, GURÍ. Messages were designed to reduce parental psychological barriers such as present bias, limited attention, misbeliefs, and mismatched identity, and included feedback on children's prior absences, planning prompts, and reminders about short- and long-term benefits of regular preschool attendance. The intervention did not yield a significant average effect on attendance or child development outcomes. Exploratory heterogeneity analyses suggest children whose baseline attendance rates were around the median had increased attendance of 1.8 days or about 2 percentage points and gains of 0.25-0.4 SD in language development. Overall, the results from this study suggest the limitations of light-touch behavioral interventions for reducing absenteeism in conditions of high poverty and high absenteeism, which are positively correlated (Ajzenman et al., 2022).

AI-Powered Coaches: Promising but Unproven

Emerging evidence also points to the potential of AI-driven interventions. Afinidata, an AI-based virtual coach, delivers personalized parenting tips via a chatbot. In a 5-month feasibility study in Peru, 180 mothers accessed Afinidata on their

smartphones. Despite the remote and low-income setting, smartphone ownership was high, and 84% of mothers attempted to use the chatbot within the first two months (Jäggi et al., 2023). Most users reported they found the AI assistant helpful and engaged in the suggested activities with their children. By month 5, about 42% of mothers were interacting with the platform at least weekly as measured in the app (Jäggi et al., 2023). Although usage tapered off, this pilot demonstrated that an AI chatbot can be deployed in an underserved area with initial enthusiasm and without significant connectivity barriers. High retention rates (~73% on average) and user satisfaction have also been observed in parenting chatbots piloted in high-income countries, although evidence of efficacy remains limited (Klapow et al., 2024). Such AI tools, if rigorously evaluated, could provide cost-effective personalization at scale (e.g., tailoring advice to a child's developmental stage or a parent's specific needs in real time). Further studies in the region are needed to investigate the impact on children and caregivers.

Challenges

Not all digital parenting initiatives have yielded positive results; several have faced implementation challenges or produced null findings. A common issue is low participant engagement over time. For example, a WhatsApp-based mothers' support group in southern Brazil saw enthusiasm wane quickly – researchers reported "significant declines" in participation and message contributions as the weeks passed (Trude et al., 2021). By the end of the 2-month pilot, many mothers were no longer actively participating, despite the moderators' efforts to stimulate discussion. Strategies to boost persistence in engagement have had mixed success: in some trials, researchers sent reminder texts or made phone calls to encourage platform use, or even provided tablets and in-person tech support sessions to help parents navigate an app. These efforts sometimes improved uptake (for instance, pairing a tablet-based intervention with regular staff check-ins yielded over 65% completion of modules) (Jäggi et al., 2025). However, adding human support erodes some of the cost and scalability advantages of "digital-only" models. The need to continually re-engage users also suggests that one-way information flow may not be sufficient; without interactive or community features, parents can lose motivation to continue.

Another challenge has been accessing technology, especially among the most disadvantaged groups. Remotely delivered parenting programs (by phone call or digital communication) implemented during the pandemic revealed practical obstacles: poor network coverage, lack of devices, or low digital literacy (Jäggi et al., 2025). In Latin America's rural areas, internet connectivity can be unstable – although the Peru Afinidata pilot was encouraging, with 88% smartphone access even in remote villages, one cannot assume uniform access. Indeed, families without connectivity are often the very ones in greatest need of support, raising concerns about exclusion and inequity. Unless digital programs explicitly plan for

offline components (e.g., distributing printed materials or leveraging SMS, which works on basic cell phones), they may inadvertently leave the poorest households behind.

Technology literacy and preference barriers can also lead to lower-than-expected program take-up and persistence. In one trial, an app for parents of children with developmental disorders showed no effect on parent–child communication outcomes (Jäggi et al., 2025). The authors noted that many parents did not fully grasp how to use the app independently, hinting that more intensive orientation or simplification was needed. In Peru, early users of the Afinidata chatbot initially struggled with the purely automated interface, prompting researchers to introduce a laminated guide and offline activities to complement the digital content (Jäggi et al., 2023). This blended approach helped more mothers benefit, underlining that technology must be tailored to users' skills and environments. Language, literacy, and cultural barriers are additional factors to consider. If interventions are not adapted for low-literacy populations and if the language excludes indigenous or migrant parents, take-up and engagement will suffer. Adapting programs for low-literacy and multilingual populations, as well as providing culturally relatable program content, should be key considerations in the design of digital interventions.

