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Socioemotional Learning in Early Childhood Education: Experimental Evidence from the Think Equal Program's Implementation in Colombia*

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Abstract

In this article we experimentally evaluate Colombia's Think Equal program, which teaches socioemotional skills to children ages 3 to 6. Given the context of COVID-19, the original design was adapted as a hybrid model, alternating in-person and remote instruction and engaging families in the implementation of the curriculum. We found that the program had positive effects on children's prosocial behavior, self-awareness, and cognitive learning. The intervention also had an impact on education center's personnel (community mothers) and caregivers implementing the activities. Treated community mothers had higher levels of empathy, lower negative health symptoms, better pedagogical practices, and a closer relationship with the children's caregivers compared with those in the control group. Treated caregivers had better stimulation practices and lower negative health symptoms compared with those in the control group. These findings suggest that a well-designed intervention has the potential to develop socioemotional skills in children at an early age and, at the same time, to develop capacities in those who implement the activities. Our results have important implications for the design, implementation, and evaluation of early childhood socioemotional learning programs and provide novel evidence about the challenges faced by interventions combining face-to-face and remote learning.

JEL Codes: C93, I20, I24

Keywords: Preschool learning, socioemotional learning, Early childhood development, parent engagement, randomized controlled trial

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Introduction

Scientific research and the advocacy movement for socioemotional learning have moved socioemotional skills to the top of the education policy agenda (OECD, 2021). The literature uses a range of terms to refer to the wide concept of socioemotional skills, including socioemotional skills, soft skills, noncognitive skills, character skills, personality qualities, 21st-century skills, and life skills. Despite variations in terminology, some authors suggest that these definitions describe similar fundamental concepts and have some characteristics that link them (Sánchez Puerta, Valerio, and Gutiérrez Bernal, 2016).[1] For example, Duckworth and Yeager (2015) state that all of these characteristics are: "(a) conceptually independent from cognitive ability, (b) generally accepted as beneficial to the student and to others in society, (c) relatively rank-order stable over time…, (d) potentially responsive to intervention, and (e) dependent on situational factors…" (p.239).

Within this literature on development of socioemotional skills in the education sector, in this article, we use the terms socioemotional skills (SES) and socioemotional learning (SEL) as the process of learning and applying these skills. Specifically, we use the definition used by Durlak et al. (2011), based on Elias et al. (1997), who define socioemotional learning as: "the process of acquiring core competencies to recognize and manage emotions, set and achieve positive goals, appreciate the perspectives of others, establish and maintain positive relationships, make responsible decisions, and handle interpersonal situations constructively" (p.406).

The increased importance of SES in the policy debate stems from two factors. First, and unlike cognition, there is evidence that SES are malleable throughout the life cycle (e.g., Almlund et al., 2011). Second, recent literature indicates that SES are related to several short- and long-term outcomes, like cognitive performance, educational attainment, criminality, behavior, health, and labor market performance (e.g., Carneiro, Crawford, and Goodman, 2007; Heckman, Stixrud, and Urzúa, 2006; Moffitt et al., 2011; Durlak et al., 2011; Heckman and Kautz, 2012).

Given the relative consensus on the importance of SES, one question is whether systematic interventions can develop these competences in children. Several studies have reviewed experimental and quasi-experimental evidence of how various interventions might enhance SEL (e.g., Durlak et al., 2011; Sklad et al., 2012; Sánchez Puerta, Valerio, and Gutiérrez Bernal, 2016). In general, these studies suggest that SES can be developed through well-designed interventions. For example, Durlak et al. (2011) find that school-based programs are likely to be effective if they take a step-by-step training approach, use active forms of learning, focus sufficient time on skill development, and have explicit learning goals. Sánchez Puerta, Valerio, and Gutiérrez Bernal (2016) find that early childhood education programs (i.e., starting before the years of compulsory schooling), especially those targeted toward vulnerable populations, appear to have a greater impact on SES than do programs later in life. This finding is consistent with evidence

[1] In some cases, the terms used depend on the research discipline. For example, *soft skills* are typically discussed in business and management and *noncognitive skills* in economics. On the other hand, the United Nations focus on *life skills.* The term *socioemotional skills* is used more in psychology (Sánchez Puerta, Valerio, and Gutiérrez Bernal, 2016).

showing that the optimal stage to invest in noncognitive skills is early childhood (Kautz et al., 2014; Cunha, Heckman, and Schennach, 2010).

Based on this empirical evidence and the findings of neuroscientific and psychological science about how humans develop socioemotional competences, a group of education, psychology, human rights, and neuroscience experts developed the Think Equal program (TE). TE provides social and emotional learning opportunities to children aged 3 to 6 years old, offers tools for coping with difficult situations and managing emotions, and promotes educational innovation to help eliminate cycles of violence and discrimination (Think Equal, 2018).

In this study we evaluate, using a randomized control trial design, the effects of the TE curriculum implemented in a subsample of Community Welfare Homes (*Hogares Comunitarios de Bienestar* or HCB), which is an early childhood care service that provides childcare and education in the home of a community agent (community mother), that are part of the Colombian Family Welfare Institute (Instituto Colombiano de Bienestar Familiar, ICBF) in Colombia.

