IDB WORKING PAPER SERIES Nº IDB-WP-1286

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Inter-American Development Bank
Institutions for Development Sector
Innovation in Citizen Services Division

July 2022

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July 2022

Cataloging-in-Publication data provided by the
Inter-American Development Bank
Felipe Herrera Library

Helping families help themselves?: the (un)intended impacts of a digital parenting program /
Sofia Amaral, Lelys Dinarte, Patricio Dominguez, Santiago M. Perez-Vincent.
p. cm. — (IDB Working Paper Series ; 1286)
Includes bibliographic references.
1. Mental health-El Salvador. 2. Parent and child-El Salvador. 3. Parenting-El Salvador.
4. Child abuse-El Salvador. I. Amaral, Sofia. II. Dinarte, Lelys. III. Dominguez, Patricio.
IV. Perez-Vincent, Santiago M. V. Inter-American Development Bank. Innovation in Citizen
Services Division. VI. Série.
IDB-WP-1286

http://www.iadb.org

Helping Families Help Themselves: The (Un)intended Impacts of a Digital Parenting Program*

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Abstract

Parenting practices play a crucial role in child development. We evaluate the impact of a free digital stress management and positive parenting intervention designed to reduce the prevalence of child maltreatment in El Salvador. Drawing on the prior success of in-person interventions, we study the effects of digital intervention delivery and examine differential treatment effects by caregiver's sex. Using an individual-level experiment, we find that the intervention increased stress and anxiety and lowered caregiver-child interactions among male caregivers. In contrast, we did not detect changes in mental health but observed a decrease in physical violence against children among female caregivers. While these findings differ from the results of in-person interventions, they align with theories that link economic deprivation and family structure to caregivers' cognitive overload and mental health.

Keywords: Mental health, positive parenting, parental stress, child maltreatment
JEL Codes: J13, J22, I24, I12, J12, J16

* We appreciate the valuable feedback we received from Kathleen Beegle, Sven Resnjanskij, Victoria Endl-Geyer, Andrew Friedson, Selim Gulesci, Florencia Lopez Boo, Barbara Petrongolo, and the participants of the NBER Winter Development Conference, ifo Institute, IZA, and Nordic Development Economics Conference. We also thank Miguel Paniagua for his invaluable fieldwork coordination and Steffanny Romero for her superb work as a research assistant. We thank our partner Glasswing International for its support in the development and implementation of this program, as well as its commitment to generating rigorous evidence. This work was supported by the IDB-COVID-19 Call for Research Projects, the World Bank Research Support Budget, and the COVID-19 Emergency Call Window from the World Bank's Early Learning Partnership. The Institutional Review Board at the Universidad Francisco Gavidia in El Salvador reviewed and approved this research project's protocol in April 2020, which is listed under ID No. 003-2020. This project's pre-analysis plan is registered at the American Economic Association RCT registry as AEARCTR-0007096. The authors report no conflicts of interest, and the findings, interpretations, and conclusions expressed in this study are entirely theirs. They do not necessarily represent the views of the Inter-American Development Bank, its Board of Directors, nor the countries they represent, nor those of the World Bank, its affiliated organizations, Executive Directors, nor the governments these directors represent.

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1 Introduction

Although parenting practices play a key role in children's development of socioemotional skills, the behaviors and approaches that many parents use remain far from ideal (Olivetti and Petrongolo, 2017; Doepke et al., 2019; Attanasio et al., 2020). Indeed, UNICEF estimates that nearly three in four children are regularly abused physically or psychologically by their caregivers (UNICEF, 2017). Such early exposure to violence can have long-lasting negative effects. For instance, children raised in a violent or stern environment are more likely to exhibit risky behaviors as teenagers (Hamby et al., 2011) and participate in criminal activity as adolescents and adults (Doyle Jr and Aizer, 2018; Sviatschi, 2018).

The COVID-19 pandemic severely disrupted social support services and either triggered or deepened preexisting stressors within homes (Cullen et al., 2020; Moreno et al., 2020). This unprecedented event provoked mandatory lockdowns and stay-at-home orders that affected caregiver access to socioemotional and parenting support. Due to their accessibility, affordability, and scalability, information technologies and digital tools have served as an appealing way to provide and access necessary behavioral change services[1]. These tools became more important during the pandemic to enable the homebound to access essential services.

Although digital tools can potentially promote positive behavioral change, even in caregiver-child interactions, due to the widespread and prevalent use of these tools in a post-pandemic world, it has become imperative to understand the benefits and perils of such technology (WHO, 2019)[2]. For example, while rigorous small in-person parenting programs show promising results for mothers and their children (Jeong et al., 2021; Carneiro et al., 2021; Baranov et al., 2020), we know little about the effectiveness of high-quality parenting programs at scale, the effects of shifting from in-person to digital parenting interventions, and how caregiver characteristics mediate these effects. Evidence of these gaps is necessary to ensure that young children continue to achieve their full developmental potential (Jeong et al., 2021), especially since the digital provision of services has become commonplace.

To address and obtain evidence about each of the aforementioned gaps, we evaluate the impact of a free digital stress management and positive parenting intervention designed to reduce the prevalence of child abuse in El Salvador[3]. Because the mental health of caregivers plays a critical role in the quality of their parenting children (Cluver et al., 2020; Renzetti, 2009; UNICEF, 2020), the digital parenting program that we study consists of an intervention that provides tools to improve caregivers' mental well-being and promote positive parenting skills. In addition, due to the limited availability of evidence on the heteroge-

[1] Studies demonstrate that digital technologies promote better health, educational attainment, and behavioural change. For example, some studies show that non-pharmaceutical interventions pre- and during COVID reduced risky health-related behaviors and improved immunization rates (Gibson et al., 2017; Haushofer and Fehr, 2014; Dupas, 2011; Banerjee et al., 2021). In education, evidence supports the use of SMS to promote parental engagement with school activities (Berlinski et al., 2021; Doss et al., 2019; Bergman and Chan, 2021).

[2] In its opening remarks to the World Health Organization, the Bellagio eHealth Evaluation Group expressed this pressing need: "To improve health and reduce health inequalities, rigorous evaluation of eHealth is necessary to generate evidence and promote the appropriate integration and use of technologies" (WHO, 2019).

[3] In El Salvador, violence against children is a major socioeconomic problem. A recent nationally representative survey shows that 55 percent of boys and 50 percent of girls ages 1 to 14 years reported being disciplined violently in the past month (WHO, 2020).

neous effects of parenting programs by caregiver or family characteristics, we study the differential impact of the program by the caregiver's sex. We also explore whether other household characteristics such as economic conditions and composition are mechanisms behind the main results.

A key feature of our program is the mode of delivery. How an intervention that deals with sensitive topics is delivered is non-trivial. For example, in-person interventions within a group setting may foster a sense of bonding through team spirit, peer-to-peer social support, shared hope, and dialogue, which cumulatively lead to positive behavioral change. Digital interventions, on the other hand, enable participants to consume content and activities at their own pace and in the comfort of their own environments without peer pressure and the fear of stigma, especially when a program includes activities related to delicate issues such as mental health and positive parenting.

We use a large-scale, individual-level, randomized controlled trial (RCT) among 3,103 caregivers[4] of children aged 0 to 8 during the second half of 2020 when the COVID-19 pandemic lockdowns and stay-at-home orders were in effect. We randomly and with equal probability assigned caregivers to a treatment or control group. Caregivers in the treatment group received on average three WhatsApp messages per week over eight consecutive weeks[5]. The content included information, videos, infographics, and exercises on stress management for parents and positive parenting techniques.

Our design purposely stratified the randomization assignment by caregiver's sex to study the intervention's differential impacts by this characteristic[6]. The caregiver's sex is salient because it dictates labor division within the household (Giurge et al., 2021; Lundberg and Pollak, 1993)[7]. In general, the effects of policies aimed at improving parenting styles remain ambiguous with regard to the father's role in the family. This ambiguity may be due to, in part, social norms that stigmatize paternal involvement in caregiving. Insofar as it is the social norm for fathers to play a limited (or no) role in caregiving, positive parenting policies will continue to have little to no positive impact on paternal parenting[8]. Our design enables us to study this characteristic.

To measure the intervention's short-term impacts on the caregivers' mental health and parenting skills, we collected data on caregivers' mental state, parenting interactions, and other sociodemographic characteristics before and after the intervention. We combined direct questions, vignette modules, and social desirability bias data to measure and address potential measurement and social desirability bias concerns in responses to sensitive questions. During the intervention, we also collected information on participant viewership and practice/technique implementation.

Based on the data that we collected, we document four main results. First, we show that over 70 percent of participants complied with the intervention by opening the SMS/WhatsApp messages, and this

[4] Throughout this paper we use the term *caregiver* to denote a mother, father, grandmother, or other adult who provides primary care to child(ren).

[5] We follow Cortes et al. (2021) three-text-per-week approach, which has been found to be the best number and frequency for parenting text message interventions.

[6] As we discuss later, we recruited participants in three ways: through SMS/WhatsApp messages, the NGO's network, and social media (Facebook). Since these methods may reach populations with different characteristics, we use enrollment mode as another stratification variable.

[7] Giurge et al. (2021) use data collected from different countries during the height of COVID-19 pandemic and show that women spend more time on household chores and parenting, which is correlated with lower happiness. We also verify this pattern.

[8] See, for example, Dahl et al. (2020) and Tur-Prats (2021).

rate remained stable throughout the intervention. Next, using information assimilation surveys, we document that caregivers in the treatment group were more likely to comprehend the specific stress and parenting techniques than those in the control group. Second, we find that the intervention had an overall negative impact on caregivers' mental health. Contrary to what we had hypothesized in our pre-analysis plan (PAP), our estimations indicate that the mental health of treated caregivers worsened by 0.057 standard deviations (SD) relative to that of caregivers in the control group. This effect was driven by a 0.072 SD increase in stress. Third, despite the negative impact on mental health, we find no evidence that the intervention changed caregiver impulsiveness, the quantity of caregiver-child interactions, caregiver perpetration of abuse and attitudes toward violent parenting, or children's behaviors.

Third, we study the heterogeneity by caregiver's sex. The intervention's overall unintended effects on mental health outcomes were concentrated among men: treated male caregivers' stress and anxiety levels increased relative to those in the control group by 0.108 SD and 0.095 SD, respectively. We observe no significant impact on women's mental health[9]. We also observe that the intervention led to 0.137 SD fewer interactions between male caregivers and children, and had no impact among women. Finally, we find that the intervention reduced the reported use of physical violence among female caregivers by 0.098 SD and had no effect among men. Additionally, among female caregivers, the likelihood of resorting to physical violence as a parenting practice fell by nearly four percentage points (pp, 16 percent). Overall, our results verify that the caregiver's sex plays an empirically significant role in moderating the impact of the intervention. The differential roles and level of involvement in parenting activities (Hupkau and Petrongolo, 2020; Olivetti and Petrongolo, 2017) and mental health status (Offer and Schneider, 2011) observed between male and female caregivers presaged the intervention's heterogeneous impact between these two groups.

Finally, we explore potential mechanisms that could explain the intervention's negative and gendered parenting effect. We provide suggestive evidence that the intervention had a greater negative impact on the mental health of male caregivers who live in more economically deprived households and who cohabitate with a partner. These results align with the literature that connects economic deprivation with increased cognitive load (Mullainathan and Shafir, 2013; Mani et al., 2013; Asadullah et al., 2021; Schilbach et al., 2016; Ridley et al., 2020). In other words, the intervention may have cognitively overloaded caregivers burdened by economic deprivation and, therefore, been a source of additional stress. Additionally, we note that the negative impact on the frequency of caregiver-child interactions occurs primarily among male caregivers living with a partner. This finding indicates that parenting interventions may make men who cohabitate rely more on their partners to parent at the cost of their (males') own mental health[10].

We conduct a variety of robustness tests. First, we show that our study attrition is low and that selective attrition between treatment and control groups did not occur. Second, we substantiate the unlikelihood that our results are due to experimenter demand. Following Asadullah et al. (2021) and Dhar et al.

[9] Haushofer et al. (2020) also show that a brief and in-person psychotherapy intervention had no impacts on women. In contrast, Bryant et al. (2017) demonstrate that the mental health of victims of gender-based violence improved after an intensive in-person psychotherapy intervention.

[10] Since the intervention may have made male participants realize the importance of being a good parent, male caregivers residing with a partner may have become more distressed by a feeling of guilt or simply by becoming aware of their own lack of parenting skills. If men already felt pressured to perform presumably more male-oriented tasks within the household, then this additional pressure to parent well might have increased their mental distress.

(2022), we test whether the treatment affected the caregivers' social desirability index[11]. We do not find evidence that desirability bias changed either among treated caregivers or by the caregiver's sex. In additional robustness checks, we include the social desirability index measure as a control variable. This inclusion did not impact the coefficients and standard errors. Finally, we verify the robustness of our results to the exclusion of the control variables and the use of randomization inference in the estimation of standard *p*-values following Young (2019). Our results remain similar in terms of magnitude and statistical significance.

Our paper contributes to four strands of literature. First, it adds to an emerging literature that measures the impact of digital interventions and parenting programs with low-implementation costs. Within this literature, programs that involve group sessions (Carneiro et al., 2019; Cluver et al., 2018) or text messages (Barrera et al., 2020) have shown mixed results. On the one hand, Carneiro et al. (2019) find that group sessions improve caregiver and child/adolescent interactions and child development, and decrease caregiver abuse of adolescents (Cluver et al., 2018; Barrera et al., 2020). On the other hand, they do not detect effects on child development but show evidence of positive impacts on parenting skills. Our study adds to this work by offering evidence of the impact of a similar digital intervention and identifying participant characteristics that might moderate the intervention's impact. Our findings illustrate that targeting and tailoring these interventions based on the caregiver and household characteristics are empirically relevant. Theoretically, parenting policies or an intervention like ours may have an ambiguous impact on children and families. Nevertheless, such effects are still understood only partially, and the literature suggests such policies may have a heterogeneous impact depending on a factor such as family structure (Olivetti and Petrongolo, 2017).

Second, we contribute to the growing and diverse evidence on the effects of different parenting-related policies on men's participation in parental responsibilities and other household outcomes. Evidence on the impact of paternity leave in high-income countries shows varied results on parent-child interactions and mothers' well-being (Farré and González, 2019; Ekberg et al., 2013) and positive impacts on mothers' labor force participation (Bartel et al., 2018). Evidence from low-income countries is also mixed; some studies show that paternal engagement in childcare can reduce violence toward mothers and young and adolescent children (Doyle et al., 2018; Cluver et al., 2018), while others report null effects on caregiver-child interactions (Maselko et al., 2019; Justino et al., 2020).

Third, we add to the currently small but growing economics literature on mental health and its link with parenting practices. Parental stress, anxiety, and frustration affect children's health and development as well as the quality of parent-child interactions, which could potentially lead parents to resort to violence or harm (Persson and Rossin-Slater, 2018; Cluver et al., 2020; Renzetti, 2009; Bendini and Dinarte, 2020; UNICEF, 2020, 2017). Interventions that help parents cope with negative emotions have been shown to improve the mental health of mothers (Persson and Rossin-Slater, 2019; Baranov et al., 2020) and the relationship between parents and their children (Knerr et al., 2013; Cluver et al., 2018), and to reduce the risk of child maltreatment (Doyle et al., 2018). We leverage previous findings and add to this body of research by testing the effects of a digital intervention that seeks to promote better parenting

[11] This index captures the study participant's individual-level propensity to misreport sensitive items, which indicates whether or not the respondent is driven by the need for social approval.

through improved caregiver mental heath. Our results reveal where this type of intervention could be improved and identify contextual variables to consider when designing future interventions.

Finally, we contribute to evidence on the impact of digital health and education interventions—a policy-relevant issue worldwide (Crawfurd et al., 2021; Berlinski et al., 2021; Campion et al., 2020; Health, 2021). In low-income settings with widespread mobile phone availability, inequality in access to health care, and stigma around mental health issues, digital interventions are attractive, even though their effectiveness is not yet well understood (Naslund et al., 2017; Kola, 2020). We provide evidence that the net benefits of a light-touch and low-cost health intervention may depend critically on the participant population's characteristics and, in our context, on the family structure[12]. These findings contrast with those based on education interventions that encourage parental involvement and show positive impacts on student learning and parental involvement in their children's school activities (Berlinski et al., 2021; Crawfurd et al., 2021; Lichand and Christen, 2020).

2 The Intervention

We study a digitally adapted version of a stress management and positive parenting techniques program for caregivers of children in El Salvador. Psychologists and early childhood development experts from the NGO Glasswing International developed this intervention[13]. After the pandemic began and subsequent stay-at-home and social distancing orders were issued, the NGO recognized the then restricted availability of traditional care services and the negative effects that pandemic could have on caregivers' mental health and child maltreatment. Realizing the importance of providing caregivers with strategies to improve their mental health and parenting skills during such a difficult time, Glasswing International adapted an in-person stress management and parenting intervention to a digital format[14]. This initiative was motivated by recent evidence showing that stress, anxiety, and frustration can affect the quality of interactions between parents and children (Cluver et al., 2020; Renzetti, 2009; UNICEF, 2020, 2017) and revealing the potential of parenting interventions to improve caregiver-child relationships in low and middle-income countries (Knerr et al., 2013; Cluver et al., 2018).

The intervention consists of two interconnected components: (i) stress management skills within the context of parenting, and (ii) positive caregiving techniques. The first component aims to help participants manage daily life stressors effectively and improve their mental well-being by helping them identify stressors and teaching them stress management skills. The second component describes positive parenting

[12] Haushofer et al. (2020) make the same argument. While psychotherapy did not improve treated participants' mental health in Haushofer et al. (2020), a similar intervention had a positive impact on victims of gender-based violence in Bryant et al. (2017). Similarly, while psychotherapy had no impact among men in Blattman et al. (2017), it had positive impacts among sex workers in Ghosal et al. (2020). Together, this mixed evidence suggests that the impact of these types of interventions depends on many factors, including the characteristics of the targeted group.

[13] Glasswing International works on education, health, and community empowerment initiatives in seven Central America and Caribbean countries. More information about these programs can be found on Glasswing International's website (https://glasswing.org/).