One intervention even showed unexpected adverse effects, highlighting the importance of careful monitoring. In the El Salvador parenting SMS trial, while mothers benefited, fathers in the treatment group reported higher stress and anxiety post-intervention (Amaral et al., 2024). Treated male caregivers with partners also spent less time interacting with their child than their control counterparts. Researchers speculated that the messages (focused on emotional caregiving and non-violence) may have inadvertently made some fathers feel inadequate or pressured, contributing to their increased stress. This result highlights the importance of considering the diverse perspectives of different caregiver groups in digital content. It also underscores the need to identify heterogeneous treatment impacts.

Even well-established programs have produced null findings under certain conditions. During the COVID-19 pandemic, a fully remote adaptation of Crianza Positiva in Uruguay—delivered exclusively through electronic messages without the in-person workshop component—did not yield significant effects on parenting quality or child outcomes, aside from modest improvements in cooperation between partners and socialization activities (Balsa et al., 2024a). Researchers suggest that both the lack of face-to-face interaction and the heightened stressors of the pandemic context likely contributed to these weaker results.

Evidence Gaps

Despite growing experimentation, there remain significant knowledge gaps regarding digital parenting interventions for ECD. One significant gap is the limited

rigorous evidence on child outcomes and long-term impacts. As noted, many studies measure immediate changes in parenting but do not follow up to see if children's development meaningfully improves. In their scoping review, Jäggi et al. (2025) find that only about half of the studies assessed any child development outcome, and only three used direct developmental tests, none of which found effects. The most evident positive impacts on children have been reported through parent surveys. It remains unclear whether digital interventions can "move the dial" on key metrics like foundational language and math skills or social-emotional skills over the long run. No study to date has tracked participants beyond the immediate post-intervention period (e.g., a year or more later). Long-term follow-up studies are necessary to determine whether digital programs yield lasting benefits or if booster sessions are required to sustain their effects.

Another key gap is the limited number of direct comparisons between digital and in-person parenting interventions. Policymakers need to know if technology-mediated programs can be as effective as traditional ones (or serve as a viable complement). The Crianza Positiva evaluation in Uruguay compares a blended model (group workshops plus e-messages) with workshop-only and playgroup alternatives, finding more potent effects on parent–child interaction quality for the blended approach (Balsa et al., 2024). Otherwise, the literature in Latin America has focused on testing digital interventions against a no-intervention control. While this establishes a proof of concept, it does not answer whether digital delivery can match the effectiveness of home visitation or group parenting classes. Given that parenting programs delivered in person in LMICs have well-documented impacts (Jeong et al., 2021), it is crucial to explore whether a digital approach can achieve similar results (likely at a lower cost). Relatedly, there is little evidence on the optimal mix of digital and human interaction. Several programs in Latin America have used hybrid models (e.g., combining an app with home visits, as with the CHEST app in Peru). It remains an open question whether such hybrid interventions outperform purely digital or in-person interventions. Understanding these comparisons can inform how best to integrate technology into existing ECD services.

Ensuring high user engagement and adherence is another area that requires further study. Many projects report on enrollment and initial uptake, but fewer systematically examine usage patterns, drop-off rates, or strategies to improve ongoing compliance. Future evaluations should monitor how parents use the digital content (e.g., click rates, time spent on the platform) and identify predictors of sustained engagement (Jäggi et al., 2025). We also lack evidence on whether giving users more choice or interactivity would improve retention. For example, would parents engage for longer if they could select content topics of interest or choose between receiving advice via SMS or a phone call? Tailoring interventions to families' preferences is hypothesized to boost buy-in, but this has not been formally tested in the parenting context. Exploring interactive and personalized approaches

is thus a key research direction. Indeed, few current interventions harness the full capabilities of digital technology – most still deliver relatively static, one-size-fits-all content (essentially digitized pamphlets). More adaptive systems (for example, an AI that adjusts parenting advice based on a child's progress, or a chatbot that answers specific questions from a parent) could potentially increase relevance and engagement. However, we need implementation research to understand how parents use and value such features.