Our article contributes to the literature on the development of SES in education. First, most empirical evidence available is for comprehensive programs that aim to develop SES along with other skills and behaviors, making it difficult to disentangle results (Sánchez Puerta, Valerio, and Gutiérrez Bernal, 2016). In contrast, TE is specifically aimed at developing SES. Second, unlike previous empirical evaluations, our analyses are based on a large sample of children and early childhood education centers. Third, we not only evaluate the impact on children, but also on educators (community agents) and caregivers. Fourth, since TE was implemented during the COVID-19 crisis, the original design had to be adapted as a hybrid model, alternating in-person and remote instruction, and engaging families in the delivery of the program. So, our study considers the effect of hybrid models on the development of SES. To the best of our knowledge, there are no rigorous evaluations of this type of instruction model. Finally, there is little evidence on this topic for countries in Latin America and the Caribbean. In this region, the case of Colombia is relevant, because the government is implementing the Peace Agreements with the Revolutionary Armed Forces of Colombia (FARC) of 2016. In education, the implementation process includes strengthening the socioemotional and citizenship skills of students (MEN, 2022). In Colombia, TE was implemented in regions historically affected by the armed conflict and the presence of street gangs and criminal groups.

The Think Equal Program in Colombia

The TE program was designed by education, psychology, human rights, and neuroscience experts. The Yale Centre for Emotional Intelligence was a research partner in the development of the TE model based on neuroscientific and psychological science about how humans develop socioemotional competences. This program provides social and emotional learning opportunities to children aged 3 to 6 years old. Moreover, TE's curriculum promotes educational innovation to help eliminate cycles of violence and discrimination and provides tools for coping with difficult situations and managing emotions (Think Equal, 2018). To date, the program has been implemented in 13 countries across 5 continents.

The methodology is based on a Collective Narrative Model, which starts with children's individual narratives and, through story-based and collaborative learning, cultivates a positive and hopeful narrative that is shared classwide. The curriculum of the program is organized into three levels, each containing 22–24 original narrative picture books, 90 lesson plans, and accompanying resources. The curriculum is

designed to be taught in 30 weeks; each week begins with a narrative book, followed by 3 x 30-minute lesson plans (Think Equal, 2018).

In Colombia, the program was implemented in a subsample ofHCBs, which is an early childhood care service of the ICBF that provides childcare in the homes of a "community mother (or father)" for 10-14 children each. [2] An HCB operates for 200 days a year, 8 hours a day, from Monday to Friday. Together, all the HCBs under ICBF serve about 460 thousand vulnerable children and their families nationwide. However, the ICBF also serves more than 1.2 million children throughout other early childhood education services that differ from HCB due to their technical and operational approach. HCBs offer an ideal setting in which to implement TE, for two reasons: first, they offer a homogeneous sample; and second, the small number of children in each facilitates the program's deployment methodology. From now on we will use the phrase *community mothers*, because it is the term used in the HCB program since the early 1980s, and because in the sample used in this study all the educational agents are women.

The nongovernmental organization Fundación Escuela Nueva (FEN) adapted TE to the Colombian context. Specifically, FEN performed the language review of printed materials, organized, and developed 12 virtual training workshops for community mothers, implemented the weekly contents of TE (starting on May 24, 2021, and ending on December 17, 2021), made 4 follow-up and monitoring calls to each community mother, and held 12 meetings and 12 focus groups with the community mothers (FEN, 2022). Teacher guides, books, and lesson plans were the main input for the teaching program. The topics presented in these materials were the inter- and intrapersonal competences of empathy, inclusion, compassion, problem-solving, critical thinking, collaboration, emotional regulation, generosity, advocacy, and caring for others. Community mothers or caregivers read the selected stories to children and conducted the activities following the instructions from the text guide. Since most of the activities require materials, community mothers and caregivers adapted the activities to what they had in the HCB and at home. **Table A.1** describes TE's main outcomes and related activities implemented in Colombia. Given that HCBs were not fully open by the time of the intervention, due to COVID-19 restrictions, FEN adapted the curriculum to alternate between in-person and remote instruction (the original curriculum is implemented on-site only). This included strategies such as having pedagogical tutors to support community mothers virtually, sending materials through WhatsApp, distributing books and other materials to the caregiver through the community mother, and involving caregivers in undertaking the activities at home. Specifically, a collection of printed materials was delivered to each HCB, as well as directly to children. Also, digital content was sent three times a week to community mothers and families through WhatsApp, using a chatbot configured and managed by FEN. The weekly digital contents included: (a) an audiobook from the children's literature collection, (b) support audios with instructions for the activities, and (c) infographics (FEN, 2022).

[2] To be selected as a community mother or father, applicants must meet the following requirements: (i) have resided in the area of the HCB for at least one year; (ii) have completed secondary education or hold a teacher's high school degree; (iii) be between 20 and 45 years of age at the time of applying; (iv) be fit for work, as certified by a doctor; (v) be recognized in their community for their solidarity, coexistence, and civic values; (vi) have family authorization for the use of the home; (vii) not have a judicial record (this also extends to relatives and nonrelatives who live in the dwelling); and (viii) have enough time to care for the children.