[14] The of digital version of this intervention was piloted to test and solidify the wording and understandability of the materials. To this end, Glasswing International invited 12 eligible adults to participate in the pilot. After obtaining participant consent, the NGO sent these caregivers the materials, asked them to review and implement the program at home, and invited them to participate in a virtual focus group discussion. The program was then adjusted based on participant feedback. The pilot participants were not part of the study sample.

practices and basic techniques to aid parents in fostering a harmonious family life. In order to better communicate these concepts within the context of family relations and to streamline our examination, we interweave these components throughout the course materials and treat them as one in our analysis.

The theory of change behind this intervention assumes that providing information on the two components can help caregivers identify stressors that affect them and their children, implement strategies to better cope with these stressors, and, thereby, reduce their mental distress. The information provided also helps foster the caregivers' awareness that some actions and attitudes are negative forms of parenting, alter their views about child maltreatment, and improve the quality of their interactions with their children (Glasswing, 2020). We describe each component of the intervention in more detail below.

Stress Management Skills: This component highlights different ways to manage stress, such as stress-inoculation training and self-control techniques[15]. Existing empirical evidence shows that individualized interventions focused on stress management (e.g., mindfulness, meditation, psychosocial programs, etc.) can improve well-being by reducing stress levels (Dinarte et al., 2021; Holman et al., 2018).

This first component includes 12 topics with exercises and information intended to help participants understand stress and its effects and learn coping strategies to reduce mental distress. It includes exercises and techniques for meditation, breathing, self-control, stretching, and emotional freedom. The topics fall into two categories: *identification of stressors* and *relaxation and breathing techniques*. The former includes disturbances in the family balance due to external factors (e.g., unemployment) or internal problems (e.g., illness of a family member); intraindividual transmission of stress from one specific domain (e.g., the workplace) to another (e.g., family life); and interindividual transmission of stress from one family member to another. The latter consists of relaxation techniques that help caregivers reduce their stress and anxiety gradually, leading to better problem-solving, health, and mental balance (Fernández et al., 2012). The breathing techniques aim to improve caregivers' mental well-being by showing them how to voluntarily control their breathing, calm their minds, and focus on the present.

Positive Parenting Techniques: Positive parenting is the caregiver's capacity to direct a child's behavior through anticipation, negotiation, and perspective (Nelsen, 2007). This ability helps caregivers avoid resorting to punishment to control their children's behavior and provides a constructive framework for caregivers to teach their children how to regulate their emotions.

The positive parenting component includes 15 topics based on the approach developed by Durrant (2013). The topics aim to foster the caregivers' understanding of how children think, feel, and behave and explain children's needs at each developmental stage. The intervention materials teach caregivers that some actions and attitudes are negative forms of parenting (i.e., withholding food, raging, name-calling), while others are positive approaches to parenting (i.e., being warm, providing structure)[16]. Finally, the caregivers receive instruction on techniques to address children's needs and behaviors through warm and structured practices based on the children's respective stages of development. The materials include ac-

[15] Stress inoculation aims to enable an individual to prepare for future stressful situations by analyzing current stressful circumstances and learning specific skills to cope with future stressful events (Guarino, 2013).

[16] According to theory of change, *warmth* refers to emotional security, verbal and physical affect, respect, sensibility, and empathy when responding to children's needs. *Structure* is the ability to state clear instructions to better guide children's behavior.

tivities that help caregivers manage children's emotions in a positive manner, communicate better, coexist peacefully, and exercise self-control, as well as recommendations for fostering an optimal family environment[17].

The 27 intervention topics were delivered as messages via SMS or WhatsApp weekly over two months. On average, caregivers received about three messages per week, which were delivered every other day[18]. The messages explained the main concepts and exercises. They included links to videos, animations, audio notes, quizzes, and short essays with recommendations for practicing specific techniques, and a blog where participants could find additional content for every topic (please see Figure A2.1 in the Appendix)[19]. We partnered with Tigo, the largest mobile phone provider in El Salvador, to provide free access to all of the intervention content.

While the pandemic necessitated redesigning the intervention, the new digital format serves as an innovative alternative to complement other more costly parenting policy initiatives such as home visitations, cognitive behavioral therapy, or parental leave programs. The program's low cost, easy accessibility, and scalability make it attractive to governments willing to expand their social services. The WHO's recommendation to understand the implications of mobile health technologies (WHO, 2021) served as the impetus to evaluate the intervention's impact as it transitioned from being offered in-person to digitally.

3 Experimental Design

3.1 Participant Recruitment and Enrollment

We recruited participants by (i) disseminating information through Facebook, (ii) soliciting them through Glasswing International's network, and (iii) sending SMS/WhatsApp messages to Tigo's customers. As we show in Table A2.1, 63 percent of participants were recruited via Tigo. We sent every participant a link to an enrollment survey through these three channels. This survey included questions that helped us identify our target group. The survey included the following eligibility criteria: caregivers had to 1) be 45 years or younger, 2) live in the same house with at least one child eight years old or younger, and 3) provide consent to participate in the intervention and study. We enrolled 4,718 individuals who met the eligibility criteria and provided consent[20]. We collected baseline data from 3,103 individuals (66 percent of the total number of individuals enrolled)[21].

3.2 Randomization

We randomly assigned the 3,103 enrolled caregivers who met the eligibility criteria and completed the baseline survey to either the treatment or the control group with equal probability. We stratified the group based on two criteria: sex and enrollment modality. Given the usual sex-based differences between

[17] All intervention materials can be found here.
[18] This frequency has been shown to be optimal based on previous interventions delivered via SMS (Cortes et al., 2021).
[19] Access to the blog was restricted to participants in the treatment group only.
[20] The enrollment survey questions and consent form are available here.
[21] The remaining 1,615 (34 percent) enrolled individuals did not complete the baseline survey for several reasons, including: they did not provide a correct phone number; we were unable to reach them after the maximum number of attempts determined in the ethics protocol; they changed their mind and decided not to participate in the study, among others.

men and women in mental health and parenting involvement, we wanted treatment and control groups to be balanced in this regard. In addition, given the different roles the two sexes play in caregiving, we also aimed to assess whether the intervention had heterogeneous effects based on the caregiver's sex, which we pre-specified in the PAP. Similarly, since the individuals who we contacted through the three enrollment channels could differ in characteristics that could be relevant to our study (e.g., currently participating or previously participated a Glasswing program), we wanted to ensure that the treatment and control groups had an equal proportion of participants recruited from each channel. Appendix Table A2.1 indicates the size of each sample stratum.

4 Data

4.1 Data Collection Stages

Baseline Data Collection: We contacted all eligible and consenting caregivers who were eligible to participate in the intervention and consented to enroll in the study and provided them with a link to an online baseline survey through SMS/WhatsApp. If participants did not complete the survey within approximately two weeks, we sent them reminders to do so[22]. All data collected at baseline were self-reported. To reduce the risk of respondent fatigue, we limited the instrument length to approximately 30 minutes. Participants also received a small monetary incentive to complete the survey[23]. We collected data from all 3,103 respondents at baseline. The baseline survey included modules on the caregiver and household socioeconomic condition; caregiver's employment status and mental health; parent-child interactions; and child maltreatment. Section 4.2 describes the information that we collected in more detail. Following information protection protocols, we stored collected data on the survey firm's private server. Access to the data was restricted to project staff and researchers.

Viewership Rates and Information Assimilation Surveys: We collected the second set of data during the implementation of the intervention. First, we determined how many SMS/WhatsApp messages caregivers in the treatment group opened. Tigo collected this data and shared it with the researchers at the aggregate level. We use this data to monitor the rate of viewership[24]. Second, we conducted four rounds of an information assimilation survey among a random subset of enrolled individuals. These surveys evaluated whether individuals in the treatment group were more likely to self-report comprehending concepts taught in the intervention, which is similar to how Carneiro et al. (2021) collected their data. We surveyed a total of 659 participants (21 percent of the sample at baseline) over the course of four survey rounds. Each survey round contained questions on four intervention topics. To avoid saturation, we selected a different random sample of respondents for each survey round[25]. Thus, our data is a cross-section of a sub-sample of the study participants. In each survey round, we asked respondents how frequently they

[22] We pretested the survey instrument during the pilot study. The staff responsible for sending the reminders were trained in the content and structure of the baseline instrument and protocol to protect victims of violence. The latter also prepared the staff to follow the guidelines outlined in the ethics protocol.

[23] Each participant received US$2.50 in Tigo "money" as an incentive to complete the baseline and follow-up survey. In addition, we motivated participants to remain in the study by raffling off iPads after the study was completed.

[24] Since the data is aggregate, we are unable to compute a treatment-on-the-treated estimator using the rate of messages opened as a proxy for take-up. Therefore, we use the information assimilation sub-sample instead.

[25] Overall, only 14 percent of the 659 respondents were included in more than one round.

implemented the different stress management and positive parenting techniques that they had learned two weeks prior[26]. Table A2.2 in the Appendix shows the topics addressed in each survey round. We use this information to assess if the participants reacted positively to the intervention materials.

Endline Data Collection: The intervention ceased at the end of November 2020, and we collected endline data at the end of December 2020. We timed the follow-up survey to test the intervention's short-term effects and minimize attrition. For the endline survey, we contacted all 3,103 respondents who took the baseline survey. We collected follow-up data from 2,280 caregivers (a 73 percent response rate). To minimize the risks of attrition and a low response rate, the endline survey was conducted over the phone[27]. As for the baseline survey, all enumerators were trained in the follow-up instrument's content and structure and the guidelines outlined in the ethics protocol. The structure of the endline survey was similar to that of the baseline survey. In the former, however, we included a module on observed child behaviors and feedback on demand for another parenting intervention by Glasswing International.

4.2 Survey Instruments and Outcomes

Based on our study's theory of change, and as specified in our PAP, our analysis focuses on the following main outcomes: mental health, impulsiveness, and the quality of interactions with children. Appendix Section A1 describes all outcomes and the survey instruments we used to measure them.

Caregivers Sociodemographic Characteristics: We collected information on caregivers' education, employment status before and during the lockdown, marital status, household size and structure (including whether or not the caregiver lived with a partner), time spent with child(ren), and number of children needing care. We also gathered information on economic deprivation by asking whether the household had enough money for food, health and education, home services, and clothes and gifts during the pandemic. At endline, we collected information on individual-level propensity to misreport sensitive items based on the *social desirability index*, following Crowne and Marlowe (1960). As shown in Table 1, Panels A-C, caregivers in our sample are, on average, 32 years old, are predominantly female (60 percent), have a child enrolled in school (66 percent), and reside in households with an average of 4 people. Most caregivers in our sample do not have tertiary education (59 percent). They also exhibit a high level of economic deprivation (25 percent worry about not having enough money for food). We also show that 29 percent of the sample were either unemployed or had lost employment during the pandemic.

Mental Health: We use the Depression, Anxiety, and Stress Scale (DASS-21) to measure mental distress (Lovibond and Lovibond, 1996). The DASS-21 module includes 21 items to measure three negative emotional states: depression, anxiety, and stress. One major advantage of the DASS-21 is that, in addition to

[26] For example, during week one, treated participants were sent a link to a film about the turtle technique. Two weeks after being exposed to this technique, the surveyed participants were then asked questions about the technique, the answers to which they would know only from having watched the film.

[27] In the companion paper Amaral et al. (2022), we study an experiment that we embedded in our baseline data collection for this study to determine which method of data collection minimizes attrition best. Specifically, we show that participants were 40 pp more likely to complete a survey by phone than a survey by SMS. Therefore, we interviewed all participants over the phone for the endline survey.

questions regarding perceptions of mental distress, which are more prone to reporting bias and subjectivity, it also includes questions on physiological responses consistent with poor mental health. Our main outcome of interest is the aggregate index of all three emotional states. However, we also consider the levels of depression, anxiety, and stress separately. On average, the caregivers in our sample display low mental health: approximately 34 percent exhibit above-normal stress, 54 percent show high anxiety, and 34 percent have depressive symptoms (See Table 1, Panel D). Compared to men, women in our sample report worse mental health across all three states (See Table 2, Panel D). While high, these rates are similar to those observed in other populations[28].

Impulsiveness: We measure caregiver impulsiveness using the Barratt Impulsiveness Scale BIS-11 (Patton et al., 1995)[29]. The outcome is the sum of the 15 items, where a higher score indicates a greater degree of impulsiveness. We use a standardized value of this index as our measure of impulsiveness. On average, the study respondents exhibit a low level of impulsiveness. Only 2 percent of caregivers reported above-normal levels of impulsiveness, as shown in Table 1. Relative to male caregivers, female caregivers are 5 pp more likely to exhibit high levels of impulsiveness (Table 2).

Caregiver-Child Interactions: We use the ten items related to support for learning/stimulating environment and setting limits domains from UNICEF's Family Care Indicators instrument (Kariger et al., 2012) to measure the frequency of caregiver-child interactions. The items ask how often different activities, which serve as proxies for interactions, occurred between the caregiver and the child during the previous week. On average, caregivers in our study completed 9 out of 10 activities with their children in a week (Table 1). Female caregivers completed more activities with children when compared to the males in our sample (Table 2, a standardized index of positive caregiver-child interactions).

We also use three other measures, which serve as secondary outcomes, to determine the quality of caregiver-child interactions. First, we measure tolerance of violent parenting based on responses to both direct questions and vignettes. The latter addresses concerns related to social desirability bias and seeks to elicit information on which violent behaviors the parents consider socially acceptable. A core aim of the intervention was to change behaviors associated with violent parenting, so we expected that parents would use coercive punishment practices less frequently after learning and practicing possible alternatives.

Second, we measure caregiver violence perpetration, which captures physical and psychological violence towards children. One of the main aims of the intervention is to address abuse; therefore, we expected that the intervention would directly impact caregivers who perpetrate violence. To measure this outcome, we use a shortened version of the International Society for Prevention of Child Abuse and Neglect Screening Tool, Parent Version (ICAST-P) (Meinck et al., 2020). Following the literature on violence (Cluver et al., 2018; Aguero and Frisancho, 2021), we combine the responses to the ICAST-P with the data on violence perpetration that we elicited through the vignettes to create an index. Finally, we measure observed child behavior using the internalizing/ externalizing behaviors sections of the parent/caregiver report survey developed by the World Bank.

[28] See the rates in Turkey (Altindag et al., 2020), Spain (Rodríguez-Rey et al., 2020), and Ireland (Burke et al., 2020), for example.
[29] Impulsiveness refers to an individual's tendency to act suddenly without first thinking carefully about the consequences of his or her actions. Recent studies have found suggestive evidence that behavioral interventions reduce automatic responses—a form of impulsive behavior—and can reduce violent behaviors (Heller et al., 2017; Dinarte and Egana-delSol, 2019).

As we show in Table 1, caregivers perpetrate a high rate of violence and demonstrate a high tolerance of it at baseline; 78 percent of caregivers use at least one form of physical or psychological punishment, and 29 percent condone the use of violence as a way to punish children.

Table 1. Summary Statistics and Balance Tests

Variable	Obs. (1)	Mean (2)	Std Dev (3)	Min (4)	Max (5)	Mean Control (6)	Mean Treatment (7)	P-val. Difference (8)
Panel A. Caregiver Characteristics								
Age (years)	3103	32.08	6.34	19	50	32.196	31.968	(0.302)
Female (%)	3103	0.60	0.49	0	1	0.599	0.599	(0.994)
Education level								
Basic (1-9 grades, %)	3103	0.20	0.40	0	1	0.205	0.205	(0.988)
High school (10-12 grades, %)	3103	0.38	0.49	0	1	0.381	0.386	(0.766)
College or higher (%)	3103	0.41	0.49	0	1	0.415	0.410	(0.756)
Employment status pre and post pandemic								
Always unemployed (%)	3076	0.19	0.40	0	1	0.191	0.197	(0.625)
Always employed (%)	3076	0.48	0.50	0	1	0.482	0.483	(0.963)
Lost job (%)	3076	0.10	0.31	0	1	0.106	0.104	(0.887)
Found job (%)	3076	0.22	0.41	0	1	0.221	0.215	(0.686)
Girls under 9 years cared (N)	3054	0.76	0.66	0	5	0.752	0.765	(0.582)
Boys under 9 years cared (N)	3054	0.77	0.65	0	4	0.782	0.756	(0.265)
Time caregiver spends with the child (hours)	3103	9.64	3.64	0	12	9.803	9.480	(0.012)
Living with a partner (%)	3103	0.70	0.46	0	1	0.699	0.696	(0.833)
Panel B. Child Characteristics								
Oldest child under 9 is female (%)	3103	0.50	0.50	0	1	0.492	0.503	(0.553)
Child enrolled in school (%)	3103	0.66	0.48	0	1	0.659	0.652	(0.676)
Child video/screen time for fun (hours)	3103	3.64	3.76	0	24	3.735	3.542	(0.151)
Child video/screen time for homework (hours)	3103	3.00	3.45	0	24	3.007	2.986	(0.863)
Panel C. Household Characteristics								
Household size (N of members	3102	4.15	1.97	1	20	4.158	4.148	(0.892)
Intergenerational household (%)	3103	0.38	0.49	0	1	0.392	0.373	(0.284)
Income vulnerability index	2953	1.31	1.18	0	4	1.278	1.337	(0.171)
Money for food (%)	3057	0.25	0.44	0	1	0.247	0.260	(0.413)
Money for health and education (%)	3041	0.34	0.47	0	1	0.339	0.344	(0.748)
Money for home services (%)	3058	0.62	0.49	0	1	0.607	0.631	(0.181)
Money for clothes and gifts (%)	3051	0.10	0.30	0	1	0.096	0.106	(0.367)
Economic deprivation (%)	2953	0.33	0.47	0	1	0.343	0.307	(0.032)
Panel D. Outcomes								
Mental health distress index (SD)	3103	0.00	1.01	-2	4	0.000	-0.008	(0.817)
High anxiety (%)	3103	0.54	0.50	0	1	0.539	0.547	(0.680)
High stress (%)	3103	0.34	0.47	0	1	0.336	0.336	(0.999)
High depression (%)	3103	0.34	0.47	0	1	0.339	0.336	(0.847)
Impulsiveness index (SD).	3103	0.00	1.02	-4	5	0.000	0.006	(0.871)
Positive caregiver–child interactions index (SD)	3103	-0.02	1.01	-5	1	0.000	-0.048	(0.182)
Positive caregiver–child interactions (N)	3103	9.20	1.31	1	10	9.239	9.168	(0.131)
Tolerance of violent parenting index (SD)	2938	-0.03	0.99	-1	7	-0.027	-0.037	(0.794)
Tolerate at least one item of maltreatment (%)	2991	0.29	0.45	0	1	0.282	0.289	(0.657)
Total violence index (SD)	2925	-0.03	0.92	-1	9	0.000	-0.067	(0.049)
Perpetrate at least one form of violence (%)	3062	0.78	0.41	0	1	0.780	0.789	(0.530)
Physical violence index (SD)	3053	0.00	0.98	-1	4	0.005	-0.005	(0.801)
Psychological violence index (SD)	2950	-0.03	0.92	-1	8	0.006	-0.069	(0.027)

Notes: This table reports descriptive statistics of the caregivers' characteristics collected through the baseline survey. It also reports the mean value of the variables by treatment status as well as the *p*-value for the difference in means (controlling for strata fixed effects. The definitions of all variables and indices are provided in Appendix A1. Data source: Baseline data.