A notable gap is in scalability and real-world implementation knowledge. Most evidence comes from small pilot trials or tightly controlled studies by NGOs or research teams. There is scant documentation of government-run digital parenting programs at scale, or guidance on effectively integrating these interventions into public health or education systems. Questions around cost-effectiveness, staffing, and sustainability are not well answered. For instance, what does it cost per family to deliver a year-long SMS coaching program, and is it cheaper (per unit of impact) than hiring additional home visitors? Such cost-effectiveness analyses are rare in the current literature.

Additionally, scaling up often introduces challenges not seen in pilots, such as maintaining content quality, handling vastly larger user volumes, and ensuring consistent training for facilitators if a hybrid model is employed. Few studies have shared lessons on transitioning from a pilot to nationwide implementation (Jäggi et al., 2025). An exception is a multi-country IDB review during COVID-19, which noted that virtual ECD services can expand coverage to remote areas and personalize support, but require attention to logistics (for example, distributing any physical materials) and ongoing training of staff to use digital tools effectively (Rubio-Codina & López-Boo, 2022). Overall, more "real-world" evaluations are needed, where digital parenting interventions are deployed through government systems on a larger scale, to assess uptake and impact outside of experimental contexts (Jäggi et al., 2025), and to understand how we can design interventions with scale considerations built in from the start.

These evidence gaps underscore the importance of highlighting initiatives that are actively seeking to overcome these limitations. As an illustrative case, we present the Chat2Learn project in Peru, an ongoing digital program with on-demand AI capabilities, in which the authors are directly involved. Although results are not yet available, the case is included here because it exemplifies a new generation of digital parenting interventions in Latin America: initiatives that move beyond small pilots to embed rigorous evaluation, integration with government systems, and explicit attention to issues of scale and cost-effectiveness.

Next-Generation Model: The Chat2Learn program in Peru

Chat2Learn-AI is a digital parenting intervention designed to improve early childhood language development by increasing the quantity and quality of

caregiver–child conversations. The theory of change posits that more frequent and developmentally appropriate verbal interactions foster gains in children's receptive vocabulary and communication skills, which serve as foundational inputs into later academic and social-emotional outcomes (McCormick et al., 2021; Golinkoff et al., 2019; Ahun et al., 2024; Rury et al., 2025). The program delivers open-ended conversational prompts via WhatsApp to encourage back-and-forth dialogue between caregivers and children, aiming to make high-quality conversation a routine part of interaction between children and their caregivers.

Experimental research conducted in low-income and Spanish-speaking populations in the US supports this theory of change. A six-month U.S.-based RCT of a precursor version (Chat2Learn Words) implemented with 600 low-income American families showed a 0.37 SD gain in children's receptive vocabulary and a 0.16 SD reduction in fixed mindset beliefs among parents, with no increase in parental stress (Rury et al., 2025). Engagement and retention rates were high, with 98% of families remaining enrolled after randomization, and most parents reported that their children enjoyed the program. In lab-based piloting of a dynamic AI-enabled prototype program version with 63 low-income parent-child pairs, parent word count increased by 15%, sentence complexity by 38%, and the number of open-ended questions doubled. Similar increases were observed in the conversational complexity of children, and parents and children were more jointly engaged.

The intervention builds on well-established findings in developmental psychology that caregiver language input and conversational turn-taking are essential for early language and cognitive development (Rowe, 2008; Kalil et al., 2024). Peru makes a compelling setting for testing Chat2Learn in Latin America. As noted by Carneiro and Toppeta (2022), Peru is an especially immobile country with respect to human capital. The correlation between parent education and young children's test scores is the highest among 16 countries in the region (see Table 10). This means that Peruvian children are at exceptionally high risk of inheriting the low socio-economic status of their parents. Data also show that only 43% of Peruvian children aged 19–36 months frequently engage in conversations with adults (INEI, 2023). Consequently, Chat2Learn Peru aims to address a significant behavioral gap within this population.