Experimental Design and Implementation

Recruitment

We selected 649 HCBs that satisfied five eligibility conditions. They were (a) public; (b) located no further than 20 kilometers from the department's capital; (c) had community mothers/fathers between 20 and 50 years old; (d) had at least a medium probability of reopening to provide full in-person service in 2021; and (e) located in the departments of Antioquia, Bolivar, Cordoba, Magdalena, and Sucre, regions historically affected by conflict and/or the presence of street gangs and criminal groups. Of this group, 366 HCBs agreed to participate in the study, and we ended up with a sample of 363.

Randomization

We implemented a random assignment to treatment and control groups at the HCB level, stratifying by age, race of the community mother, whether the HCB was open or not, the type of service,[3] and region. 181 HCBs were assigned to the treatment group and the rest to the control group (182). Treatment HCBs received the training and materials from TE and implemented the socioemotional curriculum. HCBs in the control group did not participate in the program and maintained operations while under COVID-19 restrictions and, in some cases, reopened as the pandemic situation evolved. If the HCB was treated, then all the children enrolled participated in the program.

Data collection (endline)

After the program's implementation (endline), we collected primary data through in-person surveys of 326 community mothers and 1,471 children attending HCBs in both the control and treatment groups. These children were authorized by their parents or legal guardians to participate. Finally, a self-administered web survey was conducted of 1,222 caregivers who provided information for 1,275 children. We contacted caregivers through the community mothers.[4]

Expected Outcomes of Think Equal and Measurement Instruments

We measured direct and indirect effects of TE on children, community mothers, and caregivers. Direct effects refer to children's SES. Indirect effects are related to: (a) children's environment in the household and the HCB, cognitive skills, and mental well-being; and (b) community mothers and caregivers' SES, childcare practices, and mental well-being. These are considered indirect effects because they are not specifically targeted by TE. **Table 1** presents the expected outcomes, differentiating direct and indirect effects.

We based our survey instruments on different modules from standardized instruments such as: HOME (Home Observation Measurement of the Environment) from the National Longitudinal Survey of Youth, Children and Young Adults to measure the parental investment skills and environment that surrounds the child (US Bureau of Labor Statistics, 1997); SDQ (Strengths and Difficulties Questionnaires) to measure (a) prosocial behavior, (b) problems with peers, and (iii) emotional symptoms (Goodman, 1997); CREDI (Caregiver Reported Early Childhood Development Instrument) to measure the cognitive development of

[3] In a so-called traditional HCB, a community mother takes care of the children. An "integral HCB," meanwhile, has additional social services provided by interdisciplinary teams, such as social workers and nutritionists (ICBF, 2022).

[4] We also collected information from community mothers and caregivers prior to program implementation (baseline), but these data are not used in the evaluation.

children (Graduate School of Education Harvard University, 2022); the Emotional Intelligence Questionnaire to measure the empathy among community mothers and caregivers (National Health Service, 2022); and finally, ACES (Assessment of Children Emotions Skills) to measure emotion attribution accuracy and anger attribution bias (Schultz et al., 2004). Below we present the expected outcomes of the program, by topic.[5]

Self-regulation

Emotion regulation involves the cognitive and behavioral processes involved in emotions' change and timing, and how they are experienced and expressed (Emmet et al., 2021). We built an index portraying the degree to which children could control their emotions and behaviors, based on six questions depicting hypothetical situations. To measure children's ability to control anger, we calculated the anger attribution bias. This measure accounts for the number of times a child answered that he or she would be "mad" under certain circumstances. The TE program seeks to minimize this kind of aggressive emotional reaction.

Self-awareness

Emotional intelligence is defined as an "[...] ability to perceive and identify emotions in self and other, and to manage one's own affective states to enhance well-being and the quality of one's personal and professional relationships" (Killian, 2012). Since self-awareness is considered a dimension of emotional intelligence, we understand self-awareness as the ability to perceive and identify emotions and be conscious of one's own character and feelings.

We asked each caregiver four questions about how frequently each child: (a) showed the ability to decide between what is right and wrong, (b) felt comfortable sharing his/her own feelings, (c) was able to explain why he or she said or did something, and (d) recognized any activity in which he or she was good or bad. The final score is a continuous variable in which greater values indicate the child's greater self-awareness.

We evaluated the ability of children to identify feelings by asking them about what made them happy and sad, and what they usually did when they were sad. Answers were classified as correct or incorrect according to the protocols of the MELQO[6] survey (UNESCO et al., 2017). We calculated the percentage of correct responses. We expect a greater percentage of correct answers in treated children.

Prosocial behavior

Prosocial behavior stems from the desire to benefit others, with or without an altruistic motivation. Actions that are normally considered as prosocial are: helping, sharing, donating, cooperating, and volunteering. We asked caregivers about the prosocial skills of their children using the prosocial behavior scale of SDQ. This scale measures if the child considers other people's feelings, shares with other children, offers to help, and is kind to others. In the children's survey, we asked each child how he or she would help a person who was sad or in trouble. We recreated this scenario by telling them a short story about a girl who fell and by showing them an image of a sad child. Answers were classified as correct or incorrect according to the protocols of the MELQO survey. We calculated the percentage of correct responses, expecting to receive a greater percentage from treated children than from the control group.

[5] The details about how indexes and variables were calculated, the scales, and the specific questions considered can be requested from the authors.

[6] Measuring Early Learning Quality and Outcomes.

