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Emotional and Behavioral Impacts of Telementoring and Homeschooling Support on Children[†]

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During the COVID-19 pandemic, the traditional education models were significantly disrupted, and millions of students in low- and middle-income countries (LMIC) lost learning, social, and emotional supports for months. Students experienced significant learning losses (Patrinos 2022; Singh, Romero, and Muralidharan 2022), and their mental health deteriorated considerably (Adegboye et al. 2021; UNICEF 2020). As a result, education policymakers and social scientists around the world started evaluating learning recovery programs. A number of interventions addressing the learning losses due to COVID-19 school closures show viable remedies that are also potentially scalable in low-resource and poverty-stricken contexts (see Hassan et al. 2021 and other papers in this session). However, the emotional and behavioral impacts of such programs, particularly on disadvantaged children, have received little attention.

Children frequently draw emotional cues from important people in their lives, such as parents and teachers (UNICEF 2020). Unforeseen school closures can disrupt the emotional support system between educators and students as well as lead to distress and a sense of uncertainty about the future among students. Pandemic stressors also impacted families in poverty, which subsequently impacted their capacity (time, resource, and emotional) to invest in their children (Masonbrink and Hurley 2020). Moreover, pandemic lockdowns increased the prevalence of mental health problems, such as hyperactivity and anxiety, among children from low-income families (Adegboye et al. 2021). Without both support systems and the coping mechanisms that come with them, children in low-income environments were left emotionally vulnerable and socially isolated during the COVID-19 pandemic, which put their human capital development and future success at risk.

Can remote learning and homeschooling support during prolonged school closures affect children's emotional and behavioral outcomes? Remote learning support can partially reinstate the support systems between educators and students, as well as between parents and children, and mitigate educational disparities among children from low-income backgrounds. Therefore, such support also has the potential to enhance the psychological strengths of children and help them regulate emotions, develop social relationships and positive affect, and boost attention and reasoning (Goodman and Goodman 2009; Wood et al. 2011).

In this paper, we investigate this question by leveraging a randomized over-the-phone mentoring program aimed at mothers and their primary school–aged children in rural Bangladesh. Schools in Bangladesh were closed for 18 consecutive months during the COVID-19 pandemic, while most children in low-income households did not have access to alternative learning opportunities, such as via the internet or television. Against this background, the program provided mothers and children with 13 weeks of mentoring support delivered by university student volunteers via mobile phones (Hassan et al. 2021). The aim of the program was to encourage and improve the homeschooling support system and facilitate learning among disadvantaged children.

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Following the intervention, we used the validated Strengths and Difficulties Questionnaire (SDQ) by Goodman (1997) to assess the prevalence of emotional and behavioral difficulties among children. In particular, we measured their emotions, conduct, hyperactivity/inattention, and peer relation problems. One month after the intervention ended, treated children's mental health problems decreased by 11 percent relative to the control group ($p < 0.01$). This effect was entirely driven by reductions in conduct problems (i.e., the tendency to violate rules or social norms) and hyperactivity/inattention symptoms (i.e., trouble paying attention to details). The impacts on emotional difficulties (i.e., experiencing frequent headaches and feeling fearful or unhappy) and peer problems (i.e., poor relationship with peers), however, were muted. These effects were primarily driven by boys, while girls showed little to no developments in hyperactivity/inattention and conduct problems.

One year after the intervention ended, we returned to the same children and measured all four dimensions of difficulty again. The treatment effects disappeared entirely ($p > 0.10$). However, children in both the control and treatment groups showed an alarming increase in mental health problems, with about a 10 percent increase since the first survey. This trend underscores the importance of maintaining learning support for disadvantaged children during times of crisis and uncertainty, as stopping such support can exacerbate children's psychological development and reinstate distress and anxiety.

I. Experimental Design and Data

In July 2020—four months into COVID-19 school closures in Bangladesh—we collaborated with a local partner, Global Development & Research Initiative Foundation (GDRI), to implement a mobile phone–delivered learning support intervention in rural Bangladesh called telementoring (Hassan et al. 2021). The intervention was delivered by student volunteers from Bangladeshi public universities, whom we recruited and trained. Most of these volunteers majored in social sciences and had prior private tutoring experience. For the intervention, volunteers were randomly matched with mothers and their children who were enrolled in grades 1–3 in public schools. Mothers were given solution manuals for their children's mathematics and English textbooks prior to the program. During the 13-week program period, mothers received quality mentoring and guidance on a weekly basis to help with their struggles with homeschooling. For instance, if they were struggling with a mathematics problem, the mentor would explain to them that specific problem and various ways to solve other similar problems. There were also behavioral components to the mentoring program: every week, there were time commitment goal settings and discussions based on text messages sent on issues related to positive parenting, the importance of investing equally in boys and girls, having a positive outlook, etc. The children, on the other hand, also received direct tutoring support in mathematics and English from the mentors and were present throughout all sessions with their mothers.