Program Design

Chat2Learn Peru is a structured messaging program that delivers researcher-crafted prompts accompanied by artist-created illustrations, and it is augmented with an AI-powered chatbot. The program is delivered via WhatsApp, a messaging platform widely used by the Peruvian population. Parents receive 3–5 illustrated prompts per week, and they are asked to share their child's response to each prompt. The conversational AI chatbot can respond to this parent's input and

provide tailored follow-up prompts with illustrations. This functionality is beneficial for caregivers with low literacy or limited time, who may benefit from real-time, adaptive conversational coaching without a warm-up period or supplemental content that is informationally dense and cognitively taxing.

Chat2Learn Peru is being piloted in Lima and surrounding areas in preparation for a large-scale evaluation in partnership with the government's Ministry of Development and Social Inclusion (MIDIS). MIDIS operates the large-scale cash-transfer program Juntos that serves 800,000 low-income families, and Juntos acts as the delivery hub for the intervention. Program implementation through Juntos minimizes recruitment costs and builds in capacity for scaling the program from the start.

In contrast to high-cost, labor-intensive home-visiting models like Cuna Más—which showed 0.1 SD gains and costs approximately $480 per family annually (Araujo et al., 2015)—Chat2Learn Peru can reach tens of thousands of families at a marginal cost of between $.60 to $4 per family by leveraging open-source AI tools and API integrations. This comparison is favorable to traditional interventions, particularly considering the effect sizes observed in U.S. trials (Jeong et al., 2021).

Chat2Learn Peru represents a promising next-generation parenting intervention that combines behavioral science, developmental psychology, and conversational AI to deliver high-frequency, low-cost parent coaching. The intervention builds on robust U.S.-based RCT evidence and adapts it for the Latin American context through a government partnership on the program's cultural customization and evaluation. It addresses longstanding shortcomings of Latin American parenting programs by reducing implementation costs, increasing coverage, and maintaining high engagement with minimal human facilitation. It addresses the shortcomings we have identified in existing interventions by 1) planning for long-run collection of administrative data on child outcomes; 2) comparing digital vs. hybrid digital and in-person delivery modalities; and 3) building in scale from the start by adapting the intervention for the target population to maximize take-up and engagement in partnership with the government. If shown to be effective in the Peruvian context, Chat2Learn Peru could offer a replicable model for early childhood intervention in other LMIC settings.

Conclusion and Recommendations

Digital parenting interventions in Latin America have demonstrated proof of concept: low-cost text campaigns and hybrid models can improve parenting behaviors, and small-scale pilots suggest potential benefits for children. However, evidence remains thin on direct child outcomes, long-term effects, and scalability through government systems. Evidence from Latin America also shows that center-based preschool expansion and conditional cash transfers can reduce SES gaps in child development (Berlinski et al., 2009; Millán et al., 2019; Attanasio et al., 2025).

Digital interventions should therefore be seen as complements to, rather than substitutes for, these investments.

To advance the field, we offer the following recommendations:

1. Prioritize rigorous, long-run evaluations: Future studies should collect direct child assessments and follow families beyond the immediate post-intervention period.
2. Test comparative modalities: Head-to-head trials of digital, in-person, and hybrid approaches are needed to guide cost-effective policy decisions.
3. Leverage interactivity and personalization: AI-driven features and adaptive content should be piloted to improve engagement, but with careful evaluation of equity and effectiveness.
4. Plan for scale from the start: Embedding interventions in government systems and tracking costs will be essential for sustainable expansion.

Following these guidelines, digital parenting interventions can be designed and evaluated as potentially powerful supports to help close persistent gaps in early childhood development across Latin America.