Conflict resolution

We understand conflict resolution skills as the ability to resolve conflicts in a constructive way, without damaging anyone, and coming to a peaceful solution.

We asked caregivers how frequently a child resolve disputes constructively. In the children's survey, we asked each child what he/she would do in case another child wanted to play with his/her favorite toy.

Problems with peers

This outcome accounts for behavioral difficulties that may end up causing problems for peer relationships.

We asked caregivers about their children's interaction with others using the SDQ's peer problems scale. This scale considers if the child plays alone, has at least one good friend, if he/she is generally liked by others, if he/she gets along better with adults than children, and if he/she is picked on or bullied. The scale assigns a greater score to children with relatively more problematic behaviors. Additionally, we asked caregivers how frequently their child took or used other children's belongings without permission.

We expect negative effects among the treated children for both measures, indicating that children in the treatment group had a lower probability of having problematic relationships with their peers.

Empathy

Empathy is defined in different ways by various researchers and practitioners (Cuff et al., 2016). We understand empathy as the action of understanding, being aware of, being sensitive to, and experiencing the feelings and thoughts of others, and the ability to fully communicate them in an objective way. We expect that empathy improved directly among treated children, and indirectly among those delivering the program.

We asked caregivers how frequently their child was aware of the success of others and congratulated them. Also, in the children's survey, we told each child a short story describing a situation in which a child fell and showed them a picture of a sad child. We then asked them how they thought the child was feeling. We calculated the percentage of correct answers. Answers were classified as correct or incorrect according to the protocols of the MELQO survey. We expected a greater percentage of correct answers in treated children than in the control.

For community mothers and caregivers, we calculated empathy according to the Emotional Intelligence Index questionnaire. These questions address the ability to identify and understand feelings, and other's perspectives.

Mental well-being

The program could potentially impact well-being through the promotion of better communication skills, or competences to deal with stress.

Children's mental well-being was measured through the SDQ's mental symptoms scale. This scale includes questions about physical symptoms related to emotional problems like being worried, unhappy, depressed, or tearful, nervous, scared, or afraid. The greater the score, the greater the prevalence of negative mental health symptoms in a child.

For community mothers and caregivers, we summed up the number of negative feelings (e.g., worry or nervousness, fatigue, irritability, loneliness, sadness, headaches, or stomach aches, sleeping difficulties) experienced during the preceding seven days. The questions for this component came from the *Pulso Social* questionnaire[7] of the National Administrative Department of Statistics (Departamento Administrativo Nacional de Estadística, DANE).

Cognitive learning

Socioemotional skills can be positively correlated to cognitive skills (OECD, 2017). For this reason, we tested if TE affected cognitive performance. TE activities like reading/listening to stories could improve reading/listening comprehension. Furthermore, children could have developed their cognitive skills while drawing and painting, as they recognized colors and figures and associated them with objects.

We used the CREDI instrument to identify cognitive effects as reported by caregivers. The greater the CREDI Index,[8] the better the child's cognitive development. Moreover, we asked each child to identify sizes, colors, letters, and numbers and computed a percentage of correct answers to evaluate this outcome.

Family care and pedagogical practices

A household environment can improve because of the TE's implementation. We evaluated effects on caregivers' investment of time in children's learning and daily activities. We also explored how much time caregivers invested in training to contribute to children's emotional management, and how caregivers discipline their children.

To evaluate this outcome, we included questions about emotional support and cognitive stimulation from the HOME questionnaire. This measure is known as the Family Care Index. The greater the index, the greater the stimulation of children's cognitive and emotional skills at home.

Additionally, we observed specific interactions between caregivers and children. Two questions asked how frequently caregivers read stories to children and how many times they played a movie/musical video or audiobook to children. Another question asked caregivers if they had taken a course related to children's emotional management. We analyzed these three variables separately and in a compound index (Tools for Stimulation Index), expecting positive behaviors.

On the community mothers' side, we expected enhanced pedagogical practices. To measure this outcome, we built an index that included questions from TE's end-of-program review questionnaire, the *Pequeñas Aventureras* questionnaire,[9] and self-developed questions. The questions measure the mother's ability to communicate, support, and discuss the child's emotions, to implement reading and discussion activities, and her training in managing emotions. The higher the score of the Pedagogic Practices Index,

[7] This survey collects information on consumer confidence, subjective well-being, support networks, and knowledge and access to support policies in 23 departmental capital cities and metropolitan areas of Colombia.

[8] Indicator calculated by the Colombia's research team of Innovations for Poverty Action (IPA), to measure the cognitive learning of children.

[9] "Pequeñas Aventureras" ("Little Adventurers") is a multimedia program developed by "Taller Sésamo" with the support of "Dubai Cares" and the Inter-American Development Bank. The program seeks to promote the teaching and learning of mathematics and science at the preschool level with a gender approach.

the better the practices of the community mother. We also asked community mothers how close they felt to caregivers.