Table 2. Differences in Means by Sex at Baseline

	All			Male			Female		
	Male (1)	Female (2)	P-val. Diff (3)	Control (4)	Treated (5)	P-val. Diff (6)	Control (7)	Treated (8)	P-val. Diff (9)
Panel A. Caregiver Characteristics									
Age (years)	32.636	31.711	(0.000)***	32.921	32.352	(0.111)	31.712	31.711	(0.997)
Education level									
Basic (1-9 grades, %)	0.200	0.208	(0.000)***	0.182	0.217	(0.122)	0.220	0.197	(0.218)
High school (10-12 grades, %)	0.402	0.370	(0.033)**	0.422	0.383	(0.160)	0.353	0.388	(0.118)
College or higher (%)	0.398	0.422	(0.000)***	0.396	0.400	(0.882)	0.427	0.416	(0.599)
Employment status pre and post pandemic									
Always unemployed (%)	0.081	0.270	(0.000)***	0.083	0.079	(0.802)	0.262	0.277	(0.500)
Always employed (%)	0.597	0.406	(0.000)***	0.597	0.598	(0.994)	0.406	0.407	(0.956)
Lost job (%)	0.080	0.121	(0.100)*	0.088	0.071	(0.274)	0.117	0.126	(0.570)
Found job (%)	0.242	0.203	(0.533)	0.232	0.252	(0.399)	0.215	0.191	(0.204)
Girls under 9 years under care (N)	0.748	0.766	(0.000)***	0.742	0.755	(0.735)	0.759	0.772	(0.664)
Boys under 9 years under care (N)	0.790	0.755	(0.361)	0.806	0.774	(0.396)	0.766	0.744	(0.455)
Time caregiver spends with the child (hours)	8.865	10.160	(0.000)***	9.055	8.675	(0.077)*	10.302	10.018	(0.076)*
Living with a partner (%)	0.818	0.617	(0.000)***	0.818	0.818	(1.000)	0.620	0.614	(0.802)
Panel B. Child Characteristics									
Oldest child under 9 is female (%)	0.471	0.515	(0.071)*	0.457	0.486	(0.319)	0.516	0.515	(0.962)
Child enrolled in school (%)	0.641	0.665	(0.778)	0.643	0.640	(0.919)	0.670	0.660	(0.647)
Child video/screen time for fun (hours)	3.798	3.532	(0.919)	3.944	3.653	(0.179)	3.596	3.467	(0.455)
Child video/screen time for homework (hours)	3.208	2.855	(0.630)	3.122	3.294	(0.423)	2.930	2.781	(0.322)
Panel C. Household Characteristics									
Household size (N of members)	4.105	4.185	(0.130)	4.166	4.045	(0.265)	4.153	4.217	(0.493)
Intergenerational household (%)	0.338	0.412	(0.022)**	0.354	0.322	(0.228)	0.417	0.407	(0.678)
Income vulnerability index	1.343	1.284	(0.510)	1.315	1.371	(0.412)	1.253	1.314	(0.272)
Money for food (%)	0.258	0.250	(0.087)*	0.259	0.257	(0.954)	0.239	0.262	(0.265)
Money for health and education (%)	0.352	0.334	(0.031)**	0.348	0.357	(0.736)	0.333	0.336	(0.890)
Money for home services (%)	0.623	0.617	(0.843)	0.608	0.637	(0.289)	0.607	0.626	(0.389)
Money for clothes and gifts (%)	0.124	0.086	(0.591)	0.123	0.126	(0.862)	0.079	0.093	(0.279)
Economic deprivation (%)	0.324	0.326	(0.878)	0.343	0.304	(0.140)	0.343	0.309	(0.119)
Panel D. Outcomes									
Mental health index, std.	-0.210	0.133	(0.000)***	-0.210	-0.210	(0.998)	0.140	0.126	(0.773)
Anxiety (high, %)	0.468	0.593	(0.003)***	0.465	0.471	(0.841)	0.589	0.597	(0.712)
Stress (high, %)	0.254	0.391	(0.019)**	0.245	0.264	(0.442)	0.397	0.385	(0.574)
Depression (high, %)	0.260	0.390	(0.000)***	0.258	0.262	(0.860)	0.394	0.386	(0.712)
Impulsiveness index (SD)	0.032	-0.017	(0.198	-0.009	0.073	(0.144)	0.006	-0.039	(0.350)
Positive caregiver-child interactions index (SD)	-0.155	0.063	(0.002)***	-0.160	-0.150	(0.877)	0.107	0.020	(0.046)**
Positive caregiver-child interactions (N)	9.144	9.244	(0.987)	9.134	9.154	(0.788)	9.310	9.177	(0.024)**
Tolerance of violent parenting index (SD)	0.017	-0.067	(0.112)	0.034	0.001	(0.602)	-0.070	-0.063	(0.908)
Tolerate at least one item of maltreatment (%)	0.301	0.274	(0.066)*	0.300	0.302	(0.910)	0.269	0.280	(0.627)
Total violence index (SD)	-0.070	-0.008	(0.004)***	-0.054	-0.087	(0.553)	0.037	-0.054	(0.040)**
Negative practices (#)	2.288	2.347	(0.026)**	2.315	2.260	(0.689)	2.406	2.287	(0.256)
Implement at least one negative practice (%)	0.762	0.800	(0.002)***	0.750	0.775	(0.302)	0.801	0.799	(0.945)
Perpetrate at least one form of physical violence (%)	0.431	0.437	(0.006)***	0.418	0.444	(0.361)	0.438	0.437	(0.948)
Observations	1,243	1,860		621	622		929	931	

Notes: This table compares male and female groups. It shows the means of each group and the p-values for the differences in means. The definition of all variables and indices can be found in Appendix A1. Data source: Baseline data. *** p<0.01, ** p<0.05, * p<0.1.

5 Empirical Strategy

5.1 Econometric Model

We rely on the random allocation of participants to either the treatment or the control group to identify the intervention's causal effect on the set of outcomes described above. The main identification assumption is that, had there been no intervention, our outcomes of interest would be, on average, statistically equal between caregivers assigned to the treatment and control groups. Formally, we estimate the following ANCOVA model by Ordinary Least Squares (OLS) using information at the caregiver level *i*:

$$Y_i = \delta D_i + \sum_j^n \beta_j X_i + S_i + \epsilon_i \quad (1)$$

where Y_i is an outcome variable. D_i is an indicator variable that takes the value of one if the caregiver was assigned to the treatment group and 0 otherwise. X_i is a vector of covariates measured at baseline, including age (years), educational attainment (primary, secondary, and tertiary), the number of girls and boys for who the respondent cares, and the pre-intervention outcome values for those outcomes collected in our baseline survey[30]. S_i corresponds to the strata fixed effects. ϵ_i is an idiosyncratic error term. Since randomization occurred at the individual level, and we do not expect clusters in our sample, we report heteroskedasticity-robust standard errors. In this model, δ is our coefficient of interest, which provides the estimate of the intervention's intention-to-treat (ITT) impact on outcome (Y_i)[31].

We also assess how the intervention's impact varied by the gender of caregivers. To estimate the heterogeneous impact of the intervention, we estimate the following model:

$$Y_i = \delta_1 D_i + \delta_2 D_i \times Male_i + \sum_j^n \beta_j X_{ji} + S_i + \epsilon_i \quad (2)$$

where $Male_i$ is an indicator variable taking value of one if the caregiver is male and 0 if female. We estimate this equation separately for two other variables: an indicator of extreme economic deprivation and an indicator taking the value of 1 for caregivers living with a partner. In Equation 2, δ_1 delivers the ITT estimate for female caregivers, and δ_2 provides the difference in the ITT effect between the sexes. The ITT estimate for males is calculated as the sum of δ_1 and δ_2. The interpretation of the coefficients is analogous for the other two indicator variables. We estimate Equation 2 by OLS and report heteroskedasticity-robust standard errors. We also present randomization inference *p*-values as an additional inference test.

[30] Following McKenzie (2012), if a respondent has a missing value for a covariate, then we impute this value with the respective mean of the variable. Missing values never exceed 5 percent of the sample.

[31] Since we do not observe the intervention take-up at the individual level for the full sample, we estimate an ITT effect. Additionally, we present an alternative estimation using a treatment-on-the-treated (TOT) analysis, which we discuss in the Robustness Checks section.

5.2 Balance on Covariates and Pre-intervention Outcomes

To support the validity of our identification assumption, we compare caregivers in the treatment and control groups in terms of sociodemographic characteristics and the baseline levels of the outcome variables. Table 1 reports the mean values for these variables for caregivers in the treatment group (Column 6) and caregivers in the control group (Column 7) and the *p*-value of the difference between the two means (Columns 8). There are almost no differences across groups in caregiver, child, and household characteristics. The only significant differences we detect at baseline pertain to the amount of time the caregiver spends with the child, which is greater in the treatment group but does not make an economically meaningful impact, and to economic deprivation, which is greater in the control group.

With regard to the baseline levels of the outcome variables, we only observe differences that are significant at the conventional level for the indices of total violence, which are lower in the treatment group and driven by the index of psychological violence perpetration. These differences are also not economically meaningful, which can be seen by the absolute number of items in each question. In Appendix Figure A2.2 and Figure A2.3, we also present kernel density estimations and show that the distributions of the main outcomes are balanced across treatment arms at baseline.

As to balance by sex, in Table 2, Columns 4 to 9, we show that the observed characteristics of caregivers in the treatment and control groups at baseline are balanced within each sex. We also confirm that, indeed, male and female caregivers differ from each other substantially (see Columns 1 to 3). Specifically, male caregivers are older and more likely to be employed, spend less time with children, and have better mental health. When it comes to parenting, males are more likely to tolerate violence but are less likely to perpetrate it. We show that 79 percent of females and 76 percent of males use at least one form of violence. This parenting context is consistent with the literature discussed in the Introduction and highlights the importance of sex stratification in our design.

5.3 Endline Survey Attrition and Power Calculation

After the intervention concluded, we collected endline data on 2,280 individuals, 67 percent of our initial study sample. We examine whether differential attrition might have confounded our estimates. We report the results of this analysis in Appendix Table A3. First, we find that participation in the intervention did not affect the probability of completing the endline survey. Second, we observe that baseline characteristics of the caregivers in the treatment and control groups do not explain the decision to complete the endline survey across groups[32].

To verify that our sample size allows us to detect effects similar in magnitude to those found in the literature, we calculate the minimum detectable effects (MDEs) that we can estimate from our sample of

[32] As we present in Table A3, Column (2), we find that the *p*-value for the joint significance test for all interactions between the treatment indicator and all of the baseline characteristics included in the model is 0.947, suggesting no differential attrition in terms of baseline characteristics between the treatment and control groups.

2,280 individuals. Assuming a significance level (α) of 0.05 and a conventional power level (β) of 0.8, we estimate that the MDE size of our survey design ranges from 0.083 to 0.114 SD[33].

6 Results

This section discusses the intervention's take-up and impact on our outcomes of interest. We also assess the extent to which this impact varies by sex.

6.1 Compliance: Opened SMS/WhatsApp Messages and Viewed Digital Content

To assess whether or not the intervention was effective, we first measure the take-up rate. We identify two conditions that must be met for the intervention to have an impact: i) participants must open the SMS/WhatsApp messages and ii) view the content. We assess both in two ways. First, in Appendix Figure A2.4 we show that the viewership rate among the treatment group is high; overall, 72 percent of caregivers in this group opened the SMS/WhatsApp messages[34]. Figure A2.4 shows that the viewership rate remained stable for every SMS/WhatsApp message sent throughout the intervention.

Second, using the information assimilation surveys described in the Data section, we assess whether or not caregivers in the treatment group were more likely to report knowing the techniques taught in the intervention. To test this hypothesis, we estimate the following equation:

$$Recall_{iw} = \beta_0 + \delta D_i + X_i + \gamma_{w(i)} + \epsilon_i \quad (3)$$

where $Recall_{iw}$ is the dependent variable of interest measured for every participant i responding to survey wave w. We have two outcomes of interest: the share of stress management and positive parenting techniques that the respondent learned within the past week[35]. D_i is a dummy variable that indicates that the participant is in the treatment group. To improve the precision of the estimates, we control for socioeconomic variables measured at baseline (X_i). These variables include age, gender, education level, and the number of female and male dependent children. We also include the number of times an individual responded to a monitoring survey as a control variable. To account for the fact that each of the four survey rounds presented different questions, we also include survey-round fixed effects ($\gamma_{w(i)}$). ϵ_i corresponds to the error term. We impose robust standard errors. In this estimation, δ signifies the intervention's ITT effect on self-reported assimilation of the intervention's parenting and stress management techniques.

[33] When carrying out these calculations, we follow Raudenbush and Liu's (2000) guidelines on non-dichotomic outcomes, according to which MDEs depend on the value used for the variation explained by covariates (R^2) 0.05 (small) and 0.50 (large), respectively.

[34] Caregivers in the control group did not receive any messages; in this instance, the take-up rate is always 0.

[35] We generate the share of techniques learned by round using data from the information assimilation surveys. We use categorical variables for the implementation of each technique and created a dummy variable that equals one if the respondent answers "Yes" to implementing each technique, and 0 otherwise. Then, we created the share by adding up the total techniques that respondents report knowing and dividing this number by the total number of techniques addressed in a given survey round.

On average, 61% of treated participants report using stress management strategies, and 84% of caregivers report using parenting techniques presented in the intervention[36]. Moreover, nearly every 7 out of 10 caregivers report knowing at least one stress management technique, and 85% of caregivers know at least one positive parenting practice (see Table A2.4). Appendix Table A2.5 shows the results from Equation 3. We find that caregivers in the treatment group were 20.1 pp more likely to report using stress management techniques and 5.4 pp more likely to report using positive parenting techniques than caregivers in the control group. These results, along with the evidence depicted in Appendix Figure A2.4, demonstrate that the intervention had a first-stage impact on information assimilation and content adoption.

6.2 The Program's Impact on Caregiver Mental Health and Caregiver-Child Interactions

Using Specification 1, we first estimate the intervention's impact on the primary outcomes it targets most directly: mental distress (anxiety, stress, and depression); impulsiveness; and positive caregiver-child interactions. Table 3 shows these results. Although we hypothesized that this bundled intervention would improve the three primary outcomes, we find that the program increased mental distress and had no impact on caregiver impulsiveness and caregiver-child interactions. In particular, our estimations suggest that treated caregivers' mental health reports were, on average, 0.057 SD worse than the average mental health of caregivers in the control group. This detrimental effect is driven primarily by the intervention's 0.072 SD increase in stress. The intervention has no statistically significant effects on anxiety and depression, even though their coefficients are also positive. Overall, results indicate that the treated caregivers' mental health status worsened.

[36] This is approximately a 21 and 5 percentage points difference between reported use of techniques between treated and control individuals, respectively. It is worth noticing that the difference between stress and parenting use is due to the measurement of stress-related questions. While of stress techniques the naming of techniques in the intervention was very differentiated (e.g. lemon technique) for parenting techniques this was more standard as highlighted in the Table A2.2.

Table 3. The Treatment's Effect on the Primary Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)
	Mental Health Distress					
	Index (A+S+D)	Anxiety (A)	Stress (S)	Depression (D)	Impulsiveness	Positive Caregiver–Child Interactions
Treatment	0.057*	0.039	0.072**	0.029	-0.007	-0.043
	(0.033)	(0.034)	(0.035)	(0.035)	(0.039)	(0.039)
	[0.088]	[0.269]	[0.037]	[0.451]	[0.864]	[0.295]
Mean of dep. var (control)	0.000	0.000	0.000	0.000	0.000	0.000
R-squared	0.348	0.318	0.286	0.267	0.107	0.182
Observations	2,280	2,280	2,280	2,280	2,280	2,280
Strata FE	Yes	Yes	Yes	Yes	Yes	Yes
Baseline controls	Yes	Yes	Yes	Yes	Yes	Yes
Dep. var baseline level	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table shows the intervention's estimated impacts on the primary outcomes. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized average of the caregivers' self-reported levels of anxiety, stress, and depression (all items of DASS-21); in Column (2) is the standardized average of the self-reported levels of anxiety (7 items of DASS-21); in Column (3) is the standardized average of the self-reported levels of stress (7 items of DASS-21); in Column (4) is the standardized average of the self-reported levels of depression (7 items of DASS-21); in Column (5) is the standardized sum of the self-reported instrument of the Barratt Impulsiveness Scale BIS-11; and in Column (6) is the standardized index of the responses to the ten questions concerning support for learning/stimulating environment and setting limits domain. The controls include age in years, the number of girls and boys cared for, and the caregiver's primary, high school, or tertiary education—the omitted category—education level. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Next, we assess whether the intervention's impact differs by caregiver sex by estimating the model in Equation 2. We present the results in Table 4 and document two main findings. First, we observe a difference in treatment effects on positive caregiver-child interactions across the sexes. Treated men initiated 0.154 SD fewer positive interactions with their children relative to treated women and 0.137 SD fewer positive interactions than other men in the control group. We do not observe any significant effect on caregiver-child interactions among treated females relative to female caregivers in the control group. Second, we find that the intervention's negative impact on mental health can be explained primarily by treated male caregivers. The program led to a 0.093 SD increase in mental distress relative to those males in the control group. More specifically, treated male caregivers experienced a 0.108 SD relative increase in stress and a 0.095 SD relative increase in anxiety (See Table A2.6). Although differences in treatment effects are not statistically different across the two sexes, we note that the estimates of the intervention's impacts among females are small (in fact, always smaller in absolute value than those for males) and not statistically different from 0. Overall, these results indicate that the bundled intervention can negatively impact mental health and caregiver-child interactions, which was more salient among male caregivers.