References

Ajzenman, N., Becerra Luna, L., Hernández-Agramonte, J. M., López Bóo, F., Pérez Alfaro, M., Vásquez-Echeverría, A., & Mateo Díaz, M. (2022). *A behavioral intervention to increase preschool attendance in Uruguay*. *Journal of Development Economics, 159*, Article 102984. https://doi.org/10.1016/j.jdeveco.2022.102984

Ajzenman, N., & López Bóo, F. (2019). *Lessons from behavioral economics to improve treatment adherence in parenting programs: An application to SMS* (IDB Technical Note No. 1787; IZA Discussion Paper No. 12808). Inter-American Development Bank. https://doi.org/10.18235/0001981

Ahun, M. N., McCoy, D. C., Sabol, T. J., Kim, Y., Warren, W., & Jeong, J. (2024). Overcoming the streetlight effect: Qualitative examination of community experts' perceptions of foundations of learning and development (FOLD) skills. *Annals of the New York Academy of Sciences*, *1542*(1), 647-659. https://doi.org/10.1111/nyas.15273

Amaral, S., Dinarte-Díaz, L., Domínguez, P., Y Pérez-Vincent, S. M. (2024). Helping families help themselves: The (Un)intended impacts of a digital parenting program. Journal of Development Economics, 166, 103181.

Araujo, M. C., Ardanaz, M., Armendáriz, E., Behrman, J. R., Berlinski, S., Cristia, J. P., Flabbi, L., Hincapie, D., Jalmovich, A., Kagan, S. L., Lopez Boo, F., Pérez Expósito, A., & Schady, N. (2015). The Early Years: Child Well-being and the Role of Public Policy. https://doi.org/10.18235/0000186

Attanasio, O., Lopez-Boo, F., Perez-Lopez, D., & Reynolds, S. A. (2025). Inequality in the early years in LAC: a comparative study of size, persistence, and policies.Oxford Open Economics, 4(S1), i273–i291. https://doi.org/10.1093/ooec/odae032

Balsa, A., López-Boo, F., Bloomfield, J., Cristia, M., Cid, A., & Ferro, M. (2023). Effect of the Crianza Positiva e-messaging program on adult–child language interactions. Behavioural Public Policy, 7(3), 607–643. doi:10.1017/bpp.2021.25

Balsa, A., Bloomfield, J. & Cid, A. The Conceptual Replication of Crianza Positiva E-Messaging Program During the COVID-19 Pandemic: Too Much or Too Little Information?. J Fam Econ Iss (2024). https://doi.org/10.1007/s10834-024-09975-7

Balsa, A.I., Gómez Muzzio, E., González, M.L. et al. Crianza Positiva: Combining Group Workshops and E-Messages to Strengthen Parenting Competences. Child Youth Care Forum 53, 719–740 (2024). https://doi.org/10.1007/s10566-023-09768-3

Berlinski, S., Galiani, S., & Gertler, P. (2009). The effect of pre-primary education on primary school performance. Journal of Public Economics, 93(1–2), 219–234.

Bloomfield, J., Balsa, A., & Cid, A. (2023). Using behavioral insights in early childhood interventions: The effects of Crianza Positiva e-messaging program on parental investment. Review of Economics of the Household, 21(1), 95–130.

Bloomfield, J., Balsa, A., Cid, A., & Oreopoulos, P. (2025). Calling all parents: Leveraging behavioral insights to boost early childhood outcomes in the developing world (NBER Working Paper No. 33338)—National Bureau of Economic Research.

Carneiro, P. & Toppeta, A. (2022, May 3). *Socioeconomic Gradients in Test Scores across Latin America and the Caribbean*. Corporación Andina de Fomento (CAF) Working paper 2022-07.

