

How Cognitive and Psychosocial Difficulties Affect Learning Outcomes: A Study of Primary School Children in Syria

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# HOW COGNITIVE AND PSYCHOSOCIAL DIFFICULTIES AFFECT LEARNING OUTCOMES: A STUDY OF PRIMARY SCHOOL CHILDREN IN SYRIA

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## ABSTRACT

*Meeting the education needs of children is increasingly recognized as a necessary part of humanitarian response in emergencies. Experiences of war, dislocation, and trauma are known to affect children's psychosocial wellbeing. Less is known about how mental health and psychosocial wellbeing affect children's learning in emergencies. In this article, we examine this effect among children experiencing the crisis in Syria. The data we use are from children (N=7,191) who received educational support in northwest Syria from November 2018 to May 2019. We used the literacy levels reported by teachers to measure student learning, and the Washington Group Questions to measure cognitive or psychosocial difficulties. The average length of time between moving up a literacy level was 64 days. We fit mixed ordinal models to assess the associations between having one, every, or multiple cognitive and psychosocial difficulties. Having a single cognitive or psychosocial difficulty was associated with poorer learning progress. Children with two or more cognitive or psychosocial difficulties were less likely to progress as far as those without any such difficulties. The findings suggest that psychosocial and cognitive support for children in emergencies is needed, not just for their wellbeing but to enable them to learn effectively.*

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## INTRODUCTION

Children living in emergency contexts are vulnerable to a range of risks. Education interventions are being used increasingly in these settings to support children's psychosocial wellbeing, to ensure their physical safety, and to provide learning. The research featured in this article adds to the existing knowledge on whether cognitive and psychosocial wellbeing are associated with learning. This will help those designing and delivering education responses to incorporate mental health and psychosocial support (MHPSS) into their program activities. We posit that MHPSS may enable children to learn while in emergency settings. In this article, we describe the context of the Manahel program's intervention in Syria, define what we mean by positive mental health, discuss the existing evidence on the effectiveness of MHPSS as part of education delivery, and address the persistent need for MHPSS in emergency settings.

## CONTEXT OF THE INTERVENTION

Following the Arab Spring protests of 2011, the government of Syria deployed the army against demonstrators. In 2012, the International Committee of the Red Cross ("Syria in Civil War" 2012) declared that Syria was in a state of civil war. By 2018, an estimated 500,000 lives had been lost (Human Rights Watch 2019). Before the civil war, the government of Syria had provided free education, but the provision of education services was disrupted by the conflict. Schools were destroyed, damaged, or transformed into shelters, and families were reluctant to send their children to school due to safety concerns. As the opposition interim government began to take control of some areas, they had to fill the gaps in the provision of basic services, including education. Local communities formed councils and technical directorates to meet this gap. It was no small task, as the infrastructure had been weakened by bombardments (Fatima 2018). From the start of the conflict up to 2015, there were 4,000 attacks on schools (McDonald 2017), one-third of the nation's schools were nonoperational for education purposes, and the education workforce had been depleted, as 150,000 teachers had left the country (UN OCHA 2019). Where education was available, it was often interrupted by security issues that required schools to close.

## EDUCATION, MENTAL HEALTH, AND PSYCHOSOCIAL SUPPORT AND LEARNING

“Education in emergencies” describes the provision of education for those affected by crisis, such as a war or natural disaster (Sinclair et al. 2001). Education provision, which is increasingly recognized as part of humanitarian response, enables children to return to their studies when schools reopen, which helps to sustain social capital (Talbot 2013). However, receiving education in emergency settings does not necessarily translate into learning gains for the recipients (Sharifian and Kennedy 2019), and it has not been associated with learning gains for children in various locations. War-related trauma can negatively affect children’s intelligence, cognition, memory, and attention (Sharifian and Kennedy 2019), which may indicate that children need psychosocial support to be able to learn when in a conflict or emergency setting.

Mental health and psychosocial needs are different but interconnected (WHO 2011). The World Health Organization (WHO 2013, 1) defines positive mental health as a state of wellbeing, wherein the individual can realize their abilities, cope with normal life stress, work productively, and contribute to their community. “Psychosocial” refers to the interaction between the social and the psychological, which contributes to wellness (IASC 2007). The development sector has made progress in acknowledging mental health and psychosocial needs within a global understanding of “disability prevalence.” This has been facilitated by the Washington Group Questions, which are standardized tools for understanding disability in children (Washington Group on Disability Statistics 2016).