Sample Characteristics and Econometric Models

Sociodemographic characteristics of the sample and balance validation

Randomized control trials base their identification strategy on the generation of comparable groups (Kopper and Sautmann, 2021). Using the data collected at the endline, we tested if treatment and control groups are statistically identical. **Tables 2, 3,** and **4** outline descriptive statistics of the sample and a *t*-test of the differences of the means (balance test) of a set of characteristics of community mothers, caregivers, and children. For most of the variables we found no statistically significant differences between the treatment and control groups. We also tested the balance of a set outcomes for children, community mothers, and caregivers, as measured in the baseline surveys. We did not find significant differences between treatment and control groups.[10]

Econometric models

To evaluate the impact of TE we estimated the average treatment effect (ATE) of the program on the outcomes of children, community mothers, and caregivers. Following the impact evaluation literature, this is the Intention to Treat Effect (ITT). The ITT is the effect of the program on those assigned to treatment, regardless of their take-up. In many cases, researchers, and policy makers care about the impact of the offer of the program, as this will resemble what will be likely to happen if the program is rolled out. For this reason, this estimator is also known as the "policy impact" of the program (Gertler et al., 2016).

The ATE is calculated with different methodologies depending on the outcome variable. We used linear regressions for continuous variables, logistic regressions for dichotomous variables, ordered logistic regressions for multinomial variables with a natural order, and multinomial logistic regressions for those with unordered scales.[11] In models with a continuous dependent variable, the ATE is the coefficient associated with a variable that takes the value 1 for the treatment group and 0 for the control group. In models with a dichotomous or multinomial dependent variable, the ATE corresponds to the average marginal effect of belonging to the treatment group on the probability of observing a specific value of the variable. Continuous outcomes were standardized to the mean and standard deviation of the control group so ATE is expressed in standard deviations.

Following the results of the balance test, the regressions control for those characteristics where we found significant differences between the treatment and control groups. First, estimations based on community mothers' survey control for a dummy variable measuring the education level of the community mother (1=high school completed). Second, estimations based on the caregivers' survey control for a set of dummy variables measuring caregiver characteristics: race (indigenous, black, mestizo, or not self-identified with a race), being the principal caregiver of the child, and having a partner. Finally, estimations

[10] The results of this analysis can be requested from the authors.

[11] All estimations were implemented with Stata. The specific routines are *regress*, *logit*, *ologist*, and *mlogit*, respectively.

based on the childrens' survey control for gender and race (mestizo and black). Moreover, standard errors of analysis of caregivers and children are clustered at the HCB level.

Results

In this section we present the results of the impact of TE on children's socioemotional skills (direct outcomes) and other indirect outcomes among children, community mothers, and caregivers. We only present significant results, that is, where the program had some statistically significant impact. Nonsignificant effects can be requested from the authors.

Effects on children

a. Direct outcomes

Results show that TE had a positive impact on self-awareness and prosocial behavior skills, as measured by the caregiver survey **(Table 5).** On average, being a treated child increases the frequency of self-awareness behavior in 0.141 standard deviations (SD) compared to a control child, and of prosocial behavior in 0.128 SD (as measured with the SDQ scale). With the variables in the children's survey, the effects are positive, but not statistically significant. The program had no significant effects on self-regulation, conflict resolution, problems with peers, and empathy skills.

b. Indirect outcomes

TE had a positive impact on children's cognitive learning **(Table 6)**. According to caregivers (CREDI Index), treated children showed higher cognitive development than controls (0.155 SD). We verified this finding with the analysis of children (percentage of correct answers). Treated children perform better than controls with a difference of 0.147 SD. We didn't find significant impacts on children's mental well-being.

Effects on community mothers

Table 7 outlines the impact of TE on community mothers. First, we found a positive effect of TE on the empathy (Emotional Intelligence Index) of community mothers (0.253 SD). Second, the treated community mothers are 0.215 SD below controls in reporting negative health symptoms. The COVID-19 context could potentially explain this result. The intervention started in April 2021 after a period of high levels of stress caused by restrictions and lockdowns. As portrayed in FEN's qualitative evaluation, TE improved children's environment and relations (FEN, 2022). Additionally, while teaching the TE program, community mothers and caregivers could have learned its content, contributing to their mental well-being. Third, we found improved pedagogical practices in treated HCBs. The ATE is almost 0.266 SD for the Pedagogic Practices Index. Fourth, community mothers receiving the intervention built a closer relationship with the caregiver, perhaps because of increased interactions. The probability that the community mother declares that she feels extremely close to the caregiver increased 6.8 percentage points in the treated group with respect to the control group.

Effects on caregivers

Table 8 shows the impact of TE on caregivers' outcomes. We found effects on the Family Care index and on children's stimulation practices. Caregivers in the treatment group stimulate their children emotionally and cognitively 0.360 SD more than caregivers in the control group. The most common stimulation tool were books (consistent with the program methodology). The probability that treated caregivers report

reading books always is almost 14 percentage points higher than in the control group. Furthermore, the probability of receiving training in the management of children's emotions is 17.4 percentage points higher than among controls. Results for the compound index (Tools for Stimulation) show that treated caregivers used more tools for children's stimulation compared to the control group (0.349 SD). Consistent with the finding among community mothers, treated caregivers are 0.144 SD below the control group when reporting negative health symptoms. We did not find significant effects of TE on empathy and relationship closeness outcomes for caregivers.