Table 4. Heterogeneous Effects across the Sexes: Primary Outcomes

	(1) Mental Health Distress	(2) Impulsiveness	(3) Positive Caregiver–Child Interactions
i. Treatment	0.034	0.037	0.018
	(0.045)	(0.051)	(0.047)
ii. Male × treatment	0.059	-0.111	-0.154*
	(0.067)	(0.080)	(0.082)
iii. Total effect on men ([*i*] + [*ii*])	0.093*	-0.074	-0.137**
	(0.050)	(0.062)	(0.067)
Mean of dep. var (control)	0.000	0.000	0.000
R-squared	0.348	0.107	0.183
Observations	2,280	2,280	2,280
Strata FE	Yes	Yes	Yes
Baseline controls	Yes	Yes	Yes
Dep. var baseline level	Yes	Yes	Yes

Notes: This table shows the intervention's differential impacts on the primary outcomes by sex. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized average of the self-reported levels of anxiety, stress, and depression (all items of DASS-21); in Column (2) is the standardized sum of the self-report instrument of the Barratt Impulsiveness Scale BIS-11; and in Column (3) is the standardized index of the responses to the 10 questions concerning support for learning/stimulating environment and setting limits from UNICEF's Family Care Indicators instrument. All the regressions include an interaction term between the male indicator and the treatment status indicator. The controls include age in years, the number of girls and boys cared for, and the caregiver's primary, high school, or tertiary—the omitted category—education level. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

6.3 The Program's Impact on Caregiver Violence, Attitudes Toward Child Maltreatment, and Observed Child Behavior

In addition to the aforementioned primary outcomes, this intervention sought to reduce other secondary outcomes, such as violence against children. This expected effect relies on the fact that poor mental health is a major trigger for violence (Spencer et al., 2019). In addition, some negative parenting practices entail the use of violence. Therefore, by increasing awareness about mental distress and how to address it, reducing impulsiveness (primary outcomes), and providing information on positive parenting techniques, we hypothesize that the intervention could promote non-violent behaviors among caregivers (secondary outcomes) in place of violent behaviors[37].

Table 5 summarizes the results from Specification 1, which we use to measure the intervention's impact on the perpetration of physical and psychological violence against children. On average, we find no statistically significant effects on any of these outcomes. These findings may be due to the combination of the intervention's possible unintended negative impact on mental health and positive effects arising from exposure to good parenting practices. Despite how frequently the intervention's text messages were sent, which Cortes et al., 2021 have proven to be the most effective in text-message-based parenting programs aimed at improving parenting engagement, the program overall does not appear to have been

[37] We also acknowledge that a reduction in the use of violence could be attributed to the parenting practices component of the intervention alone.

influential enough to change the caregivers' use of violence against children. Another potential explanation for the lack of effect on violence is that the intervention only provided information; it did not include any kind of mentoring or encouragement for the caregivers. Programs that provide interaction and encouragement have been proven to reduce participant drop-out and improve parenting practices (Cortes et al., 2021; Fricke et al., 2018)[38].

Table 5. The Treatment's Effect on the Secondary Outcomes

	(1)	(2)	(3)
	Total Violence	Physical Violence	Psychological Violence
Treatment	0.007	-0.050	0.027
	(0.039)	(0.038)	(0.040)
	[0.860]	[0.199]	[0.513]
Mean of dep. var (control)	-0.008	0.002	-0.007
R-squared	0.103	0.131	0.078
Observations	2,245	2,270	2,251
Strata FE	Yes	Yes	Yes
Baseline controls	Yes	Yes	Yes
Dep. var baseline level	Yes	Yes	Yes

Notes: This table shows the intervention's estimated impacts on the secondary outcomes. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized index of nine items on negative parenting practices (physical and psychological violence); in Column (2) is the standardized index of the two items on physical violence; and in Column (3) is the standardized index of the seven items on psychological (emotional) violence. The controls include age in years, the number of girls and boys cared for, and the caregiver's primary, high school, or tertiary—the omitted category—education level. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

From our analysis of the intervention's impact on violence against children among male and female caregivers separately, we find a 0.098 SD decrease in the use of physical violence against children among treated female caregivers relative to females in the control group (see Table 6)[39]. This impact is particularly relevant in our context, where female caregivers spend more time with the children and implement more negative parenting practices, including emotional and physical abuse, as shown in Table 2.

[38] As pre-specified in the PAP, we explore the intervention's effects on other outcomes such as tolerance of parental violence and child behavior. We find that the program has no statistically significant effect on any of these outcomes (see Table A2.7).

[39] As we show in the Robustness Checks section, this effect is highly robust to various specifications, the inclusion of controls, and after controlling for a social desirability bias index.

Table 6. Heterogeneous Effects Across the Sexes: Secondary Outcomes

	(1)	(2)	(3)
	Total Violence	Physical Violence	Psychological Violence
i. Treatment	-0.005	-0.098**	0.032
	(0.049)	(0.049)	(0.050)
	[0.214]	[0.174]	[0.743]
ii. Male × treatment	0.029	0.123	-0.011
	(0.082)	(0.078)	(0.084)
	[0.660]	[0.040]	[0.870]
iii. Total effect on men ([*i*] + [*ii*])	0.025	0.025	0.020
	(0.065)	(0.061)	(0.067)
	[0.715]	[0.651]	[0.759]
Mean of dep. var (control)	-0.008	0.002	-0.007
R-squared	0.103	0.132	0.078
Observations	2,245	2,270	2,251
Strata FE	Yes	Yes	Yes
Baseline controls	Yes	Yes	Yes
Dep. var baseline level	Yes	Yes	Yes

Notes: This table shows the intervention's differential impacts on the secondary outcomes by sex. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized index of the nine items on negative parenting practices (physical and psychological violence); in Column (2) is the standardized index of the two items on physical violence; and in Column (3) is the standardized index of the seven items on psychological (emotional) violence. All the regressions include an interaction term between the male indicator and the treatment status indicator. The controls include age in years, the number of girls and boys cared for, and the caregiver's primary, high school, or tertiary—the omitted category— education level. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Could the lack of statistically significant impacts be due to a lack of power? As we discussed before, our survey design's MDE size ranges from 0.083 to 0.114 SD for mental health. Considering the size of detected effects in other studies, this MDE range is sufficient. For example, York et al. (2019) conducted a text message intervention of a similar intensity among parents and detected an 0.156 to 0.269 SD increase in parental involvement in samples ranging from 267 to 536. These studies suggest that our findings are unlikely due to a lack of statistical power but due to differences between the two sexes.

7 Robustness Checks

This section addresses potential concerns regarding the results presented in Section 6, such as experimenter demand effects and social desirability bias. We also show the results of some additional robustness tests.

7.1 Experimenter Demand

Experimenter demand effects are an important concern mentioned in the literature. Because our study focuses on measures subject to measurement error, this issue is relevant. We address this concern in three ways. First, we acknowledge that using self-reported measures to assess mental health status (as

opposed to interviews or clinical assessments, for example) might confound changes in mental distress with changes in respondents' awareness of their mental health status. Therefore, the intervention's estimated negative impact on mental health may reflect how the intervention increased caregiver awareness of mental distress. Although it is impossible to fully rule out this possibility, the widely validated survey instrument DASS-21 asks questions about specific physiological responses to stress, anxiety, and depression (e.g., dry mouth and trembling)—and not about self-perceptions of mental distress—which should attenuate this potential concern (Lovibond and Lovibond, 1996). We, therefore, believe that the observed effects on mental health likely (and, at least, partially) reflect actual changes in mental distress.

Second, we realize that self-reported measures can also be problematic when assessing attitudes and violence perpetration. The participants' responses regarding such a sensitive topic might have been influenced by social desirability bias (Aguero and Frisancho, 2021). This is especially true for an intervention that targets violence[40]. To address this potential concern, we use three approaches. First, we complement direct questions with vignettes to indirectly elicit the respondents' views regarding the use of violent parenting practices[41]. Second, we test the intervention's direct effect on social desirability bias and whether this effect changes by the caregiver's sex. As we show in Table 7, the treatment itself did not impact social desirability overall or by sex. Third, following Dhar et al. (2022) and Asadullah et al. (2021), we test the robustness of all of our results to the inclusion of a social desirability index that captures individual-level propensity to misreport sensitive items as an additional control variable. All results remain similar in magnitude and statistical significance (See Appendix Table A2.8 - Table A2.11). Together these findings suggest that a change in the respondents' willingness to reveal their true mental health status and views about the use of violence across the treatment and control groups is unlikely to explain our findings.

[40] See Sugarman and Hotaling's (1997) meta-analysis.

[41] For a detailed description of each vignette and and how the index was created, see the outcomes list and descriptions in Appendix A1.

Table 7. The Treatment's Effect on Social Desirability

	(1)	(2)
	Social Desirability	
Treatment	0.019	0.057
	(0.076)	(0.099)
Male × treatment		-0.099
		(0.152)
Observations	2,280	2,280
R-squared	0.009	0.009
Mean of dep. var (control)	9.914	9.914
Strata Fixed Effects	Yes	Yes
Baseline controls	Yes	Yes
Dep. var baseline level	No	No

Notes: This table shows the intervention's estimated impacts on the social desirability score. Treatment is a dummy that equals one if the caregiver is randomly assigned to the treatment group and 0 if assigned to the control group. The dependent variable in Column (1) captures the individual-level propensity to misreport sensitive items. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

7.2 Additional Tests

In the PAP, we pre-specified the inclusion of the control variables in the regression model to increase the precision of our estimations. We show that the exclusion of these covariates does not change our results. As presented in Appendix Table A2.13 - Table A2.16, all estimation results remain similar in magnitude and statistical significance after excluding the control variables.

Second, our findings related to heterogeneity by sex remain unchanged when we conduct the split sample analysis, as we show in Table A2.17 - Table A2.19 in the Appendix. This is consistent with the fact that we purposely designed our experiment to detect effects by sex, as evidenced by our large sample sizes for both men and women. Moreover, the statistical significance of our results remains unchanged when we calculate *p*-values through randomization inference[42].

8 Mechanisms

This section explores two mechanisms that might underlie the detrimental effects of the intervention on caregivers' mental health and interactions with their children and the heterogeneous results by caregiver gender: economic deprivation and interactions between partners[43]. We acknowledge that these findings are only suggestive evidence. Still, we think they are worth exploring because they can serve as a starting point for new academic and policy-relevant research avenues.

[42] Appendix Table A2.17 and Table A2.19 present these results along with the respective *p*-values in brackets.

[43] Although this analysis is not pre-specified in the PAP, we consider it essential to understand the main detected effects. We explored alternative hypotheses (e.g., total number of children, gender ratio of children residing in the household, child's age, etc.), but we did not find consistent evidence of potential alternative mechanisms that could explain our results.

8.1 Limited Attention and Economic Deprivation

The pandemic affected households' economic security and created a highly stressful domestic environment for many (Robillard et al., 2020; Salari et al., 2020; Lakhan et al., 2020). One of the largest comparative studies that examines the pandemic's economic impact found widespread declines in employment and income in nine developing countries, where an average of 68 percent of households experienced an income drop (Egger et al., 2021)[44]. Economic deprivation has been shown to limit cognitive space and bandwidth (Mullainathan and Shafir, 2013; Mani et al., 2013; Haushofer and Fehr, 2014; Schilbach et al., 2016; Ridley et al., 2020). In the extremely challenging context of a pandemic and economic deprivation, the addition of even a relatively minor task such as reading the intervention messages might have increased the caregivers' stress. Although participants could drop out of the intervention at any time or simply not open the messages, their interest in the material or their desire to improve their parenting practices might have prevented them from doing so, thus creating an additional cognitive burden.

We assess the empirical importance of this mechanism by examining if the intervention's impact varied based on the extent of the caregivers' economic deprivation. To do so, we construct a dummy variable indicating whether the caregiver reported (at baseline) that his or her household did not have enough money for food, health and education, home services, and clothes and gifts during the pandemic[45]. In our regression model, we interact this dummy variable with the treatment indicator to estimate the difference in the treatment effect between those with the highest level of economic deprivation and those with either less or no deprivation. Table 8 reports the results. We observe that the treatment led to a significantly higher increase in mental distress among those who reported the highest level of economic deprivation. The 0.248 SD difference is large and statistically significant. While the intervention had no statistically significant effect on mental distress among the least deprived, it led to a 0.217 SD increase for those most deprived relative to similarly economically deprived caregivers in the control group.

[44] These authors also document that household coping strategies and government responses were widely insufficient, leading to generalized food insecurity and worse economic conditions even three months into the crisis.

[45] Table 1 shows descriptive statistics for each of the questions considered to create this indicator variable. At baseline, caregivers were asked if they had enough money for different household expenses during the pandemic. Among this group, 75 percent responded not having enough money for food, 66 percent indicated not having enough funds for health and education, 38 percent reported not having enough financial means for basic services, and 90 percent said they lacked money for clothes and gifts. Thirty percent of households indicated not having enough money for all four categories.

Table 8. Heterogeneous Effects by Economic Deprivation: Primary Outcomes

	(1) Mental Health Distress	(2) Impulsiveness	(3) Positive Caregiver–Child interactions
i. Treatment	-0.032	0.005	-0.048
	(0.040)	(0.049)	(0.049)
ii. Living with a partner	-0.032	0.075	0.071
	(0.053)	(0.060)	(0.058)
iii. Living with a partner × treatment	0.248***	-0.034	-0.049
	(0.077)	(0.086)	(0.086)
iv. Total effect on caregivers living with a partner ([*i*] + [*iii*])	0.217***	-0.029	-0.097
	(0.065)	(0.071)	(0.071)
Mean of dep. var (control)	0.003	-0.004	0.010
R-squared	0.352	0.109	0.182
Observations	2,172	2,172	2,172
Strata Fixed Effects	Yes	Yes	Yes
Baseline controls	Yes	Yes	Yes
Dep. var baseline level	Yes	Yes	Yes

Notes: This table shows the intervention's differential impacts on the primary outcomes by economic deprivation. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized average of the self-reported levels of anxiety, stress, and depression (all items of DASS-21); in Column (2) is the standardized sum of the self-report instrument of the Barratt Impulsiveness Scale BIS-11; and in Column (3) is the standardized index of the responses to the ten questions concerning support for learning/stimulating environment and setting limits from UNICEF's Family Care Indicators instrument. The variable Economic Deprivation is a dummy that equals one if the individual responds that he or she has not had enough money for food, home services, education, and others things since the pandemic began. All the regressions include an interaction term between the economic deprivation indicator and the treatment status indicator. The controls include age in years, the number of girls and boys cared for, and caregiver's primary, high school, or tertiary—the omitted category—education level. The reduction in the sample size is because the Economic Deprivation variable contains missing values. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

8.2 Interactions between Partners

The presence of a partner in the house also might have mediated the intervention's impact on our outcomes of interest. Partner quality is an important determinant of caregiver mental health (Bendini and Dinarte, 2020; Pico-Alfonso, 2005; Taylor et al., 2009), and it influences the relationship between caregivers and their children. For example, Bendini and Dinarte (2020) show that a low-quality partner in the house (a heavy drinker, particularly) worsens the effect of maternal mental health on child development. The intervention's focus on positive parenting, which stresses the importance of spending quality time with children and being aware of their emotions, might have changed the caregiver's expectations of the partner's role in child-rearing and the distribution of parenting duties. If a treated caregiver was unable to communicate these revised expectations to the partner effectively, then the intervention could have created a wedge between the two partners, increased negative interactions within the household, and affected the caregiver's mental health.

In light of this hypothesis, we assess if the intervention's impact varied based on whether the treated caregivers lived with a partner or not. Table 9 presents the results of this analysis. We find suggestive evidence that the intervention's impact on caregiver-child interactions differed significantly between caregivers who lived with a partner and those who did not. The difference in the treatment effect was -0.167 SD. Although the intervention did not have a precise impact on caregiver-child interactions among caregivers who did not live with a partner, it significantly reduced caregiver-child interactions among

those living with one by -0.091 SD. Moreover, we also find that caregivers living with a partner experienced a negative impact on their mental health. Among these caregivers, the intervention increased mental distress by 0.094 SD.

Table 9. Heterogeneous Effects by the Presence of a Partner

	(1) Mental Health Distress	(2) Impulsiveness	(3) Positive Caregiver–Child interactions
i. Treatment	-0.032	-0.037	0.076
	(0.629)	(0.605)	(0.297)
ii. Living with a partner	-0.117**	-0.094	0.158**
	(0.039)	(0.138)	(0.010)
iii. Living with a partner × treatment	0.125	0.043	-0.167*
	(0.100)	(0.620)	(0.052)
iv. Total effect on caregivers living with a partner ([*i*] + [*iii*])	0.094**	0.005	-0.091**
	(0.039)	(0.047)	(0.046)
Mean of dep. var (control)	0.000	0.000	0.000
R-squared	0.349	0.108	0.185
Observations	2,280	2,280	2,280
Strata Fixed Effects	Yes	Yes	Yes
Baseline controls	Yes	Yes	Yes
Dep. var baseline level	Yes	Yes	Yes

Notes: This table shows the intervention's differential impacts on the primary outcomes by the presence of a partner. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized average of the self-reported levels of anxiety, stress, and depression (all items of DASS-21); in Column (2) is the standardized sum of the self-report instrument of the Barratt Impulsiveness Scale BIS-11; and in Column (3) is the standardized index of the responses to the ten questions concerning support for learning/stimulating environment and setting limits from UNICEF's Family Care Indicators instrument. The Living with a Partner variable is an indicator variable that equals one if the respondent indicated living with a partner at baseline. The regressions include an interaction term between the living with a partner indicator and the treatment status indicator. The controls include age in years, the number of girls and boys cared for, and the caregiver's primary, high school, or tertiary —the omitted category—education level. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

We cannot directly assess exactly how the presence of a partner generates these heterogeneous effects–that is, with the available information, it is impossible to test, among other things, partner quality, communication of expectations about parenting roles, or the distribution of duties among partners. For this reason, we argue that these results suggest that the presence of a partner plays a potentially important role in the intervention's impact and may increase negative interactions within the household due to changes in the caregivers' expectations about parenting roles and the distribution of duties. Further research is necessary to test these specific hypotheses.