Gobierno del Perú. (n.d.). About MEFLab. Retrieved August 28, 2025, from https://www.gob.pe/en/56939-about-meflab

Golinkoff, R. M., Hoff, E., Rowe, M. L., Tamis-LeMonda, C. S., & Hirsh-Pasek, K. (2019). Language Matters: Denying the Existence of the 30-Million-Word Gap Has Serious Consequences. Child development, 90(3), 985–992. https://doi.org/10.1111/cdev.13128

Hernández-Agramonte, J. M., Namen, O., Näslund-Hadley, E., & Biehl, M. L. (2024). Supporting early childhood development remotely: Experimental evidence from SMS messages. Journal of Development Economics, 166, 103201. https://doi.org/10.1016/j.jdeveco.2023.103201

INEI. (2023). Encuesta Demográfica y de Salud Familiar 2023 (ENDES). Instituto Nacional de Estadística e Informática.

Innovations for Poverty Action. (August 14, 2025). Turning evidence into routine practice: Lessons from embedded evidence labs. Retrieved August 28, 2025, from https://poverty-action.org/turning-evidence-routine-practice-lessons-embedded-evidence-labs

Jeong, J., Franchett, E. E., Oliveira, C. V. R., Rehmani, K., & Yousafzai, A. K. (2021). Parenting interventions to promote early child development in the first three years of life: A global systematic review and meta-analysis. PLOS Medicine, 18(5), e1003602. https://doi.org/10.1371/journal.pmed.1003602

Jäggi, L., Aguilar, L., Alvarado Llatance, M., Castellanos, A., Fink, G., Hinckley, K., Huaylinos Bustamante, M. L., McCoy, D. C., Verastegui, H., Mäusezahl, D., & Hartinger Pena, S. M. (2023). Digital tools to improve parenting behaviour in low-income settings: a mixed-methods feasibility study. Archives of disease in childhood, 108(6), 433–439. https://doi.org/10.1136/archdischild-2022-324964

Jäggi, L., Hartinger, S. M., Fink, G., McCoy, D. C., Alvarado Llatance, M., Hinckley, K., Ramirez-Varela, L., Aguilar, L., Castellanos, A., & Mäusezahl, D. (2025).

Parenting in the Digital Age: A Scoping Review of Digital Early Childhood Parenting Interventions in Low- and Middle-Income Countries (LMIC). Public health reviews, 45, 1607651. https://doi.org/10.3389/phrs.2024.1607651

Kalil, A., & Ryan, R. (2020). Parenting practices and socioeconomic gaps in childhood outcomes. The future of children, 30(1), 29-54.

Kalil, A., Mayer, S. E., Delgado, W., & Gennetian, L. A. (2024). Education gradients in parental time investment and subjective well-being. Review of Economics of the Household, 1-46.

Klapow, M. C., Rosenblatt, A., Lachman, J. M., & Gardner, F. (2024). The feasibility and acceptability of using a digital conversational agent (chatbot) for delivering parenting interventions: Systematic review. JMIR Pediatrics and Parenting, 7(1), e45794.

Mayer, S. E., Kalil, A., Oreopoulos, P., & Gallegos, S. (2018). *Using behavioral insights to increase parental engagement: The Parents and Children Together (PACT) intervention*. *Journal of Human Resources, 54*(4), 900–931. https://doi.org/10.3368/jhr.54.4.0617.8835R

Millán, T. M., Barham, T., Macours, K., Maluccio, J. A., & Stampini, M. (2019). Long-term impacts of conditional cash transfers: Review of the evidence. The World Bank Research Observer, 34(2), 119–159. http://hdl.handle.net/10986/34347

McCormick, M., Weiland, C., Hsueh, J., Pralica, M., Weissman, A. K., Moffett, L., ... & Sachs, J. (2021). Is skill type the key to the preK fadeout puzzle? Differential associations between enrollment in preK and constrained and unconstrained skills across kindergarten. *Child Development*, *92*(4), e599-e620. https://doi.org/10.1111/cdev.13520

Rubio-Codina, M., & Lopez Boo, F. (2022). What Have We Learned from the Design and Delivery of Remote and Hybrid Early Childhood Development Services During the Pandemic?. https://doi.org/10.18235/0004409

Rury, D., Kalil, A., Mayer, S., & Bresciani, D. (2025). Talking about words boosts preschool-age children's vocabulary: Evidence from a parent intervention (Working Paper No. 2025-24). Becker Friedman Institute for Economics. https://bfi.uchicago.edu/wp-content/uploads/2025/02/BFI_WP_2025-24.pdf

Rowe, M. L. (2008). Child-directed speech: Relation to socioeconomic status, knowledge of child development, and child vocabulary skill. Journal of Child Language, 35(1), 185–205.