Discussion

In this article we experimentally evaluate Colombia's Think Equal program, which teaches SES to children ages 3 to 6. We found that the program had positive effects on children's prosocial behavior, self-awareness, and cognitive learning. The results of a recent experimental evaluation of TE in Australia are consistent with our findings. Emmett et. al. (2021) found that treated children were more emotionally regulated, less anxious and withdrawn, demonstrated greater extraversion, and had lower negative affect than children in the control group. Our intervention also had an impact on community mothers and caregivers implementing the activities. Treated community mothers had higher levels of empathy, lower negative health symptoms, better pedagogical practices, and a closer relationship with the children's caregivers compared with those in the control group. Treated caregivers had better stimulation practices and lower negative health symptoms compared with those in the control group.

The qualitative evaluation of TE in Colombia (FEN, 2022) provides some hypotheses about the reasons behind its positive effects. According to the community mothers who participated in focus group conversations, the program strengthened the school-community relationship through their direct work with the caregivers; strengthened the caregivers' reading practices with their children, using program materials (books, audio stories, infographics, and chatbot); helped caregivers incorporate SEL in students' daily life; increased their own self-esteem in relation to their educational practice; and improved the curricular planning at the educational centers, based on a detailed description of the contents of the program.

These results are relevant, given recent evidence showing that SES—such as goal-setting, teamwork, and managing emotions—are correlated with a range of labor market and tertiary education outcomes in Colombia (Cunningham, Acosta, and Muller, 2016). Also, SEL through the education system is a key element of the implementation of the Peace Agreements with the FARC. In this context, our findings are promising for developing these skills from early childhood in a cost-effective way. In fact, based on the detected effects, in 2023 the ICBF launched a new program called "Heal to Grow", which scales elements from TE combined with training of community mothers to foster their own mental health and promote the mental wellbeing of children. The findings also contribute to the literature on the design and implementation of education interventions as they suggest that a well-designed program has the potential to develop some SES in children at an early age, and at the same time to develop capacities in those who implement the activities.

Despite the positive effects on children's prosocial behavior, self-awareness, and cognitive learning, the program had no effect on some other SES (self-regulation, conflict resolution, problems with peers, and empathy). Two hypotheses could explain this finding. First, it is challenging to design and apply instruments to measure SES in early childhood education, especially when there is no relationship of

knowledge and trust with the evaluator (Darling-Churchill and Lippman, 2016). Consistent with this, the positive impact of the program on children's SES was found only using the caregiver questionnaire. Second, the program's hybrid operating model—combining face-to-face and remote learning—in the COVID-19 context may have reduced its effectiveness due to difficulties in supervising the implementation of the curriculum at home. Both hypotheses are supported by the testimonies of community mothers in the qualitative evaluation of TE (FEN, 2022). This result has important implications for the design and evaluation of early childhood socioemotional learning programs. On the other hand, it provides novel evidence about the challenges faced by interventions using hybrid models.

Future research should analyze the mechanisms behind the impact of the TE program (e.g., to study if the positive effects are due to a direct impact on children or if they are rather mediated by their positive effects on caregivers and community mothers) and consider the long-term outcomes of treated children (e.g., educational trajectories, SES at primary school). Also, it is important to evaluate the impact of TE in contexts other than the one used in our evaluation (e.g., Colombian regions with lower rates of violence or far from the areas of the armed conflict or high-income countries) and in centers that operate in different modalities than the community mothers' program of the ICBF.

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Tables and Figures

Table 1. Expected Direct and Indirect Outcomes of Think Equal Program, by Analysis Level

Level	Effect	
	Direct	Indirect
Children	Self-regulation Self-awareness Prosocial behavior Conflict resolution Problems with peers Empathy	Mental well-being Cognitive learning
Community mothers		Empathy Mental well-being Pedagogical practices Relationship closeness
Caregivers		Empathy Mental well-being Child's care practices Relationship closeness

Table 2. Community Mothers—Treatment and Control Group Comparison

Variable	Control		Treatment		t-test
	Mean	Standard Deviation	Mean	Standard Deviation	p-value
Age of the CM	44.5	9.7	44.2	9.4	0.776
Race of the CM:					
Indigenous	10.0%	30.3%	10.0%	29.8%	0.897
Black	17.0%	37.9%	16.0%	36.6%	0.747
Mestizo	33.0%	47.2%	37.0%	48.5%	0.446
White	3.0%	17.6%	5.0%	22.8%	0.314
Another race	36.0%	48.1%	31.0%	46.4%	0.387
Education level of the CM:					
Elementary school incomplete	0.0%	0.0%	1.0%	10.9%	0.167
Elementary school complete	1.0%	7.9%	0.0%	0.0%	0.306
High school incomplete	4.0%	19.1%	3.0%	17.1%	0.698
High school complete	13.0%	34.0%	7.0%	25.9%	0.072
Technical program	78.0%	41.6%	84.0%	36.9%	0.180
Undergraduate	4.0%	20.6%	5.0%	21.4%	0.868
Years as CM	15.0	8.6	15.2	9.3	0.873
CM lives in the HCB	95.0%	21.9%	96.0%	20.1%	0.719
CM receives help at the HCB	48.0%	50.1%	47.0%	50.1%	0.929
HCB is open	77.0%	42.0%	74.0%	44.2%	0.439
Total children in the HCB	12.1	0.9	12.2	1.1	0.459
Number of remote children in the HCB	8.6	3.6	8.5	3.8	0.780
HCB model:					
In-person model	9.0%	29.3%	9.0%	28.7%	0.888
Remote model	74.0%	44.2%	77.0%	42.4%	0.524
Blended model	17.0%	37.7%	14.0%	35.2%	0.518
Availability of equipment and materials at the HCB:					
Books for children	81.0%	39.2%	96.0%	20.1%	0.000
Radio	23.0%	42.4%	28.0%	44.8%	0.377
TV	50.0%	50.2%	56.0%	49.8%	0.234
Telephone	21.0%	41.1%	26.0%	44.2%	0.295
Refrigerator	90.0%	30.2%	94.0%	23.8%	0.176
Computer with camera	19.0%	39.2%	15.0%	35.8%	0.349
Smartphone	91.0%	29.3%	88.0%	32.6%	0.460
Tablet	2.0%	13.6%	1.0%	7.7%	0.292
CD/DVD	4.0%	20.6%	5.0%	22.6%	0.681
Internet	82.0%	38.7%	83.0%	38.0%	0.837
CM's app use:					
Uses WhatsApp	100.0%	0.0%	100.0%	0.0%	-
Uses Facebook	80.0%	40.2%	81.0%	39.5%	0.827