Schools could provide an appropriate environment for delivering mental health and psychosocial support, as most children feel safe there (UNICEF 2019; McDonald 2017). However, there is a lack of evidence on the delivery or effectiveness of psychosocial support as part of an education response in crisis settings. An education project in post-civil war Sierra Leone demonstrated that psychosocial support was beneficial for children recovering from trauma; the project did not investigate whether it also supported learning (Crisp, Talbot, and Cipollone 2001). There is limited evidence from crisis settings to indicate that MHPSS can support children’s learning (Torrente et al. 2019; Jordans, Pigott, and Tol 2016). A review by Burde et al. (2015) of the aspects of education interventions that may be effective in supporting the learning and wellbeing of children in crisis settings did not find sufficient evidence to determine whether wellbeing and mental health were associated with learning outcomes in humanitarian contexts. The literature from developing countries on MHPSS and learning in conflict or crisis contexts is

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limited and we cannot assume that study findings are generalizable from other contexts or across crisis settings, but there is evidence from other study settings that that this type of support may benefit children's learning outcomes.

Mental health and psychosocial interventions have been found to have positive associations with learning in Western contexts (Reback 2010; Stokes and Brunzell 2019), but this has not always been the case when using objective measures of learning. A review of several social and emotional learning interventions in the United States only found positive effects, as reported by teachers, for ability, motivation, and skill, but not for grades or standardized test scores (Jones et al. 2017). These findings indicate an association between MHPSS and learning in Western contexts, but making inferences beyond Western cultures should be done with caution, as the culturally inappropriate application of psychosocial support can be harmful (Wessells and van Ommeren 2008).

It is important to understand whether MHPSS is conducive to learning, as children's mental health and psychosocial needs are greater in crisis settings. Therefore, evidence is needed to support programs that include MHPSS in the delivery of education. The mental health and psychosocial needs of children and adults are negatively impacted by violence, economic uncertainty, and food insecurity (IASC 2007; Talbot 2013). The scale of the need for MHPSS among children in Syria is unknown (McDonald 2017). However, research among children living in refugee camps in Turkey found that 60 percent had symptoms of depression, 45 percent had posttraumatic stress disorder (PTSD), and 65 percent had psychosomatic symptoms (Özer, Şirin, and Oppedal 2013).

There are challenges in providing sufficient MHPSS to the frontline professionals and paraprofessionals who can give children and adults the support that they need (ABAAD Resource Center for Gender Equality 2016). Failing to help adults and children recognize when individuals around them may need MHPSS could exacerbate the problem. The effects of MHPSS on children are underresearched, as most research conducted on MHPSS in Syria has focused on adults (Lee, Ziveri, and Pfeffer 2019). PTSD is the most researched area in the field; less is known about other psychosocial needs, which may affect more of the population (Blanchet et al. 2015; Jordans et al. 2009). The limited evidence, the scale of mental health and psychosocial needs, and the importance of providing education interventions that deliver learning demonstrate the need to understand the link between MHPSS and learning in the Syrian context. Burde et al. (2015) noted the lack of research on children with disabilities and other vulnerable populations and recommended further research in this area.

## RESEARCH AIMS AND OBJECTIVES

Understanding the association between mental health and psychosocial needs, functional difficulties, and learning can help those delivering education in the context of emergencies to meet the needs of the children they support and ensure that they receive MHPSS for their wellbeing and learning. There is only limited research thus far on children's mental health and psychosocial needs and learning in the education in emergencies context. The objective of this research is to explore whether mental health and psychosocial needs are associated with learning in the Syrian crisis. We aim to show whether mental health and psychosocial needs are associated with learning and, if so, which aspects are associated with it and whether the association differs in accordance with the degree of mental health and psychosocial difficulties.

## METHODOLOGY

### STUDY SETTING, POPULATION, AND SAMPLE

The Manahel program, which was established in Syria in 2018, is funded by the UK Foreign, Commonwealth, and Development Office.<sup>1</sup> The Manahel program, which provides access to safe, inclusive, quality education for primary school-age children in first through fourth grade, operates in seven districts across two provinces and includes 25 of the 26 subdistricts in Idleb. It combines classroom lessons with remedial education, structured psychosocial support, and play-based activities.

The Manahel program has mainstreamed MHPSS in all its activities. This includes helping teachers know how to identify the children's MHPSS needs, training paraprofessional MHPSS workers, ensuring that schools have child-friendly spaces, and providing structured learning materials and sessions on key topics, such as bullying, coping with change, expressing feelings, and making friends. The program aim is for teachers and MHPSS workers to help children overcome the trauma they have experienced.