Solís-Cordero, K., Marinho, P., Camargo, P., Takey, S., Lerner, R., Ponczek, V. P., Filgueiras, A., Landeira-Fernandez, J., & Fujimori, E. (2023). Effects of an Online Play-Based Parenting Program on Child Development and the Quality of Caregiver-Child Interaction: A Randomized Controlled Trial. Child & youth care forum, 52(4), 935–953. https://doi.org/10.1007/s10566-022-09717-6

Trude, A. C. B., Martins, R. C., Martins-Silva, T., Blumenberg, C., Carpena, M. X., Del-Ponte, B., & Loret de Mola, C. (2021). A WhatsApp-Based Intervention to Improve Maternal Social Support and Maternal-Child Health in Southern Brazil: The Text-Message Intervention to Enhance Social Support (TIES) Feasibility Study. Inquiry : a journal of medical care organization, provision and financing, 58, 469580211048701. https://doi.org/10.1177/00469580211048701

Westgard, C. M., & Orrego-Ferreyros, L. A. (2022). An mHealth tool for community health workers to improve caregiver knowledge of child health in the Amazon: An effectiveness–implementation hybrid evaluation. PLOS Global Public Health, 2(9), e0001118. https://doi.org/10.1371/journal.pgph.0001118

Appendix.

Table 1. Empirical studies of digital parenting interventions in Latin America

Study	Sample Size	Location	Target Population	Outcomes Measured	Measures Used	Treatment Impacts
GURÍ App Preschool Attendance Messages	4,098 families	Uruguay	Public preschool parents nationwide	Preschool attendance, child development (cognitive and general)	Government administrative data (preschool attendance, INDI)	No significant effects (Ajzenman et al., 2022)
Crianza Positiva (e-messages, 2018)	529 families	Uruguay	Low-income families with young children	Parent-child communication; parental engagement; harsh discipline	Video coding; self-report surveys	~+0.24 to 0.25 SD parenting behaviors; improved communication; reduced discipline (Balsa et al., 2023)
Crianza Positiva (Workshops + e-messages, 2018)	442 families	Uruguay	Low-income families with young children	Quality of child–caregiver interaction	Video-recorded play coded with PICCOLO scale	~+0.44 SD affective and ~+0.59 teaching skills(Balsa et al., 2024a)
Crianza Positiva (E-messages during COVID-19, 2020)	687 families	Uruguay	Low-income families with young children	Parenting practices; child development; caregiver stress	Surveys (Parenting Scale, Parental Stress Index, ASQ-SE)	No significant effects (Balsa et al., 2024b)
El Salvador SMS/Whats App	3,103 caregivers	El Salvador	Caregivers during COVID-19	Parenting stress reduction;	Self-reported surveys	+20.6pp coping skills; -0.1 SD physical punishment

				discipline practices		among women (Amaral et al., 2024)
Costa Rica SMS	4,496 children, 691 networks	Costa Rica	Preschoolers' parents	Child cognitive development	Phone-based standardized assessments	Improved child cognitive skills by +0.11 to +0.12 SD (Hernández-Agramonte et al., 2024)
BEM Program	129 families	Brazil	Low-income mothers and children	Child language development; parenting behaviors	Video coding; observational data	+0.20 SD language; -0.35 SD intrusive behavior (Solís-Cordero et al., 2023)
CHEST App	186 families	Peruvian Amazon	Rural families with young children	Caregiver knowledge	Knowledge assessments	+1.26 SD in caregiver knowledge (Westgard & Orrego-Ferreyros, 2022)
Afinidata Chatbot	180 mothers	Cajamarca, Peru	Rural low-income mothers	Platform usage; perceived value	Usage logs; qualitative feedback	84% used within 2 months; 42% weekly use at 5 months (Jäggi et al., 2023)