We evaluated this program using a randomized controlled trial, where randomization was at the household level. From GDRI's existing contacts, we identified households that met our selection criteria—at least one child enrolled in grades 1–3 in public schools, and the household had a mobile phone. We randomly selected 1,500 such households and eventually surveyed and enrolled 838 households in the program. 419 mother-child dyads were randomly assigned to the treatment arm that received telementoring, and the remaining 419 mother-child dyads were assigned to a pure control group where no support was provided. The average age of children was about 7.5 years, and roughly half were girls. The mothers had about six years of schooling, and the average household income was about $135 per month.

Following program completion, we carried out two rounds of data collection on the same sample: the first in January 2021 and the second in December 2021. Our data were collected in person, as lockdown and isolation rules had been relaxed by the government by then. The enumerators strictly followed social distancing and hygiene rules throughout the fieldwork. We were successful in collecting end line data from about 98 percent of the original sample (i.e., participated in at least 1 end line), of which 93 percent never attrited at either end line. We measured children's learning outcomes through a standardized test and surveyed mothers to measure their daily time input on children and on their parenting perceptions and practices. In

Hassan et al. (2021), we report the main results of this intervention, where we find significant and persistent impacts on the learning outcomes of children, parental time input, and positive parenting and behavior.

During both follow-ups, we also surveyed mothers to measure four dimensions of their children's psychological difficulties using the SDQ (Goodman 1997): emotions, conduct, hyperactivity/inattention, and peer relation problems. Each difficulty is measured using five questions, where each question is answered on a three-point Likert scale (ranging from 0 to 2). So a higher score corresponds to unfavorable outcomes. The SDQ is a validated questionnaire that is widely used as a screening tool to identify behavioral and emotional problems among children as young as four years old. According to Goodman and Goodman (2009), children are considered to have borderline mental health problems ("difficulty threshold" hereinafter) if emotional problems score >3, conduct problems score >2, hyperactivity/inattention score >5, and peer problems score >2.

II. Results

We begin by examining the prevalence of mental health problems among children that did not receive telementoring support during the pandemic.[1] We report these control group averages in column 1 of Table 1. First, their average emotional problems during the one-month follow-up were below the corresponding difficulty threshold ($2.14 < 3$, panel A), but their average peer problems were slightly above the corresponding threshold ($2.12 > 2$, panel A). During the one-year follow-up, emotional problems remained below the difficulty threshold ($2.35 < 3$, panel B), but peer problems deteriorated further ($2.68 > 2$, panel B). Second, conduct problems were above the corresponding threshold of 2 in both end lines (2.40 and 2.58), while hyperactivity/inattention problems were not (4.28 and 4.42, both below 5). Lastly, psychological difficulties among the untreated group worsened over time in all four dimensions. In fact, the increases in emotional problems by 10 percent and peer problems by 26 percent were statistically significant at conventional levels. This trend suggests that the lack of access to alternative learning opportunities during school closures may have exacerbated mental health problems in children and pushed them toward borderline behavioral complications.

Next, to understand the treatment effects of telementoring on the emotional and behavioral difficulties among children and how much of the aforementioned problems were successfully averted, we estimate the following equation:

$$(1) \quad Y_{ijk} = \alpha + \beta T_{ijk} + \Gamma' \mathbf{X}_{ijk} + g_j + c_k + \epsilon_{ijk},$$

where Y_{ijk} is either the aggregated SDQ score (between 0 and 40) or disaggregated scores (each between 0 and 10) of child i in grade j in union council k (the smallest rural administrative and local government unit). T is the indicator for telementoring, $\mathbf{X}$ is a vector of controls listed in Table 1's notes, and g_j and c_k are grade and union council fixed effects, respectively.

Estimates for equation 1 are reported in column 2 of Table 1. We find that telementoring significantly reduced the prevalence of psychological difficulties immediately after the intervention ended (panel A). The average SDQ score among the treated was 1.24 units lower than that among the untreated ($p < 0.01$). This difference is about 11 percent lower than the mean of the control group (score of 10.94). When disaggregated by the four different psychological difficulties, we find that only conduct and hyperactivity/inattention problems were significantly reduced by the treatment (by 18 percent and 17 percent, respectively, relative to the control). Moreover, conduct problems were successfully averted among the treated children (score was below 2), as opposed to the borderline/moderate conduct problems observed in the control group (score was above 2). Boys experienced more benefits than girls; however, these differences are not statistically significant at conventional levels (column 5, panel A). The results suggest that reintroducing learning routines to children's daily lives through telementoring encouraged them to follow rules and norms (which are associated with conduct) and made them feel less anxious and restless about missing out on school activities and falling behind (which are associated with inattention).

[1] Note that these children also did not have access to alternative learning opportunities, such as via the internet.