HCB = Hogares Comunitarios de Bienestar; CM = community mother.

Table 3. Caregivers—Treatment and Control Group Comparison

Variable	Control		Treatment		t-test
	Mean	Standard deviation	Mean	Standard deviation	P-value
Caregiver lives with the child	100.0%	4.1%	99.0%	7.6%	0.235
Principal caregiver (yes)	97.0%	15.7%	99.0%	10.8%	0.067
Age of the caregiver	29.7	6.7	30.3	7.3	0.100
Gender of the caregiver (female)	93.0%	27.1%	92.0%	27.5%	0.355
Race of the caregiver:					
Indigenous	7.0%	25.6%	10.0%	30.3%	0.076
Black	16.0%	36.3%	11.0%	30.7%	0.016
Mestizo	33.0%	47.2%	28.0%	44.8%	0.052
White	7.0%	26.3%	9.0%	28.5%	0.395
No race	34.0%	47.5%	39.0%	48.9%	0.087
Caregiver is employed	32.0%	46.5%	33.0%	46.9%	0.707
Caregiver receives an income	31.0%	46.2%	31.0%	46.2%	0.974
Number of adults at household	3.4	1.8	3.3	1.6	0.515
Number of under 18 at household	2.1	1.2	2.1	1.2	0.546
Children gender (female)	47.0%	50.0%	47.0%	50.0%	0.989
Caregiver has a partner	80.0%	40.1%	76.0%	43.0%	0.067
HCB model:					
In-person model	17.0%	37.2%	17.0%	37.6%	0.810
Remote model	78.0%	41.7%	77.0%	42.4%	0.647
Blended model	6.0%	23.4%	6.0%	24.5%	0.670
Frequency of monthly attendance of the child at the HCB:					
Every week of month	56.0%	49.9%	56.0%	49.8%	0.944
Weeks 1 and 3 of month	20.0%	39.9%	22.0%	41.5%	0.654
Weeks 2 and 4 of month	25.0%	43.2%	21.0%	40.5%	0.431
One week a month	0.0%	0.0%	1.0%	11.7%	0.196
Services that the house has:					
Electricity	97.0%	16.7%	97.0%	16.0%	0.790
Aqueduct	77.0%	42.1%	75.0%	43.2%	0.443
Sewerage	71.0%	45.5%	70.0%	46.0%	0.700
Internet at home	29.0%	45.6%	28.0%	44.8%	0.512
Internet on smartphone	31.0%	46.3%	30.0%	45.7%	0.619

Table 4. Children—Treatment and Control Group Comparison

Variable	Control		Treatment		t-test
	Mean	Standard deviation	Mean	Standard deviation	p-value
Child age	3.9	0.8	3.9	0.7	0.772
Child gender (female)	49.0%	50.0%	55.0%	49.8%	0.045
Child race:					
White (c)	47.0%	49.9%	50.0%	50.0%	0.289
Mestizo (c)	31.0%	46.1%	30.0%	45.9%	0.806
Brown (c)	12.0%	32.9%	11.0%	30.8%	0.298
Black (c)	10.0%	30.0%	10.0%	29.4%	0.770
White (e)	30.0%	45.6%	32.0%	46.5%	0.395
Mestizo (e)	49.0%	50.0%	54.0%	49.8%	0.043
Brown (e)	18.0%	38.2%	11.0%	31.8%	0.001
Black (e)	4.0%	19.1%	3.0%	16.3%	0.251
HCB model:					
In-person model	21.0%	40.5%	22.0%	41.8%	0.380
Remote model	72.0%	44.9%	72.0%	44.8%	0.929
Blended model	7.0%	26.2%	5.0%	22.4%	0.097

Note: To report race, children were shown an image (depending on their gender) and were asked with which character they identified. Subsequently, the enumerators chose the character they deemed more similar to the children: (c) the race reported by the child or (e) by the enumerator.