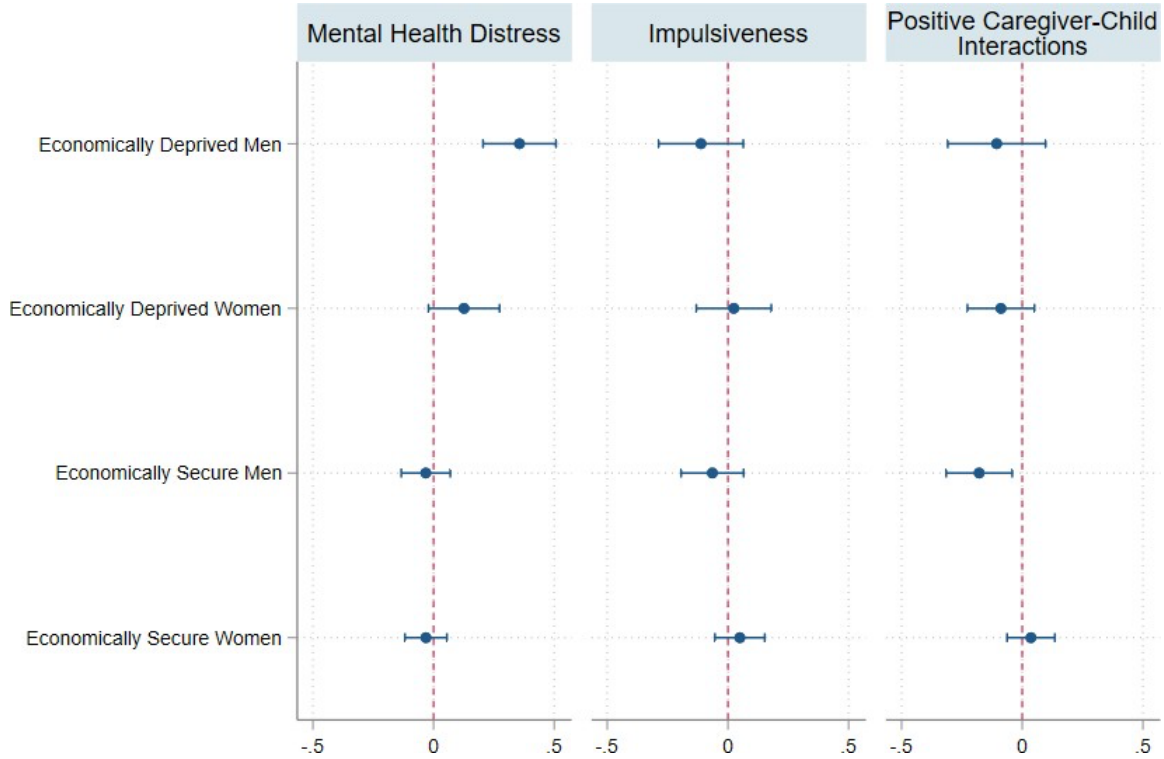
8.3 What Can Explain the Differential Effects by Sex?

The analysis presented in Section 6 shows that the intervention's impacts on mental distress, positive caregiver-child interactions, and violence were experienced mostly by male caregivers. Sections 8.1 and 8.2 show that the extent of economic deprivation and cohabitation with a partner also moderate the intervention's effect. We now assess how the differential impact across the two sexes relates to these

two channels. Since we do not have experimental variation on these attributes, we acknowledge that they provide only suggestive evidence that could help us better understand the mechanisms or mediating factors at play.

We assess how the intervention's impact differed by sex and severity of economic deprivation (at baseline) and examine its differential effect based on the presence or absence of a partner. In both cases, we estimate a triple-difference regression model by interacting the treatment status with a variable indicating whether the caregiver is male, with an indicator for the corresponding category, and a triple interaction term. This specification allows us to compare the intervention's impact across four different groups of caregivers, as shown in Figure 1 and Figure 2[46]. Overall, the results indicate that characteristics such as caregiver sex, household economic situation, and cohabitation with a partner influenced the intervention's effects. We also observe that the degree to which economic and family circumstances moderate the intervention's impact depends on the caregiver's sex. The intervention's impact on male caregivers varies greatly depending on the extent of economic deprivation and whether such men live with a partner, which even leads to negative effects. In women, the differences in the intervention's impact based on economic deprivation and cohabitation with a partner are less pronounced.

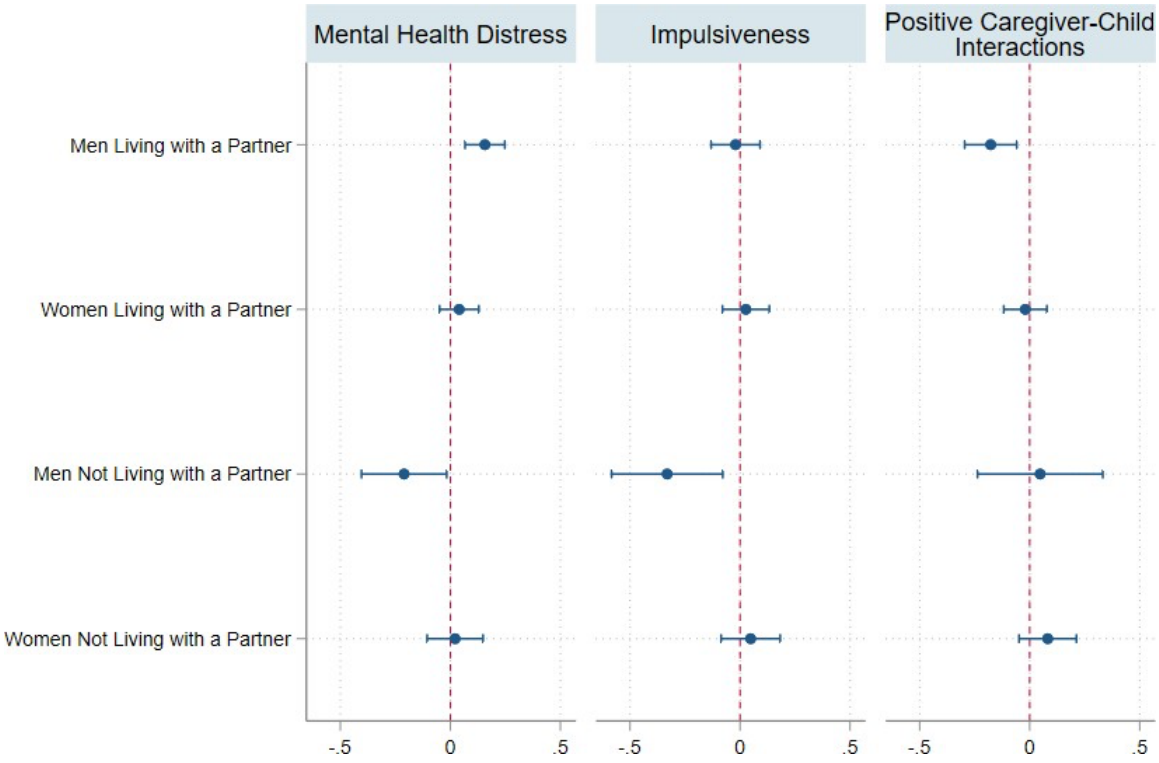
Figure 1. Heterogeneous Effects by Sex and Economic Deprivation



Notes: This figure shows the heterogeneous impacts by sex and economic deprivation on the primary outcomes. We report the regression coefficients in Table A2.20. Confidence intervals indicate statistical significance at 5%.

[46] Table A2.20 and Table A2.21 correspond with Figure 1 and Figure 2, respectively.

Figure 2. Heterogeneous Effects by Sex and Family Structure



Notes: This figure shows the heterogeneous impacts by sex and family structure on the primary outcomes. We report the regression coefficients in Table A2.21. Confidence intervals indicate statistical significance at 5%.

9 Discussion and Concluding Remarks

Parenting is a challenging undertaking. Much of parents' knowledge about parenting styles and behaviors comes informally through their social and familial interactions, which can perpetuate sub-optimal practices and even violence. As the growing body of literature on the importance of parental investments reveals (Cunha and Heckman, 2007), poor parenting practices can have broad detrimental effects on child development. This important issue has become a central focus of development policy. To promote and implement the best policies related to parenting, an accurate understanding of the effects of early childhood and parenting interventions that seek to improve the quality of parent-child interactions (Britto et al., 2017; Doepke and Zilibotti, 2017, 2019) is necessary.

We study the impact of a digital program that promotes positive parenting and parental stress management in El Salvador. An NGO with vast experience administering mental health programs in El Salvador and Central America developed the program. The digital content of the intervention (delivered via SMS/WhatsApp messages) is similar to that of other successful interventions (Cluver et al., 2018; Carneiro et al., 2019). Given the widespread availability of mobile phones (even in low-income settings), this mode of delivery offers a low-cost, scalable, and effective way to improve the well-being of caregivers and children alike, particularly in severely constrained settings such as the COVID-19 lockdowns.

Contrary to what we initially expected, we find that, on average, the intervention increased the mental distress of caregivers. Despite this finding, we observe no evidence that this detriment translated to the caregivers' children or their relationship with them. Overall, we also document no significant impact on caregiver-child interactions or child maltreatment. However, we find that the intervention's effects differed substantially by sex. We find that primarily male caregivers experienced an increase in mental distress, while no such significant change occurred among females. Furthermore, we observe that female caregivers decreased their use of physical violence toward their children. Finally, we note that family structure and the severity of economic deprivation greatly moderated the intervention's impact, especially among male caregivers.

We explain the intervention's average negative effects on mental health as caregiver backlash within the context of a pandemic that confined families to their homes and disrupted family dynamics, leaving parents mentally, psychologically, and financially stretched and stressed. As observed in the literature, familial and cultural contexts can greatly moderate the impact of shocks and interventions, which leads to unintended consequences. In our case, the negative response is associated with caregiver sex, family structure, and economic deprivation, which is consistent with prevailing theories linking the latter to caregivers' cognitive overload and mental health (Mullainathan and Shafir, 2013; Mani et al., 2013; Asadullah et al., 2021; Schilbach et al., 2016; Ridley et al., 2020). These results provide relevant insights for future research and policy interventions. As for current policy interventions, there is a major evidence gap in terms of parenting policies that reduce child maltreatment (Pundir et al., 2020). We show that addressing this problem with a one-size-fits-all program can have unintended negative consequences that could potentially be avoided by tailoring the intervention to the context and the specific needs of the beneficiaries. Our study highlights some caregiver and household characteristics that can substantially moderate the effects of interventions and should be carefully considered in their design.

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Appendix

A1 Outcomes List and Descriptions

Primary Outcomes

A1.1 Mental health

We use the Depression, Anxiety, and Stress Scale (DASS-21) instrument to measure mental distress (Lovibond and Lovibond, 1996). This instrument includes 21 items broken down into three sets of seven questions, each section of which measures depression, anxiety, and stress, respectively. Each of the seven items is measured on a scale of 0–3 points (Never, Rarely, Almost Always, or Always). We compute the standardized average of the seven items as an index for each set of questions. We also compute the standardized average of all 21 items as an aggregate index. We use the mean and standard deviation of the control group for the standardization. The 21 items included in the DASS-21 are as follows:

No.	Item	Emotion	Original Version
1	Le costó mucho relajarse	Stress	I found it difficult to wind down
2	Se dio cuenta que tenía la boca seca	Anxiety	I was aware that my mouth was dry
3	No podía tener ningún sentimiento positivo	Depression	It seemed like I could not experience any positive feelings at all.
4	Le costó respirar	Anxiety	I experienced difficulty breathing (e.g., excessively rapid breathing, breathlessness without physical exertion.)
5	La costó hacer cosas	Depression	I found it difficult to find motivation to do things
6	Reaccionó de forma exagerada en ciertas situaciones	Stress	I tended to overreact in certain situations
7	Sintió que las manos le temblaban	Anxiety	I experienced trembling (e.g., in the hands)
8	Sintió que las manos le temblaban	Stress	I experienced a lot of nervous energy
9	Estaba preocupado/a por situaciones en las cuales podría hacer el ridículo	Anxiety	I was worried that I might panic in certain situations and make a fool of myself
10	Sintió que no tenía ninguna razón para vivir	Anxiety	I have felt that I have had nothing to look forward to
11	Noto que estaba muy agitado/a	Depression	I found myself becoming agitated
12	Le costó mucho calmarse	Stress	I found it difficult to relax
13	Se sentió triste o deprimido/a	Stress	I felt down and sad
14	Fue intolarante con las cosas que le distraían o que le desconcentraban	Depression	I was impatient with anything that prevented me from continuing whatever I was doing
15	Sintió que iba a tener un ataque de miedo	Anxiety	I felt close to panicking
16	Sintió que no podía entusiasmarse por nada	Depression	I was unable to become enthusiastic about anything
17	Sintió que no valía mucho como persona	Depression	I felt I had low self-worth
18	Sintió que estaba muy irritable	Stress	I felt that I was rather oversensitive
19	Sintió el corazón agitado sin haberse esforzado	Anxiety	I could feel my heart beating without physical exertion (i.e., heart palpitations).
20	Tuvo miedo sin razón aparente	Anxiety	I felt scared without any good reason
21	Sintió que la vida no tenía ningún sentido	Depression	I felt that life was meaningless

A1.2 Impulsiveness

We use the Barratt Impulsiveness Scale BIS-11 (Patton et al., 1995) to measure impulsiveness. The BIS-11 includes 15 items, each measured on a scale of 1–4 points (Never, Rarely, Almost Always, or Always). We calculate the standardized sum of the 15 items as an index and use the mean and standard deviation of the control group for the standardization. The BIS-11 items are as follows:

No.	Item	Original version
1	Actué impulsivamente	I act impulsively
2	Hice las cosas en el momento que se me ocurrieron	I act spontaneously
3	Hice las cosas sin pensarlas	I do things without thinking
4	Dije las cosas sin pensarlas	I say things without thinking
5	Compré cosas impulsivamente	I buy things impulsively
6	Busqué un mejor trabajo	I change jobs
7	Hice planes para el futuro	I am future-oriented
8	Ahorré con regularidad	I save regularly
9	Planifiqué mis tareas con cuidado	I plan tasks carefully
10	Pensé las cosas cuidadosamente	I am a careful thinker
11	Me sentí muy inquieto/a al tener que escuchar hablar a alguien	I am restless when having to listen to someone else speak
12	Se me hizo difícil estar quieto/a por largos periodos de tiempo	It is difficult for me to sit still for long periods of time
13	Me concentré fácilmente	I concentrate easily
14	Pude enfocar mi mente en una sola cosa por mucho tiempo	I can only think about one thing at a time
15	Me aburrió pensar en algo por demasiado tiempo	I get bored easily when I think about something for a long time

A1.3 Positive caregiver-child interactions

We use the ten questions concerning support for learning/stimulating environment and setting limits domains from the Family Care Indicators instrument developed by UNICEF (Kariger et al., 2012) to measure positive caregiver-child interactions. Following Anderson (2008), we construct a standardized index using inverse covariance weighting. We use the mean and standard deviation of the control group for the standardization. The items used to measure this outcome according to the scale (Never, One Day, Two or Three Days, and Four or More Days) are as follows:

No.	Item	Original version
1	Leyó libros o imágenes en libros	In the past week the caregiver read books/showed images to the child(ren)
2	Contó cuentos	In the past week the caregiver told stories/tales to the child(ren)
3	Le cantó canciones	In the past week the caregiver sang songs to the child(ren)
4	Jugaron	In the past week the caregiver played with the child(ren)
5	Usaron tiempo en actividades de aprendizaje, como contar, nombrar objetos o dibujar	In the past week the caregiver shared learning time with the child(ren)
6	Hicieron labores de la casa como cocinar, limpiar, cuidar a los animales, u otras similares	In the past week the caregiver did chores with the child(ren).
7	Le enseñó lecciones de la iglesia, leyeron la biblia, etc.	In the past week the caregiver gave catechism lessons/read the Bible to the child(ren)
8	Se sentó con el niño o niña a comer juntos durante el almuerzo o cena	In the past week the caregiver sat down to share a meal with the child(ren)
9	Alimentó al niño	In the past week the caregiver fed the child(ren)
10	Hablaron durante las comidas	In the past week the caregiver talked with the child(ren) during meals

Secondary Outcomes

A1.4 Parenting practices and violence perpetration

We use an adapted version of the International Society for Prevention of Child Abuse and Neglect's Screening Tool for Parents (ICAST-P) to measure child abuse[47]. The original instrument includes 38 items (forms) of violence. We shorten this instrument to eight items. To improve our measure of child abuse, we complement this self-reported instrument with vignettes that enable us to solicit caregiver responses to hypothetical situations involving violence. Specifically, we presented caregivers with two fictional stories about regular caregiver-child interactions. We use the same vignettes as the module on tolerance towards abusive parenting practices. After each story, we surveyed the caregivers by presenting eight items (forms) of abuse that they might use against their child(ren) if they were characters in the hypothetical scenarios. We chose each item of abuse in this module in accordance with the ICAST-P. The responses reflect a five-point Likert scale. We explore three outcomes and estimate a standardized index of nine negative parenting techniques that include physical and psychological abuse. We analyze two separate aspects of negative parenting. First, we examine a standardized index of the two items on physical abuse, and, second, a standardized index of the seven items on psychological (emotional) violence. For all outcomes we follow Anderson (2008) and use inverse covariance weighting. The items included are as follows:

No.	Item	Form of Parenting	Original Version
		Direct Caregiver Questions	
1	Prohibirle que se mueva de lugar	Psychological violence	Force the child to stay in one place in a position that was painful or humiliating as a means of punishment
2	Pegarle en la mano cuando toca algo que no debe	Psychological violence	Strike the child on head with a fist or the back of the hand
3	Decirle "no" y explicarle por que	Positive parenting	Explain to the child why something that the child did was wrong
4	Hacer que se siente o mandarlo a otro cuarto para que tenga un tiempo a solas	Psychological violence	Lock the child in a confined space or a dark room
5	Gritarle	Psychological violence	Shout, yell, or scream at the child very loudly and aggressively
6	Quitarle los objetos y ponerlos en un lugar donde no los alcance	Positive parenting	Take away the child's pocket money or other privileges. Withhold something the child likes
7	Distraerlo con otras actividades	Positive parenting	Give the child something else to do in order to reorient the child's attention
8	Ofenderlo(a) o humillarlo(a)	Psychological violence	Insult the child by calling the child dumb, lazy, etc.
		Vignettes	
9	Quitar los juguetes o cualquier cosa que la niña o el niño le guste	Positive parenting privileges?	Take away the child's pocket money or other privileges. Withhold something the child likes. Give the child something else to do in order to reorient the child's attention

[47] This is an internationally validated tool to measure child abuse (Meinck et al., 2020). When we developed this module, a scientific understanding of the best way to survey parents remotely on such a sensitive topic were limited. Due to the scarcity of approaches, we include these items as an exploratory outcome. The module follows the Conflict Tactics Scale methodology; therefore, the coding for each item is a dummy that equals one if the respondent perpetrates a specific form of violence.