Table 1—Treatment Effects on Emotional and Behavioral Problems

Outcomes	Control means (1)	Treatment effects (2)	Heterogeneity by gender: Boy (3)	Girl (4)	Difference (5)
Panel A. One-month end line					
Total SDQ score	10.94	−1.24	−1.62	−0.76	−0.65
	(0.23)	(0.31)	(0.45)	(0.47)	(0.62)
Emotional symptoms	2.14	−0.02	−0.01	−0.00	−0.02
	(0.08)	(0.12)	(0.17)	(0.17)	(0.24)
Conduct problems	2.40	−0.43	−0.60	−0.31	−0.26
	(0.10)	(0.13)	(0.17)	(0.20)	(0.25)
Hyperactivity/inattention	4.28	−0.73	−0.91	−0.52	−0.18
	(0.11)	(0.15)	(0.21)	(0.22)	(0.29)
Peer problems	2.12	−0.05	−0.12	0.07	−0.19
	(0.07)	(0.09)	(0.13)	(0.14)	(0.18)
Panel B. One-year end line					
Total SDQ score	12.03	0.29	0.63	−0.10	0.67
	(0.25)	(0.34)	(0.46)	(0.52)	(0.66)
Emotional symptoms	2.35	0.11	0.11	0.21	−0.08
	(0.09)	(0.13)	(0.19)	(0.19)	(0.26)
Conduct problems	2.58	0.05	0.16	−0.11	0.16
	(0.10)	(0.13)	(0.17)	(0.21)	(0.26)
Hyperactivity/inattention	4.42	0.14	0.22	−0.04	0.27
	(0.11)	(0.14)	(0.20)	(0.21)	(0.27)
Peer problems	2.68	−0.01	0.15	−0.16	0.31
	(0.08)	(0.10)	(0.15)	(0.14)	(0.20)

Notes: Control group averages (with standard errors in parentheses) are reported in column 1. Treatment effects were estimated using OLS (reported in column 2). All outcomes are scored between 0 and 10, where a higher score is considered less favorable. Controls include the child's age, gender, baseline literacy and numeracy scores, access to a private tutor, birth order, father's and mother's education, family income, household's number of children, and religion. Columns 3–5 report heterogeneity by gender of children. Column 3 reports treatment effects only among boys, column 4 reports treatment effects only among girls, and column 5 reports the difference between columns 1 and 2 (the coefficient on the interaction between treatment and gender dummies). All specifications include grade and union council fixed effects. Robust standard errors are in parentheses.

On the other hand, emotional and peer problems were unaffected by telementoring. The first end line was conducted when there were strict lockdown restrictions, which prevented children from interacting/playing with their peers. This might have contributed to the muted effects on peer problems among the treated children, as their mothers were unable to observe their behaviors toward their peers in these circumstances. Moreover, symptoms of emotional problems, such as headaches, fears, and being clingy, might be more influenced by parental mental health and childcare during lockdowns than by a mentoring intervention. Hassan et al. (2021) report that telementoring did not affect mothers' mental health, which might explain why it also did not affect children's emotional problems.

Next, we turn to the results from the one-year follow-up (panel B, Table 1). We find that treatment effects on aggregated and disaggregated mental health problems disappeared altogether ($p > 0.10$ for all in column 2, panel B). There was also no difference between boys and girls ($p > 0.10$ for all in columns 3–5, panel B). However, the overall SDQ scores in both control and treatment groups increased between the one-month end line and the one-year end line (10 percent higher than SDQ at the one-month end line). We believe the discontinuation of telementoring support may have contributed to the muted treatment effects in the one-year end line

and the upward trend in mental health problems. It is possible that active intervention was critical for restoring the educator-student support system that was disrupted by pandemic lockdowns. Furthermore, educators can provide hope and serve as role models for disadvantaged children, and in their absence, children may experience increased anxiety and uncertainty related to schooling. In Hassan et al. (2021), we demonstrate that the treatment had lasting effects on learning outcomes, parental involvement, and parenting behavior for at least one year. If these outcomes were instrumental in reducing children's emotional and behavioral difficulties, we would expect to see a significant and sustained reduction in treated children's mental health problems over the same time period. Therefore, we do not believe that children's learning gains, parental involvement, or parenting behavior contributed to their emotional and behavioral strengths, but rather believe that frequent interactions with an educator itself played a significant role in changing children's mental and behavioral difficulties.

III. Concluding Remarks

This paper shows that maintaining a support system between educators and children is essential for children's emotional and behavioral well-being. Developing behavioral difficulties, such as attention-deficit/hyperactivity disorder, can negatively impact children's human capital accumulation and future success (Currie and Stabile 2006). Our screening tool, the SDQ, reveals that brief remote learning support programs during prolonged school closures, such as telementoring, can prevent such threats in the short term, but sustained support is necessary to effectively address this issue.

Remote learning through basic phones also has the potential to alleviate the risks of developing behavioral problems in children during other frequent crises in LMIC, such as political unrest, teacher strikes, and natural disasters, which often lead to school closures and disruptions to learning. The wider mobile phone coverage in rural areas, thus, presents an opportunity for policymakers in LMIC to address both learning and behavioral difficulties concurrently, especially when in-person communication is difficult.

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