Schools participating in the program aim to be a place where children can solve problems, build confidence, make friends, manage stress, and learn to process and express feelings of empathy, sympathy, sadness, and hope.

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<sup>1</sup> The UK Department for International Development and the UK Foreign and Commonwealth Office merged on September 2, 2020, thereby creating the Foreign, Commonwealth, and Development Office. The Manahel program was still operating in Syria at the time of publication.

## COGNITIVE AND PSYCHOSOCIAL DIFFICULTIES AND LEARNING OUTCOMES IN SYRIA

### STUDY POPULATION

Since 2018, the Manahel program has supported 354,940 children ages 6 to 14, 50 percent of whom were girls. Teachers collected some administrative data to support learning. For example, they kept a paper record that included the school's name, teacher's name, child's name, and the class the child was attending. They also entered the date of the learning assessment, what literacy level the child reached, and completed the Washington Group Questions for the child. A selection of 59 schools participating in the Manahel program was drawn from a list of all schools to produce a random sample. Eighteen schools were removed from this list due to security concerns in northwest Syria.

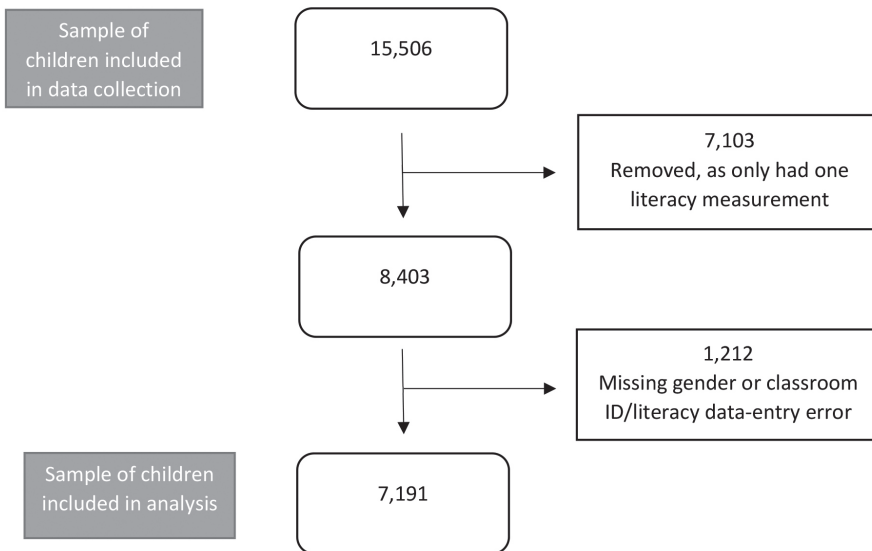
For this research, Manahel project staff members manually entered data for the sampled schools on an Excel spreadsheet. Children's names were used to determine gender, then removed and replaced with a unique identifying number; the teachers' names were removed. The spreadsheets from each school were then combined into one. The Manahel program gained consent to use the anonymized data for reporting and research purposes. A translated summary of the research was shared with the provinces' education directorates in opposition-held areas as part of the agreed-to accountability mechanisms. When enumerators collected the data, they informed the teachers that the data showing children's names would be used to track each child's progress, and that all sensitive data (in our case, children's and teachers' names) would be removed when the data were used for research and reporting. The data collection resulted in a representative sample of 15,506 children, which was representative of the population of children taking part in the Manahel program.

### ANALYTICAL SAMPLE

We collected only one literacy level measurement for approximately half the children in the study when they entered the program, and it was not possible to identify whether their literacy level had not progressed, if they were missing an updated record, or if they had left the program. Therefore, in our analysis we could only use children who had two literacy measurements. This meant we removed 7,103 children from the sample, leaving us with 8,403 observations. In the Appendix, we compare the profiles of those with one literacy measurement to those with two. We found that the proportion of those who had cognitive or psychosocial difficulties was similar in the two groups, 7.6 percent and 6.9 percent, respectively.

The sample available for analysis was depleted further due to high item-level missingness on the gender variable (1,172 cases missing). Eighty-two children were the only child in their classroom; this was assumed to be a data-entry error and they were recoded as missing. Forty-five children were assumed to have data-entry errors on their literacy measure and were recoded as missing. There was some overlap between those missing gender data and those with a data-entry error on classroom identifier or literacy level, meaning that a total of 7,191 observations remained. This is depicted in Figure 1.