10	Gritarle para que obedezca	Psychological violence	Shout, yell, or scream at the child very loudly and aggressively
11	Llamarla ”desobediente” ,” malcriada” o ” torpe	Psychological violence	Insult or humiliate the child by calling the child dumb, lazy, etc
12	Pegarle con la palma de la mano o un objeto	Psychological violence	Hit the child elsewhere (not buttocks) with an object such as a stick, broom, cane, or belt
13	Encerrarla o dejarla sin alimentos por un tiempo	Psychological violence	Intentionally deprive the child of food or drink even though there is a sufficient amount for everyone as a means of punishment
14	Explicarle por qué el comportamiento no es el adecuado	Positive parenting	Intentionally deprive the child of food or drink even though there is a sufficient amount for everyone as a means of punishment
15	Pedirle que no lo haga nuevamente	Positive parenting	Tell the child to start or stop doing something
16	Preguntar por qué la niña actuó de esa manera	Positive parenting	Ask the child why the child acted in a particular way
17	No hacer nada	Neutral	Do nothing.

Notes: The vignettes used to illicit the responses regarding violence perpetration are presented in the Table of Section A1.5 below. For each vignette respondents were asked: ”How appropriate do you consider the following responses in the event that your child acted in the same way as [Character Name]?” Respondents were given a list of options that included items 9-17. Their responses were based on a 5-item Likert scale.

Exploratory Outcomes

A1.5 Tolerance towards violent parenting

We measure tolerance of violence parenting practices using the responses solicited from two sets of questions. First, we presented two fictional stories about typical violent practices that could hypothetically take place in the studied context described. After each story, we asked the respondents two questions about how justifiable the fictional caregiver's behavior is. The respondents' ratings were based on the following scale: Inadequate, Less Inadequate, Neutral, Somewhat Adequate, and Adequate. Second, we asked direct questions about the acceptability of child abuse perpetrated by fathers, mothers, and teachers, and whether the respondents think physical punishment is an effective disciplinary tool. For each question, the respondents could answer either Yes or No. We followed (Anderson, 2008), so our main outcome was a standardized index using inverse covariance weighting. We used the mean and standard deviation of the control group for the standardization. The items used to measure this trait are as follows:

No.		Item	Original Version
	Vignettes Baseline		
1	Es un día normal de cuarentena y la familia se prepara para almorzar. Todos están sentados a la mesa excepto Rebecca quien tiene 8 años. Roberto su padre, quien ha estado desempleado desde hace un par de meses, la llama varias veces, pero ella no le escucha o decide no obedecer, por lo que no responde a sus llamadas durante casi 30 minutos para ir al comedor y almorzar. Roberto se altera mucho y, como cree que la actitud de su hija debe ser corregida, le da una palmada y la lleva al comedor para hacerle entender que su desobediencia no puede repetirse.	Considerando lo que pasó en este relato ¿Cómo considera que fue la reacción de Roberto ante el comportamiento de su hija Rebecca?	How would you rate Roberto's reaction to the behavior of his daughter Rebecca?
2	Marcos y Stephanie son hermanos y están jugando dentro de la casa. Sus padres están cansados e irritables por el ruido que hacen los niños, ya que la casa es pequeña, pero los aguantan ya que prefieren que sus hijos estén dentro y no fuera de la casa. De repente el juego se sale de con- trol y Marcos le pega con la pelota al televisor, lo bota y lo arruina. Su madre, Ana, se enfureció muchísimo, ya que recién habían comprado el televisor y todavía lo seguían pagando en cuotas. Ana se molestó tanto que perdió el control y empezó a gritarle a sus hijos, diciéndoles que ya no los soportaba, los agarró de los brazos y los tiró al piso.	Considerando lo que pasó en este relato ¿Cómo considera que fue la reacción de Ana ante el comportamiento de sus hijos Marcos y Stephanie?	How would you rate Ana's reaction to the behavior of her children Marcos and Stephanie?
	Vignette Endline		
1	Ya es la hora de cenar en la casa de Paco. Paco estuvo trabajando todo el día y María su esposa estuvo todo el día con los niños. Todos están sentados a la mesa excepto Ana, la hija de Paco y María. Ana tiene 10 años y a veces no hace todo lo que sus padres le piden. María y Paco están cansados por todo lo que está pasando con la pandemia, y hoy María cocinó algo rico para que todos pudieran relajarse un poco. Ana se ha quedado viendo la tele y no se acerca a comer, a pesar de que sus padres le han estado llamando. Paco se comienza a alterar mucho, ya que está muy cansado. El cree que la actitud de su hija no está bien, por lo que le grita, le da una palmada y la lleva a la mesa para hacerle entender que no debe ser desobediente.	Considerando lo que pasó en este relato ¿Cómo considera que fue la reacción de Paco ante el comportamiento de su hija Ana?	How would you rate Paco's reaction to the behavior of his daughter Ana?

Direct Questions			
1		¿Cree usted que es aceptable que un padre, madre o encargado(a), cuidador(a) castigue físicamente a un niño(a) cuando él(ella) se porta mal?	Do you think that it is acceptable for a caregiver to use abuse in order to discipline a child?
2		¿Cree usted que es aceptable que el(la) docente castigue físicamente a un niño(a) cuando él(ella) se porta mal?	Do you think it is acceptable for a teacher to use abuse in order to discipline a child?
3		¿Piensa que el castigo físico es un método de corrección efectivo?	Do you think physical punishment is an effective way to discipline children?

A1.6 Child behavior

We measure child behaviour using the internalizing/externalizing behaviors sections of the parent/caregiver report survey developed by the World Bank. This module includes seven items to which the caregiver responds either Yes or No. The questions concern bad child behaviors that occurred within the past three months and were posed only to parents with children aged three and up, following the recommendations of those who developed the module. The data obtained from this survey was collected at endline only. We follow Anderson (2008) and construct a standardized index using inverse covariance weighting and the mean and standard deviation of the control. The items included are as follows:

No.	Item	Original version
1	Llorando mucho	Frequent crying
2	Hablando con mayor dificultad de la habitual	Speaking with greater difficulty than usual
3	Aislado(a) o muy callado(a)	Isolated or very quiet
4	Irritable (se ha molestado o enojado fácilmente por cosas que le pasan)	Irritable (easily upset or angry about things that happen to you)
5	Rebelde (no respeta las reglas de la casa)	Rebel (does not respect the house rules)
6	Destruyendo o dañando cosas	Destroying or damaging things
7	Tranquilo/a. No nota ningún cambio de comportamiento (Revertido)	At peace. Experience no changes in behavior (reversed)

A1.7 Social desirability

We use the short form of 13 questions to measure the individual-level propensity to misreport sensitive items, following Crowne and Marlowe (1960) and Dhar et al. (2022). Due to the time limits of the baseline survey instrument, we included the social desirability module at endline. Each question allows for two possible answers: Yes or No. The outcome is the sum of the positive responses to the following items:

No.	Item	Original Version

1	A veces se me hace difícil ponerme a trabajar sin que me pidan que lo haga (Revertido)	Sometimes it is difficult for me to continue with my work without being encouraged to do so
2	A veces me siento frustrado(a) o triste porque las cosas no salen como yo quiero (Revertido)	Sometimes I feel frustrated or sad when things do not go my way
3	En algunas ocasiones, he dejado de intentar hacer algo porque he pensado que soy poco capaz de hacerlo (Revertido)	On a few occasions I have given up doing something because I thought too little of my ability
4	En ocasiones quiero llevarle la contraria a la gente con autoridad, aunque sepa que tienen razón (Revertido)	Sometimes I have felt like rebelling against authority figures even when I know they are right
5	Sin importar con quien este´ hablando siempre escucho con atención	I always listen carefully to whomever I am talking to
6	Ha habido ocasiones en que me he aprovechado de alguna persona (Revertido)	I have taken advantage of others on ocassion
7	Siempre estoy dispuesto/a aceptar cuando cometo un error	I am always willing to admit when I make a mistake
8	En ocasiones trato de desquitarme o vengarme en lugar de perdonar u olvidar (Revertido)	Sometimes I try to get even rather than forgiving and forgetting
9	Siempre soy amable, aun con la gente que no es tan agradable	I am always courteous, even to people who are disagreeable
10	Nunca me molesto cuando la gente tiene ideas que son muy distintas a las mías	I have never been bothered when people expressed thoughts or ideas that are very different from mine
11	A veces he sentido muchos celos de la buena suerte de otras personas (Revertido)	At times I have been quite jealous of the good fortune of others
12	Algunas veces me irrito porque la gente me pida favores (Revertido)	Sometimes I am irritated by people who ask me for favors
13	De forma consciente he dicho cosas que han herido los sentimientos de otra persona (Revertido)	I have deliberately said something to hurt someone else's feelings

A1.8 Sociodemographic information and additional covariates

		Categorías de respuesta		
Fecha de nacimiento	Día/Mes/Año			
Género	Mujer	Hombre		
Nivel educativo más alto que ha alcanzado	Kinder (4-5) Preparatoria 1er grado 2do grado 3er grado 4to grado 5to grado 6to grado 7mo grado 8vo grado 9no grado 1er año bachto 2do año bachto 3er año bachto Técnico superior incompleto Técnico superior completo Universitario incompleto Universitario completo			
Durante los últimos 6 meses, ha desempeñado algún trabajo, ya sea como empleado o por cuenta propia	Sì, empleado	Sì. empleado por cuenta propia	No	No sabe
Realizaba algún trabajo/ocupación/oficio remunerado al momento que el gobierno declaro´ la cuarentena obligatoria por COVID-19 el 22 de Marzo	Si	No	No sabe	No responde
Niños que están bajo su cuidado o responsabilidad				
Niñas	Número			
Niños	Número			
Horas en promedio que el niño o niña pasa con usted ahora que las clases presenciales están suspendidas	Número (0-12)			
Género del hijo/hija con más edad que tenga 8 años o menos	Género del niño/niña			

El niño/a esta matriculado/a en alguna escuela o colegio	Si	No		
Horas al día que su hijo o hija vio programas en la televisión o videos en el celular para divertirse	Número (0-24)			
Horas al día que su hijo o hija vio programas en la televisión o videos en el celular para estudiar/hacer tareas	Número (0-24)			
Personas que viven en su casa	Número			
Escriba el número de personas al lado del parentesco que aplique para las personas que viven en su hogar				
Esposo/a o compañero/a de vida	Número			
Hijas o hijos solo de su pareja	Número			
Hija o hijo	Número			
Papa	Número			
Mama	Número			
Suegro	Número			
Suegra	Número			
Hermana o	Número			
Nuera / yerno	Número			
Nieta o	Número			
Sobrina a	Número			
Otros	Número			
Desde el inicio de la cuarentena, considera que en su casa hay dinero suficiente para:				
Comida/alimentación	Si	No	No sabe	No responde
Servicios importantes como salud, gastos educativos	Si	No	No sabe	No responde
Servicios básicos como agua, electricidad, gas	Si	No	No sabe	No responde
Otros bienes o servicios como ropa, recreación, regalos	Si	No	No sabe	No responde

A2 Appendix Tables and Figures

List of Tables

List of Figures

Table A2.1. Summary of Stratification Sample

	Mode of Data Collection			
	Facebook	Glasswing Communities	SMS/WhatsApp	Total
Female Caregiver	747	78	1,035	1,860
Male Caregiver	312	11	920	1,243
Total	1,059	89	1,955	3,103

Notes: This table shows the size of each stratum in the sample and recruitment by mode and sex.

Table A2.2. Recall and Information Assimilation Survey Rounds

	Stress Management	Positive Parenting	N
Round 1	Short breathing exercise Turtle technique Deep breathing exercise	Storytelling	204
Round 2	Drop technique Deep breathing exercise	Listen attentively Develop Rapport with Child	204
Round 3	Lemon technique Short breathing exercise Sleep well	Conflict management	100
Round 4	Relaxation technique	Let the Child Win Games Manual activities	151

Notes: This table shows an overview of the techniques surveyed by information assimilation rounds.

Table A2.3. Individual Characteristics and Attrition

	(1)	(2)
	Attrition	
Treatment	0.020	0.081
	(0.016)	(0.126)
Age × treatment		-0.002
		(0.003)
Female × treatment		0.024
		(0.038)
High school (10-12 grades) × treatment		-0.046
		(0.051)
Bachelor or higher × treatment		-0.038
		(0.052)
Always employed × treatment		0.038
		(0.050)
Lost job × treatment		-0.000
		(0.069)
Found job × treatment		0.028
		(0.056)
Girls under 9 years cared × treatment		-0.014
		(0.036)
Boys under 9 years cared × treatment		-0.039
		(0.035)
Oldest child under 9 is female × treatment		0.002
		(0.050)
Child enrolled in school × treatment		0.071*
		(0.040)
Child video/screen time for fun × treatment		-0.001
		(0.006)
Child video/screen time for homework × treatment		-0.002
		(0.006)
Household members × treatment		0.001
		(0.010)
Intergenerational household × treatment		0.000
		(0.040)
Income vulnerability index × treatment		0.006
		(0.015)
Mental health index, std. × treatment		0.001
		(0.019)
Impulsiveness index, std. × treatment		-0.021
		(0.019)
Positive caregiver–child interactions, std. × treatment		-0.002
		(0.018)
Tolerance norms index, std. × treatment		-0.011
		(0.021)
Parenting positive index, std. × treatment		-0.017
		(0.019)
Parenting negative index, std. × treatment		0.303*
		(0.169)
Physical violence, std. × treatment		-0.064
		(0.046)
Psychological violence, std. × treatment		-0.290*
		(0.155)
Individual controls	No	Yes
Strata fixed effects	Yes	Yes
Number of observations	3,103	2,589
P-value for F-test (interactions)		0.947

Notes: The dependent variable in Columns (1)–(2) is a dummy that equals one if the individual did not respond to the follow-up survey. The regression in Column (2) includes the interactions between baseline individual characteristics/outcomes and treatment. All individual variables are included and coefficients are omitted. The sample size in Column 2 is reduced because it contains missing values. We use the F-statistics (interactions) to test the hypothesis of nondifferential attrition between the treatment and control groups.

Table A2.4. Summary Statistics: Information Assimilation Surveys

Variable	N	Mean	Std Dev	Min	Max
Pooled Rounds					
% known stress-management techniques	659	0.50	0.40	0	1
Known stress-management technique (dummy)	659	0.69	0.46	0	1
% known parenting techniques	659	0.81	0.37	0	1
Known parenting technique (dummy)	659	0.85	0.36	0	1
=1 if stressed or very stressed, =0 if somewhat or not stressed	659	0.51	0.50	0	1
=1 if quality of interaction is very easy or easy, =0 if hard or very hard	659	0.62	0.49	0	1
Treatment Group	659	0.47	0.50	0	1
No. of monitor surveys	659	1.15	0.39	1	3
Wave 1					
% known stress-management techniques	204	0.57	0.37	0	1
Known stress-management technique (dummy)	204	0.77	0.42	0	1
% known parenting techniques	204	0.63	0.48	0	1
Known parenting technique (dummy)	204	0.63	0.48	0	1
=1 if stressed or very stressed, =0 if somewhat or not stressed	204	0.57	0.50	0	1
=1 if quality of interaction is very easy or easy, =0 if hard or very hard	204	0.79	0.41	0	1
Treatment Group	204	0.48	0.50	0	1
No. of monitor surveys	204	1.00	0.00	1	1
Wave 2					
% known stress-management techniques	204	0.58	0.36	0	1
Known stress-management technique (dummy)	204	0.81	0.39	0	1
% known parenting techniques	204	0.95	0.15	1	1
Known parenting technique (dummy)	204	1.00	0.00	1	1
=1 if stressed or very stressed, =0 if somewhat or not stressed	204	0.45	0.50	0	1
=1 if quality of interaction is very easy or easy, =0 if hard or very hard	204	0.10	0.30	0	1
Treatment Group	204	0.48	0.50	0	1
No. of monitor surveys	204	1.09	0.28	1	2
Wave 3					
% known stress-management techniques	100	0.59	0.31	0	1
Known stress-management technique (dummy)	100	0.92	0.27	0	1
% known parenting techniques	100	0.76	0.43	0	1
Known parenting technique (dummy)	100	0.76	0.43	0	1
=1 if stressed or very stressed, =0 if somewhat or not stressed	100	0.57	0.50	0	1
=1 if quality of interaction is very easy or easy, =0 if hard or very hard	100	0.93	0.26	0	1
Treatment Group	100	0.45	0.50	0	1
No. of monitor surveys	100	1.28	0.51	1	3
Wave 4					
% known stress-management techniques	151	0.25	0.44	0	1
Known stress-management technique (dummy)	151	0.25	0.44	0	1
% known parenting techniques	151	0.91	0.21	0	1
Known parenting technique (dummy)	151	0.99	0.11	0	1
=1 if stressed or very stressed, =0 if somewhat or not stressed	151	0.46	0.50	0	1
=1 if quality of interaction is very easy or easy, =0 if hard or very hard	151	0.88	0.33	0	1
Treatment Group	151	0.45	0.50	0	1
No. of monitor surveys	151	1.34	0.54	1	3

Notes: This table shows descriptive statistics of the responses to the four information assimilation survey rounds conducted in a subset of individuals who enrolled in the study at baseline.