Table 5. Impact of Think Equal on Children's Direct Outcomes

	Socioemotional skills			
	Self-awareness		Prosocial behavior	
	(1)	(2)	(3)	(4)
	Frequency of self-aware behavior	Understanding own feelings	SDQ Prosocial scale	Way of helping others
Treatment (ATE in SD)	0.141**	0.099	0.128**	0.075
	(0.037)	(0.122)	(0.042)	(0.231)
Observations	1,275	1,471	1,275	1,471
Survey	Caregiver	Children	Caregiver	Children
Outcome variable type	Continuous	Continuous	Continuous	Continuous

Note: Regressions (1) and (3) control for caregiver's race (indigenous, black, mestizo, and not self-identified with a race), being the principal caregiver of the child, and having a partner. Regressions (2) and (4) control for child's gender and race (mestizo and black). Average treatment effect (ATE) is clustered by HCB.
SDQ = Strengths and Difficulties Questionnaires; SD = standard deviations.
p-values in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table 6. Impact of Think Equal on Children's Indirect Outcomes

	Cognitive development	
	(1)	(2)
	Cognitive development CREDI Index	Percentage of correct answers-cognitive development
Treatment (ATE in SD)	0.155**	0.147**
	(0.018)	(0.022)
Observations	1,275	1,471
Survey	Caregiver	Children
Outcome variable type	Continuous	Continuous

Note: Regression (1) controls for caregiver's race (indigenous, black, mestizo, and not self-identified with a race), being the principal caregiver of the child, and having a partner. Regression (2) controls for child's gender and race (mestizo and black). Average treatment effect (ATE) is clustered by HCB. CREDI = Caregiver Reported Early Childhood Development Instrument; SD = standard deviations. p-values in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table 7. Impact of Think Equal on Community Mothers' Outcomes

	Indirect outcome			
	Empathy	Mental well-being	Pedagogical practices	Relationship closeness
	(1)	(2)	(3)	(4)
	Emotional Intelligence Index	Sum negative mental health symptoms	Pedagogic Practices Index	How close the community mother feels to the caregiver[1]
Treatment (ATE in SD)	0.253**	-0.215*	0.266**	
	(0.023)	(0.053)	(0.016)	
Marginal effect (T vs. C)				
Not close at all				–
				–
Fairly close				-0.011
				(0.112)
Quite close				-0.058**
				(0.049)
Extremely close				0.068**
				(0.042)
Observations	326	326	326	325
Survey	Community mother	Community mother	Community mother	Community mother
Outcome variable type	Continuous	Continuous	Continuous	Multinomial ordered

Note: Regressions (1), (2), and (3) and ordered logit (4) control for education of the community mother (high school complete). (1) No community mother answered "not at all close."
p-values in parentheses *** p<0.01, ** p<0.05, * p<0.1
SD = standard deviations.

Table 8. Impact of Think Equal on Caregivers' Outcomes

	Indirect outcome				
	Child's care practices				Mental well-being
	(1)	(2)	(3)	(4)	(5)
	Family Care Index	Tools for Stimulation Index[1]	Frequency of reading books	Took course in emotion management	Sum negative mental health symptoms
Treatment (ATE in SD)	0.360***	0.349***			-0.144**
	(0.000)	(0.000)			(0.038)
Marginal effect (T vs. C)					
Never			-0.044***		
			(0.000)		
Sometimes			-0.185***		
			(0.000)		
Almost always			0.094***		
			(0.000)		
Always			0.135***		
			(0.000)		
Yes				0.174***	
				(0.000)	
Observations	1,275	1,275	1,155	1,171	1,275
Survey	Caregiver	Caregiver	Caregiver	Caregiver	Caregiver
Outcome variable type	Continuous	Continuous	Multinomial ordered	Dichotomous	Continuous

Note: (1) Compound index of three variables: frequency of reading books, frequency of playing videos/movies, and took emotion management course. Regressions (1), (2), and (5), ordered logit (3) and logit (4) control for caregiver's race (indigenous, black, mestizo, and not self-identified with a race), being the principal caregiver of the child, and having a partner. Average treatment effect (ATE) clustered by HCB

p-values in parentheses *** p<0.01, ** p<0.05, * p<0.1

SD = standard deviations.

Appendix

Table A.1 Think Equal: Key Outcomes and Related Activities Implemented in Colombia

Main outcomes	Focus areas	Objective	Example activities
Prosocial behavior	Respect and value others	Learn to celebrate diversity	Dialogue about hair and how different people have different types of hair. Recall the importance of diversity.
			Discuss how children may be different, but all want to be happy and be loved.
	Conflict resolution	Learn techniques to control emotions.	Discuss how the body reacts to emotions such as frustration and enthusiasm. Teach deep breathing as a technique to control emotions.
Self-awareness	Personal attributes	Identify what makes each of us unique	Dialogue about what makes each of us unique. Ask children what they like about themselves.
			Based on the reading "Is There Anyone Like Me?" and the Okapi drawing at the end of the book, have children draw their own okapi with different tastes and preferences.
	Emotions	Recognize emotions	Dialogue about emotions. Ask children what makes them smile.
			Describe some of the emotions in the story "Measurement of Emotions." Practice facial expressions that transmit the emotions.

			Analyze the different emotions of the characters. Use cards to interpret emotions.
		Recognize behaviors that we display when we are angry.	Start a conversation about anger. How did a character display anger?
Oral communication	Language and communication	Understand how books are written and how stories are developed.	Discuss what the components of the story are, and work with the children to develop their own narratives.