Figure 1: Description of Exclusions from the Analytical Sample



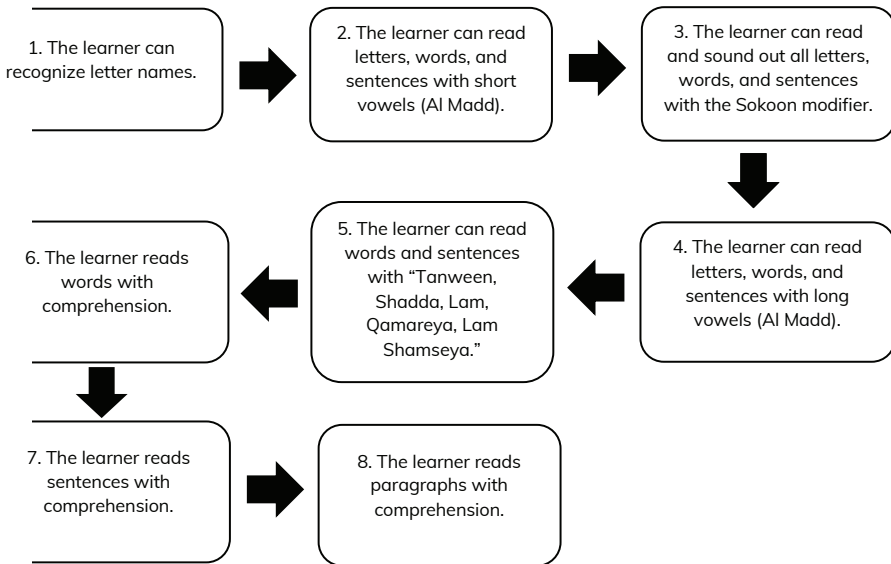


MEASUREMENT

LEARNING

Children’s literacy was assessed using Manahel’s eight literacy levels, as depicted in Figure 2. We call these level one, level two, and so on.

Figure 2: Assessment of Literacy Levels in the Manahel Program



The date measurements for each level were transformed so that, instead of being in date form, they became a categorical measure of level to capture the initial level at which each child entered the program and the last literacy level at which they were observed. The learning outcome we used for this analysis was the number of levels each child moved between their first and last recorded measurement. For example, if a child had a date measurement for level one, a date measurement one month later for level two, and a final date measurement recorded for level three, their outcome was that they had moved two levels. Due to the small number of children in the upper levels, and because few children had moved more than five levels (46 had moved six levels and 16 moved seven levels), we recategorized those who moved five, six, or seven levels into “five or more level moves.” Several children (n=45) had moved to a higher or a lower literacy level on the same date as their entry; although these trajectories were not necessarily implausible, we recoded these children’s learning progress as missing. Thus, the outcome variable of learning progress comprised the number of levels children progressed, which

ranged from one to five or more. This was considered more appropriate than using the final literacy level children achieved; using the number of levels moved as the outcome meant we could compare progress between children with either a high or low literacy level upon entering the program.

#### COGNITIVE AND PSYCHOSOCIAL FUNCTIONAL DIFFICULTIES

The Washington Group Questions were developed by a United Nations Statistical Commission City Group made up of more than 130 representatives from national statistical offices, as well as UN agencies, bilateral aid agencies, nongovernmental organizations, and disabled people's organizations. The questions were developed in recognition of the paucity of disability measurement tools for collecting data on the prevalence of disability and to monitor the UN Convention on the Rights of Persons with Disabilities. The Washington Group Questions also aim to foster comparability in disability information across countries, which did not previously exist (Washington Group on Disability Statistics 2020, 1).

The questions cover different types of impairment (e.g., visual, aural, mobility, cognitive, self-care, and developmental) and were pretested in multiple countries, including Cambodia, the Maldives, Portugal, Germany, Mongolia, the Philippines, and Sri Lanka (Loeb, Eide, and Mont 2007). The questions also include a child-functioning module—a set of Washington Group Questions adapted for children—to identify children with disabilities more accurately. We note that the Washington Group Questions are not a diagnostic tool; for the purpose of this paper, we conceptualized the questionnaire to classify children as having a functional difficulty.

We measured cognitive and psychosocial functional difficulties using the Washington Group/UNICEF Child Functioning Module. The module covers children between ages 2 and 17 and assesses whether they have difficulties in one of the following domains: seeing, hearing, walking, self-care, communication, learning, remembering, concentrating, accepting change, controlling behavior, and making friends, as well as anxiety and depression.<sup>2</sup> A full list of the Washington Group Questions and how the teacher asked them is available elsewhere.<sup>3</sup>

<sup>2</sup> A data-entry error led to the omission of the walking domain from this analysis.