Table A2.5. The Treatment's Effect on Caregiver's Assimilation of Information

	(1) Stress Techniques	(2) Stress Techniques	(3) Parenting Techniques	(4) Parenting Techniques
i. Treatment	0.201***	0.237***	0.054**	0.032
	(0.029)	(0.036)	(0.026)	(0.036)
ii. Male x Treatment		-0.085		0.053
		(0.059)		(0.053)
iii. Total Effect on Men ([i] + [ii])		0.152		0.084*
		(0.047)		(0.039)
Mean of dep. var (control)	0.41	0.41	0.79	0.79
Adjusted R-squared	0.174	0.175	0.137	0.136
Observations	659	659	659	659
Wave Fixed Effects	Yes	Yes	Yes	Yes
No. of surveys taken	Yes	Yes	Yes	Yes
Baseline Controls	Yes	Yes	Yes	Yes
Dep. Var. (Baseline Level)	Yes	Yes	Yes	Yes

Notes: This table presents the results from Equation 3. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. The dependent variable in Columns (1)-(2) is the share of stress management techniques implemented by the caregiver in the past week. The dependent variable in Columns (3)-(4) is the share of positive parenting techniques implemented by the caregiver in the past week. All regressions include wave fixed effects. The controls include the number of surveys the respondent has taken, age in years, household size dummies for average, large or small household (large household is the omitted category), caregiver's gender, and caregiver's primary, high school—the omitted category—or tertiary education level. We also control for the baseline mental health level using the standardized index of the DASS score in Columns (1)-(4) and the standardized index of the quality of caregiver-child interactions. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.6. The Treatment's Heterogeneous Effects Across the Sexes: Mental Health Outcomes

	(1) Anxiety (A)	(2) Stress (S)	(3) Depression (D)
i. Treatment	0.004	0.049	0.022
	(0.046)	(0.046)	(0.047)
ii. Male × treatment	0.091	0.059	0.016
	(0.069)	(0.071)	(0.070)
iii. Total effect on men ([*i*] + [*ii*])	0.095*	0.108**	0.039
	(0.051)	(0.053)	(0.052)
Mean of dep. var (control)	0.000	0.000	0.000
Adjusted R-squared	0.315	0.282	0.263
Observations	2,280	2,280	2,280
Strata FE	Yes	Yes	Yes
Baseline controls	Yes	Yes	Yes
Dep. var baseline level	Yes	Yes	Yes

Notes: This table shows the intervention's estimated impacts on the mental health outcomes. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized average of the self-reported levels of anxiety (7 items of DASS-21), in Column (2) is the standardized average of the self-reported levels of stress (7 items of DASS-21), and in Column (3) is the standardized average of the self-reported levels of depression (7 items of DASS-21). All the regressions include an interaction between the male variable and the treatment status. The controls include age in years, number of girls and boys cared for, and the caregiver's primary, high school, or tertiary—the omitted category—education level. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.7. The Treatment's Effect on the Exploratory Outcomes

	(1) Tolerance of Violent Parenting	(2) Child Behavior
Treatment	-0.020	0.066
	(0.039)	(0.042)
	[0.607]	[0.123]
Mean of dep. var (control)	-0.005	0.005
Adjusted R-squared	0.164	0.006
Observations	2,234	2,226
Strata FE	Yes	Yes
Baseline controls	Yes	Yes
Dep. var baseline level	Yes	No

Notes: This table shows the intervention's estimated impacts on the exploratory outcomes. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. In Column (1), the dependent variable is the standardized index of the responses in the ICAST-P module and the vignettes, and in column (2) is the standardized index of the seven items that are reported by the caregiver from the internalizing/externalizing behaviors sections of the Parent/Caregiver Report Survey. The controls include age in years, number of girls and boys cared for, and the caregiver's primary, high school, or tertiary—the omitted category—education level. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.8. The Treatment's Effect on the Primary Outcomes, including the Social Desirabil- ity Bias (SDB) as a Control

	(1)	(2)	(3)	(4)	(5)	(6)
		Mental Health Distress				
	Index (A + S + D)	Anxiety (A)	Stress (S)	Depression (D)	Impulsiveness	Positive Caregiver–Child Interactions
Treatment	0.060*	0.042	0.074**	0.032	-0.005	-0.045
	(0.057)	(0.208)	(0.026)	(0.335)	(0.893)	(0.246)
Mean of Dep. Var (control)	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared	0.407	0.355	0.351	0.318	0.111	0.193
Observations	2,280	2,280	2,280	2,280	2,280	2,280
Strata FE	Yes	Yes	Yes	Yes	Yes	Yes
Baseline controls	Yes	Yes	Yes	Yes	Yes	Yes
Dep. var baseline level	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table shows the intervention's estimated impacts on the primary outcomes including the SDB as a control. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized average of the self-reported levels of anxiety (7 items of DASS-21); in Column (2) is the standardized average of the self-reported levels of stress (7 items of DASS-21); in Column (3) is the standardized average of the self-reported levels of depression (7 items of DASS-21); in Column (4) is the standardized average of the self-reported levels of anxiety, stress, and depression (all items of DASS-21); in Column (5) is the standardized sum of the self-report instrument of the Barratt Impulsiveness Scale BIS-11; and in Column (6) is the standardized index of the responses to the 10 questions concerning support for learning/stimulating environment and set- ting limits domain. The controls include age in years, number of girls and boys cared for, and the caregiver's primary, high school, or tertiary—the omitted category—education level. Social desirability score captures the individual-level propensity to misreport sensitive items as an additional control variable. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.9. Heterogeneous Effects Across the Sexes, Including the SDB as a Control: Primary Outcomes

	(1) Mental Health Distress	(2) Impulsiveness	(3) Positive Caregiver-Child Interactions
i. Treatment	0.044	0.040	0.012
	(0.298)	(0.429)	(0.793)
ii. Male × treatment	0.041	-0.115	-0.146*
	(0.516)	(0.147)	(0.072)
iii. Total effect on men ([*i*] + [*ii*])	0.085*	-0.075	-0.134**
	(0.047)	(0.062)	(0.066)
Mean of dep. var (control)	0.000	0.000	0.000
Adjusted R-squared	0.407	0.111	0.194
Observations	2,280	2,280	2,280
Strata FE	Yes	Yes	Yes
Baseline controls	Yes	Yes	Yes
Dep. var baseline level	Yes	Yes	Yes

Notes: This table shows the intervention's differential impacts on the primary outcomes by sex including the SDB as a control. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if to the control group. The dependent variable in Column (1) is the standardized average of the self-reported levels of anxiety, stress, and depression (all items of DASS-21); in Column (2) is the standardized sum of the self-report instrument of Barratt Impulsiveness Scale BIS-11; and in Column (3) is the standardized index of the responses to the ten questions concerning support for learning/stimulating environment and setting limits domain. The controls include age in years, number of girls and boys cared for, and the caregiver's primary, high-school, or tertiary—the omitted category—education level. Social desirability score captures individual-level propensity to misreport sensitive items as an additional control variable. Robust standard errors-. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.10. The Treatment's Effects on the Secondary Outcomes, Including the SDB as the Control

	(1) Total Violence	(2) Physical Violence	(3) Psychological Violence
Treatment	0.008	-0.048	0.028
	(0.038)	(0.038)	(0.039)
Observations	2,245	2,270	2,251
Adjusted R-squared	0.146	0.144	0.115
Mean of dep. var (control)	-0.008	0.002	-0.007
Strata Fixed Effects	Yes	Yes	Yes
Baseline Controls	Yes	Yes	Yes
Dep. Var. (Baseline Level)	Yes	Yes	Yes

Notes: This table shows the intervention's estimated impacts on the secondary outcomes including the SDB as the control. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized index of the nine negative parenting practices (physical and psychological violence); in Column (2) is the standardized index of the two forms of physical violence; and in Column (3) is the standardized index of the seven forms of psychological violence. The controls include age in years, number of girls and boys cared for, and the caregiver's primary, high school, or tertiary—the omitted category—education level. Social desirability score captures the individual-level propensity to misreport sensitive items as an additional control variable. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.11. The Treatment's Effect on the Exploratory Outcomes, Including the SDB as a Control

	(1) Tolerance of Violent Parenting	(2) Child Behavior
Treatment	-0.020	0.068*
	(0.038)	(0.041)
Mean of dep. var (control)	-0.005	0.005
Adjusted R-squared	0.176	0.077
Observations	2,234	2,226
Strata FE	Yes	Yes
Baseline controls	Yes	Yes
Dep. var baseline level	Yes	No

Notes: This table shows the intervention's estimated impacts on the exploratory outcomes including the SDB as a control. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized index of the responses in the ICAST-P module and the vignettes, and in Column (2) is the standardized index of the seven items reported by the caregiver from the internalizing/externalizing behaviors sections of the Parent/Caregiver Report Survey. The controls include age in years, number of girls and boys cared for, and the caregiver's primary, high school, or tertiary—the omitted category—education level. Social desirability score captures the individual-level propensity to misreport sensitive items as an additional control variable. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.12. Robustness Check: Physical Violence Results

	(1) Physical Violence Index	(2) Social Desirability Controlling	(3) Physical Violence Dummy
i. Treatment	-0.098**	-0.094*	-0.038*
	(0.049)	(0.048)	(0.023)
ii. Male × treatment	0.123	0.116	0.044
	(0.078)	(0.077)	(0.037)
iii. Total effect on men ([*i*] + [*ii*])	0.025	0.022	0.007
	(0.061)	(0.061)	(0.029)
Mean of dep. var (control)	0.002	0.002	0.305
Mean of dep. var (female control)	0.034	0.034	0.321
Mean of dep. var (male control)	-0.047	-0.047	0.282
Adjusted R-squared	0.127	0.145	0.145
Observations	2,270	2,270	2,270
Strata FE	Yes	Yes	Yes
Baseline controls	Yes	Yes	Yes
Dep. var baseline level	Yes	Yes	Yes

Notes: This table shows the intervention's estimated impacts on physical violence by sex. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. The dependent variable in Columns (1)-(2) is the standardized index of the two items on physical violence; and in Column (3) is a dummy that equals one if the individual reports at least one item of physical violence. Social desirability score captures individual-level propensity to mis-report sensitive items as an additional control variable in Column (2). Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.13. The Treatment's Effects on the Primary Outcomes, Without Individual Controls

	(1)	(2)	(3)	(4)	(5)	(6)
	Mental Health Distress					
	Index (A + S + D)	Anxiety (A)	Stress (S)	Depression (D)	Impulsiveness	Positive Caregiver–Child Interactions
Treatment	0.054	0.036	0.070**	0.025	-0.005	-0.042
	(0.033)	(0.034)	(0.035)	(0.035)	(0.039)	(0.039)
Mean of dep. var (control)	0.000	0.000	0.000	0.000	0.000	0.000
Adjusted R-squared	0.341	0.312	0.281	0.258	0.101	0.177
Observations	2,280	2,280	2,280	2,280	2,280	2,280
Strata FE	Yes	Yes	Yes	Yes	Yes	Yes
Baseline controls	No	No	No	No	No	No
Dep. var baseline level	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table shows the intervention's estimated impacts on the primary outcomes excluding individual controls. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized average of the self-reported levels of anxiety, stress, and depression (all items of DASS-21); in Column (2) is the standardized average of the self-reported levels of anxiety (7 items of DASS-21); in Column (3) is the standardized average of the self-reported levels of stress (7 items of DASS-21); in Column (4) is the standardized average of the self-report levels of depression (7 items of DASS-21); in Column (5) is the standardized sum of the self-report instrument of the Barratt Impulsiveness Scale BIS-11; and in Column (6) is the standardized index of the responses to the ten questions concerning support for learning/stimulating environment and setting limits domain. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.14. Heterogeneous Effects Across the Sexes, Without Individual Controls

	(1) Mental Health Distress	(2) Impulsiveness	(3) Positive Caregiver–Child Interactions
i. Treatment	0.031	0.040	0.015
	(0.045)	(0.051)	(0.048)
ii. Male × treatment	0.058	-0.114	-0.145*
	(0.067)	(0.080)	(0.082)
iii. Total effect on men ([*i*] + [*ii*])	0.089*	-0.074	-0.130*
	(0.050)	(0.062)	(0.067)
Mean of dep. var (control)	0.000	0.000	0.000
Adjusted R-squared	0.341	0.101	0.178
Observations	2,280	2,280	2,280
Strata FE	Yes	Yes	Yes
Baseline controls	No	No	No
Dep. var baseline level	Yes	Yes	Yes

Notes: This table shows the intervention's differential impacts on the primary outcomes by sex, excluding individual controls. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized average of the self-reported levels of anxiety, stress, and depression (all items of DASS-21); in Column (2) is the standardized sum of the self-report instrument of the Barratt Impulsiveness Scale BIS-11; and in Column (3) is the standardized index of the responses to the ten questions concerning support for learning/stimulating environment and setting limits domain. All the regressions include interaction between the male variable and treatment status. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.15. The Treatment's Effect on Secondary Outcomes, Without Individual Controls

	(1) Total Violence	(2) Physical Violence	(3) Psychological Violence
Treatment	0.007	-0.050	0.027
	(0.039)	(0.038)	(0.040)
Mean of dep. var (control)	-0.008	0.002	-0.007
Adjusted R-squared	0.099	0.127	0.073
Observations	2,245	2,270	2,251
Strata Fixed Effects	Yes	Yes	Yes
Baseline Controls	No	No	No
Dep. Var. (Baseline Level)	Yes	Yes	Yes

Notes: This table shows the intervention's estimated impacts on the secondary outcomes excluding individual controls. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized index of the nine negative parenting practices (physical and psychological violence); in Column (2) is the standardized index of the two items on physical violence; and in Column (3) is the standardized index of the seven items on psychological (emotional) violence. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.16. The Treatment's Effect on Exploratory Outcomes, Without Individual Controls

	(1) Tolerance of Violent Parenting	(2) Child Behavior
Treatment	-0.021	0.067
	(0.039)	(0.042)
Mean of dep. var (control)	-0.005	0.005
Adjusted R-squared	0.157	0.002
Observations	2,234	2,226
Strata FE	Yes	Yes
Baseline controls	No	No
Dep. var baseline level	Yes	No

Notes: This table shows the intervention's estimated impacts on the exploratory outcomes, excluding individual controls. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized index of the responses in the ICAST-P module and the vignettes, and in Column (2) is the standardized index of the caregivers' responses to the seven items from the internalizing/externalizing behaviors sections of the Parent/Caregiver Report Survey. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.17. Heterogeneous Effects Across the Sexes: Primary Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)
	Mental Health Distress					
	Index (A + S + D)	Anxiety (A)	Stress (S)	Depression (D)	Impulsiveness	Positive Caregiver–Child Interactions
Panel A: Male Observations						
Treatment	0.089*	0.091*	0.102*	0.035	-0.071	-0.129*
	(0.050)	(0.051)	(0.053)	(0.052)	(0.062)	(0.067)
	[0.084]	[0.076]	[0.067]	[0.514]	[0.261]	[0.071]
Mean of Dep. Var (control)	-0.209	-0.181	-0.199	-0.169	0.020	-0.078
R-squared	0.288	0.250	0.216	0.229	0.090	0.175
Observations	892	892	892	892	892	892
Panel B: Female Observations						
Treatment	0.032	0.002	0.046	0.022	0.034	0.020
	(0.045)	(0.046)	(0.046)	(0.047)	(0.051)	(0.047)
	[0.500]	[0.962]	[0.305]	[0.657]	[0.514]	[0.665]
Mean of Dep. Var (control)	0.133	0.115	0.126	0.108	-0.013	0.050
R-squared	0.354	0.339	0.299	0.266	0.122	0.185
Observations	1,388	1,388	1,388	1,388	1,388	1,388

Notes: This table shows the intervention's estimated impacts on the primary outcomes by the sample's sex. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized average of the self-reported levels of anxiety, stress, and depression (all items of DASS-21); in Column (2) is the standardized average of the self-reported levels of anxiety (7 items of DASS-21); in Column (3) is the standardized average of the self-reported levels of stress (7 items of DASS-21); in Column (4) is the standardized average of the self-reported levels of depression (7 items of DASS-21); in Column (5) is the standardized sum of the self-report instrument of the Barratt Impulsiveness Scale BIS-11; and in Column (6) is the standardized index of the responses to the ten questions related to support for learning/stimulating environment and setting limits domain. The controls include age in years, number of girls and boys under care, and the caregiver's primary, high school, or tertiary—the omitted category—education level. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.18. The Treatment's Effects on the Secondary Outcomes

	(1) Total Violence	(2) Physical Violence	(3) Psychological Violence
Panel A: Male Observations			
Treatment	0.019	0.023	0.015
	(0.065)	(0.061)	(0.067)
	[0.780]	[0.708]	[0.832]
Mean of dep. var (control)	-0.073	-0.047	-0.061
Adjusted R-squared	0.097	0.142	0.071
Observations	878	886	881
Panel B: Female Observations			
Treatment	-0.008	-0.095*	0.027
	(0.049)	(0.049)	(0.050)
	[0.890]	[0.061]	[0.602]
Mean of dep. var (control)	0.034	0.034	0.028
Adjusted R-squared	0.108	0.131	0.0837
Observations	1,367	1,384	1,370

Notes: This table shows the intervention's estimated impacts on the secondary outcomes by the sample's sex. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized index of the nine items on negative parenting techniques (physical and psychological violence); in Column (2) is the standardized index of the two items on physical violence; and in Column (3) is the standardized index of the seven items on psychological (emotional) violence. The controls include age in years, number of girls and boys under care, and the caregiver's primary, high school, or tertiary—the omitted category—education level. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.19. The Treatment's Effect on the Exploratory Outcomes

	(1) Tolerance of Violent Parenting	(2) Child Behavior
Panel A: Male Observations		
Treatment	-0.015	0.063
	(0.066)	(0.065)
	[0.792]	[0.302]
Mean of dep. var (control)	0.070	-0.052
R-squared	0.172	0.009
Observations	877	866
Panel B: Female Observations		
Treatment	-0.018	0.060
	(0.048)	(0.056)
	[0.696]	[0.290]
Mean of dep. var (control)	-0.053	0.041
R-squared	0.155	0.007
Observations	1,357	1,360

Notes: This table shows the intervention's estimated impacts on the exploratory outcomes by the sample's sex. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized index of the responses to the ICAST-P module and the vignettes, and in Column (2) is the standardized index of the seven items reported by the caregiver from the internalizing/externalizing behaviors sections of the Parent/Caregiver Report Survey. The controls include age in years, number of girls and boys under care, and the caregiver's primary, high school, or tertiary—the omitted category—education level. Robust standard errors. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.20. Heterogeneous Effects by Economic Deprivation and Sex: Primary Outcomes

	(1) Mental Health Distress	(2) Impulsiveness	(3) Positive Caregiver–Child Interactions
Economic deprivation	0.035	0.066	0.190***
	(0.072)	(0.077)	(0.068)
Treatment	-0.032	0.050	0.036
	(0.053)	(0.063)	(0.060)
Male × treatment	-0.000	-0.114	-0.215**
	(0.081)	(0.101)	(0.103)
Economic deprivation × male	-0.174*	0.024	-0.304**
	(0.102)	(0.122)	(0.121)
Economic deprivation × treatment	0.158	-0.025	-0.124
	(0.104)	(0.113)	(0.104)
Economic deprivation × male × treatment	0.230	-0.022	0.197
	(0.152)	(0.174)	(0.181)
Treatment Effects			
Economically secure women	-0.032	0.050	0.036
Economically secure women	0.126	0.025	-0.088
Economically secure women	-0.032	-0.064	-0.178**
Economically secure women	0.356*	-0.111	-0.106
Differences in Treatment Effects			
Economically secure men - women	-0.000	-0.114	-0.215**
Economically deprived men - women	0.230*	-0.136	-0.018
Economically deprived - economically secure, Women	0.158	-0.025	-0.124
Economically deprived - economically secure, Men	0.388***	-0.047	0.072
Mean of dep. var (control)	0.003	-0.004	0.010
Adjusted R-squared	0.348	0.103	0.179
Observations	2,172	2,172	2,172
Strata FE	Yes	Yes	Yes
Baseline controls	Yes	Yes	Yes
Dep. var baseline level	Yes	Yes	Yes

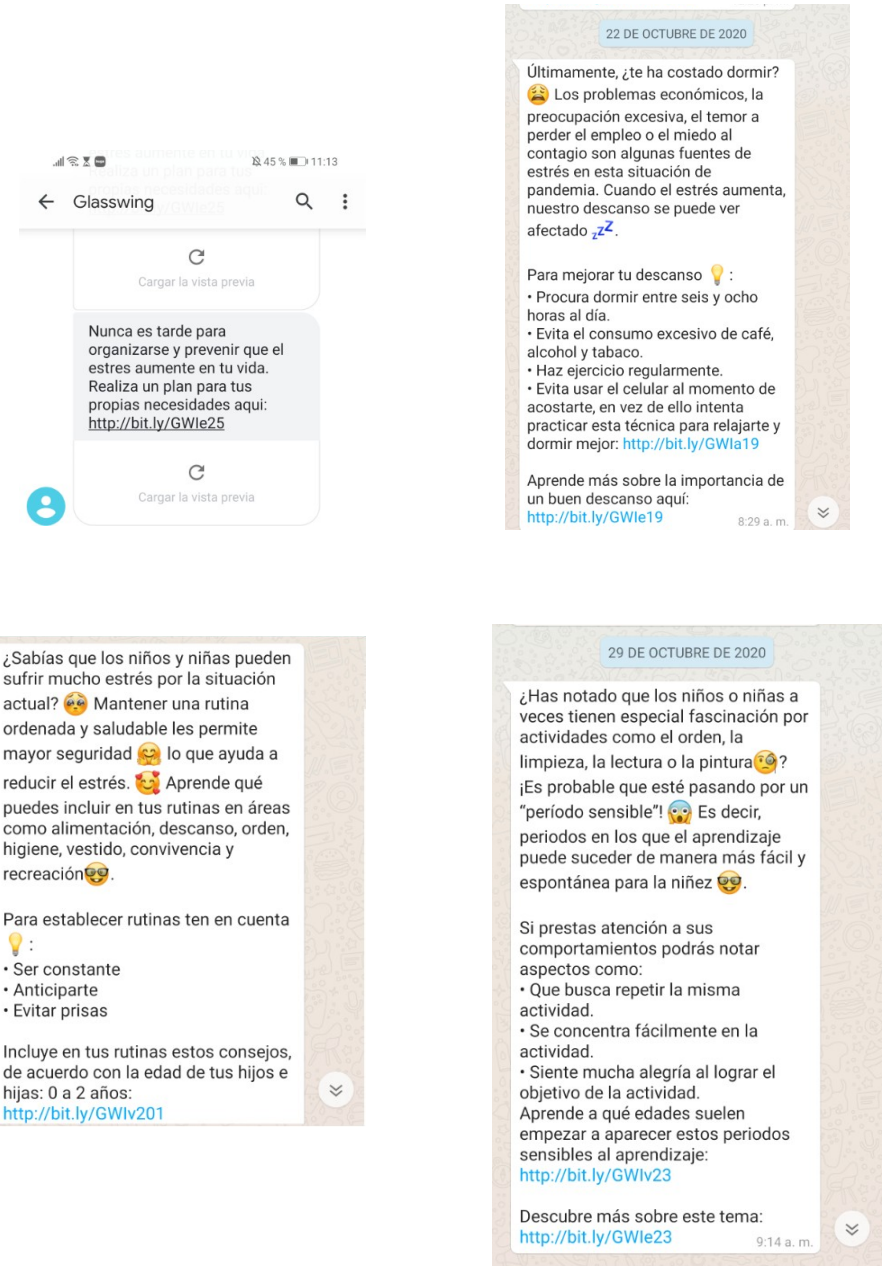
Notes: This table shows the intervention's differential impacts on the primary outcomes by sex and economic deprivation. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if assigned to the control group. The dependent variable in Column (1) is the standardized average of the self-reported levels of anxiety, stress, and depression (all items of DASS-21); in Column (2) is the standardized sum of the self-report instrument of the Barratt Impulsiveness Scale BIS-11; and in Column (3) is the standardized index of the responses to the ten questions concerning support for learning/stimulating environment and setting limits domain. The variable Economic Deprivation is a dummy that equals one if the individual indicated not having enough money for food, home services, education, and other things since the beginning of the pandemic. The controls include age in years, number of girls and boys under care, the caregiver's primary, high school, or tertiary—the omitted category—education level. Robust standard errors-. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.21. Heterogeneous Effects by Partner: Primary Outcomes

	(1) Mental Health Distress	(2) Impulsiveness	(3) Positive Caregiver–Child Interactions
Living with a partner	-0.049	-0.071	0.083
	(0.068)	(0.075)	(0.069)
Treatment	0.022	0.048	0.082
	(0.077)	(0.082)	(0.079)
Male × treatment	-0.232*	-0.379**	-0.034
	(0.141)	(0.174)	(0.191)
Living with a partner × male	-0.226*	-0.127	0.219
	(0.121)	(0.142)	(0.153)
Living with a partner × treatment	0.019	-0.021	-0.102
	(0.094)	(0.104)	(0.099)
Living with a partner × male × treatment	0.349**	0.332*	-0.123
	(0.161)	(0.198)	(0.212)
Treatment Effects			
Women not living with a partner	0.022	0.048	0.082
Women living with a partner	0.040	0.027	-0.020
Men not living with a partner	-0.210*	-0.331**	0.048
Men living with a partner	0.157*	-0.020	-0.177*
Differences in Treatment Effects			
Men - Women, Not living with a partner	-0.232	-0.379**	-0.034
Men - Women, Living with a partner	0.117	-0.047	-0.157*
Living with a partner - Not living with a partner, Women	0.019	-0.021	-0.102
Living with a partner - Not living with a partner, Men	0.368***	0.311*	-0.225
Adjusted R-squared	0.346	0.103	0.180
Observations	2,280	2,280	2,280
Strata FE	Yes	Yes	Yes
Baseline controls	Yes	Yes	Yes
Dep. var baseline level	Yes	Yes	Yes

Notes: This table shows the intervention's differential impacts on the primary outcomes by sex and partner presence. Treatment is a dummy that equals one if the individual is randomly assigned to the treatment group, and 0 if to the control group. The dependent variable in Column (1) is the standardized average of the self-reported levels of anxiety (7 items of DASS-21); in Column (2) is the standardized average of the self-reported levels of stress (7 items of DASS-21); in Column (3) is the standardized average of the self- reported levels of depression (7 items of DASS-21). The controls include age in years, number of girls and boys under care, and the caregiver's primary, high school, or tertiary—the omitted category—education level. Robust standard errors-. *** p<0.01, ** p<0.05, * p<0.1.

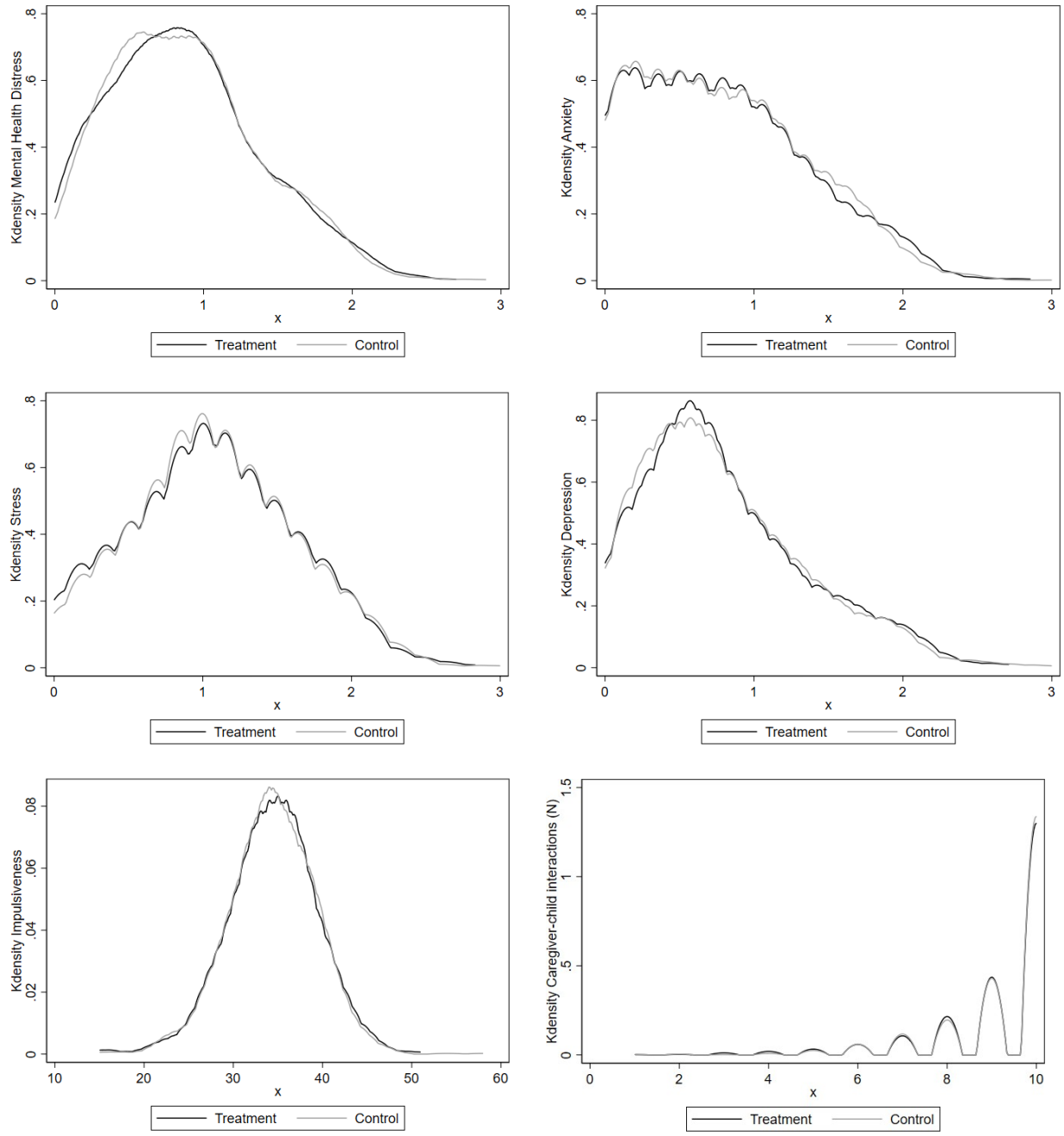
Figure A2.1. Example SMS/WhatsApp Messages



Notes: This figure shows examples of the materials sent to caregivers via text message during the interven- tion.

Figure A2.2. Distributions of the Primary Outcomes

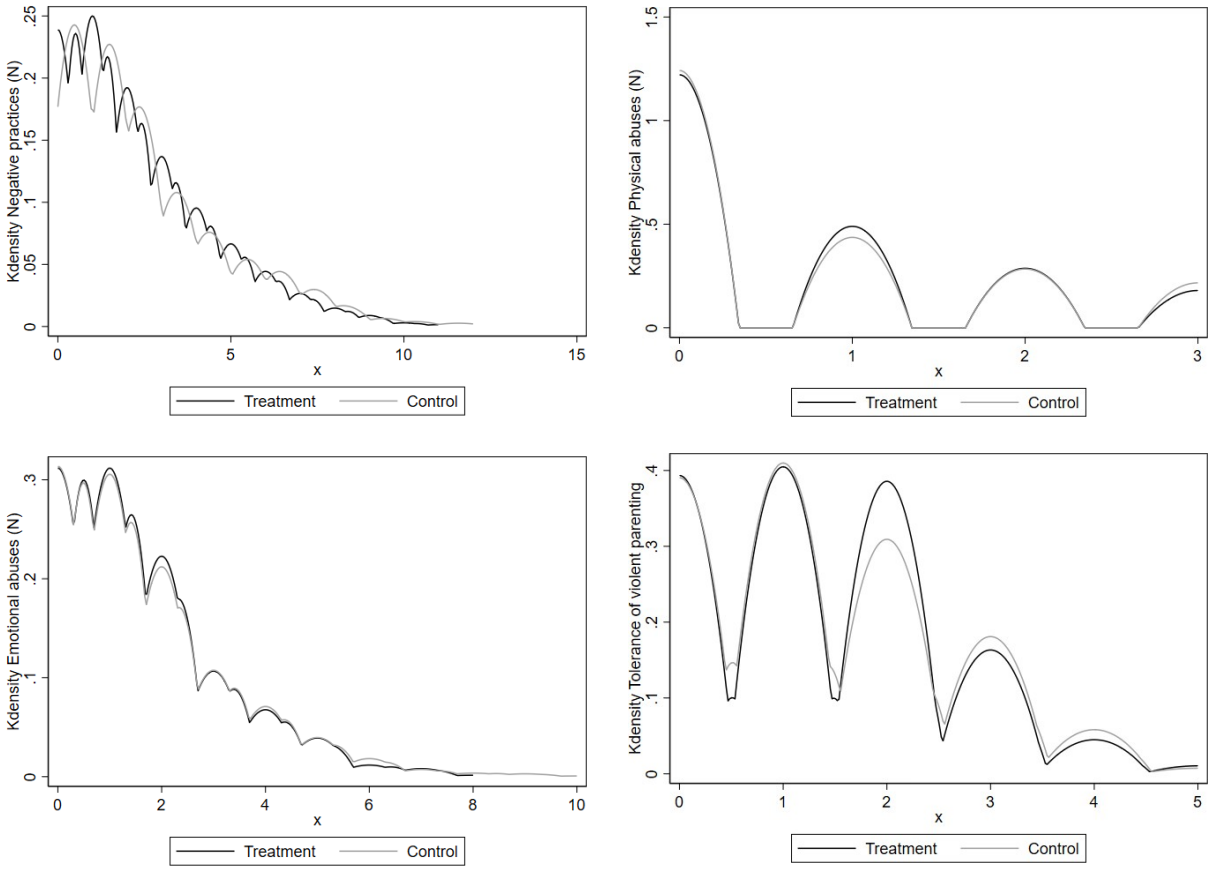
Using Baseline Information



Notes: This figure shows the distribution of reported measures on parental distress (stress, depression, and anxiety), impulsiveness, and caregiver-child interactions by treatment status. Overall, we find no differences in the outcome distributions between the treatment and control groups.

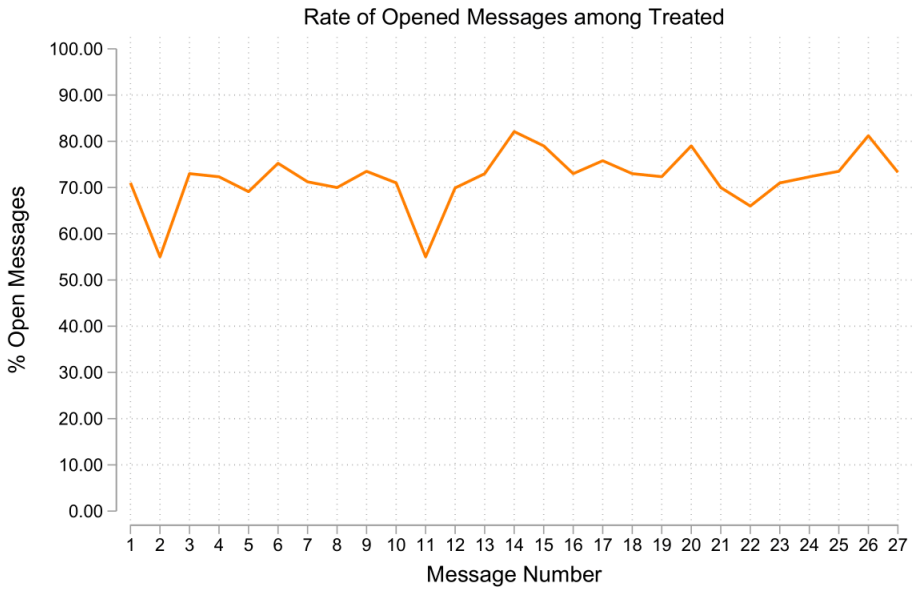
Figure A2.3. Distributions of the Primary Outcomes

Using Baseline Information



Notes: This figure shows the distribution of reported measures on parenting practices, physical and physiological violence, and tolerance of violent parenting by treatment status. Overall, we find no differences in the outcome distributions between the treatment and control groups.

Figure A2.4. Message Viewership



Notes: This figure shows the measure of compliance in our experimental design, i.e., the rate of message viewership. For each message, this rate was calculated as the number of treated participants who opened the message out of the total number of caregivers assigned to the treatment group. Only the caregivers in the treatment group received messages.