<sup>3</sup> The Washington Group/UNICEF Child Functioning Module is available at <https://www.washingtongroup-disability.com/question-sets/wgunicef-child-functioning-module-cfm/>.

## COGNITIVE AND PSYCHOSOCIAL DIFFICULTIES AND LEARNING OUTCOMES IN SYRIA

The seeing and hearing domains were used as control variables in the analysis in order to separate their effects from the cognitive and psychosocial difficulties. Responses were coded as per the instructions for using the Washington Group Questions.<sup>4</sup> Functional difficulty was present for children who reported “a lot of difficulty” and “cannot do at all” for all questions, and also reported experiencing anxiety and depression daily.

A teacher administered the questions while the child registered for the class. The child’s functional difficulty status may have subsequently changed, but this was not captured in our data. Social workers trained the teachers to use the Washington Group Questions, including one-on-one support and shadow mentoring as teachers conducted the questioning with a sample of their students. The social workers also performed verification checks by comparing a random sample of the data entered with the paper records when they uploaded the data.

As teachers completed the questions for each child, a potential limitation was how well teachers were able to use them. However, a study using the Washington Group Questions on children in Fiji found that parents and teachers were both able to diagnose the questions, with the reliability between teachers and parents rated as “fair” (Sprunt, McPake, and Marella 2019). Another study of the Washington Group Questions used with children in Uganda to assess the internal validity and consistency of the questions showed that they are an effective scale for evaluating disability, as internal consistency was good and factor-level internal consistency was excellent (Zia et al. 2020). The Washington Group Questions have been lauded as being low cost and easily administered by nonspecialists. However, critics have argued that they only identify individuals with more significant disabilities and may omit individuals with mild disabilities (Groce 2017).

### OTHER CHARACTERISTICS

Children’s gender was determined by their names in the learning record, and the names were then removed. Where gender could not be determined clearly, it was coded as missing. This was the case for a substantial proportion of the sample (n=1,172, 14%). The school district was included in the administrative data related to schools. A measure of learning duration was derived from the number of days between recording a child’s first and last learning levels. This is a proxy measurement of how long children spent in the program, although they could have spent more time than was captured in the date measurements. We

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4 See <https://data.unicef.org/resources/module-child-functioning-tabulation-plan-narrative/>.

included this measure because the longer children spend in school, the greater the likelihood that they will learn, and this provided a measure of learning progress. The first learning level children were observed at is included in the model, as those who entered with a low literacy level could have been more inclined to achieve progress than those who entered at a higher level, or vice versa. As few children entered above level three, we aggregated these measures into the category “level three or higher.”

We adjusted for differences in learning that could arise from children being in different grades and classes. This was derived from the random identifier generated at data entry for each school, and the children’s grade and class variables. Grade was included in the identifier because of how information on class and grade were captured. The children could be in class one, class two, and so on, but this put them in multiple grades; therefore, we combined grade and class to identify individual classrooms within a school.

### ANALYTICAL TECHNIQUE

A mixed model was fit with a random intercept for classroom. Capturing variations in learning progress at this level enabled us to control for children in the same classroom being more likely to have similarities; the associations between independent variables and learning progress were assumed not to vary and to be equal across classrooms (Harrison et al. 2018, 1-32; Rabe-Hesketh and Skrondal 2008, 128). We used a mixed ordinal model because, although there is an ordered rank in progress through each literacy level, the differences between each level are not necessarily equal (McCullagh 1980, 109-42). Gender, sensory difficulty, district, initial literacy level, and learning duration were added to the model as control variables. There was no imputation of missing data, and complete case analysis was used. Nonrandom item nonresponse can reduce generalizability, and missingness was high on the gender variable (1,172 missing cases), which may undermine the representativeness of our results. For example, nonresponse cannot be distinguished from nonprogress in the case of learning progress, thus our conclusions can only be generalized to the population that demonstrated learning progress.

Models were fit using R version 3.6.1 (R Core Team 2018). The first model estimated the effects associated with having any cognitive or psychosocial difficulty. We subsequently fit a model for each of the domains: self-care, communication, learning, remembering, concentrating, accepting change, controlling behavior,

## COGNITIVE AND PSYCHOSOCIAL DIFFICULTIES AND LEARNING OUTCOMES IN SYRIA

making friends, and anxiety and depression. We estimated the effects of having either one or two or more cognitive or psychosocial difficulties.

### SENSITIVITY TESTS

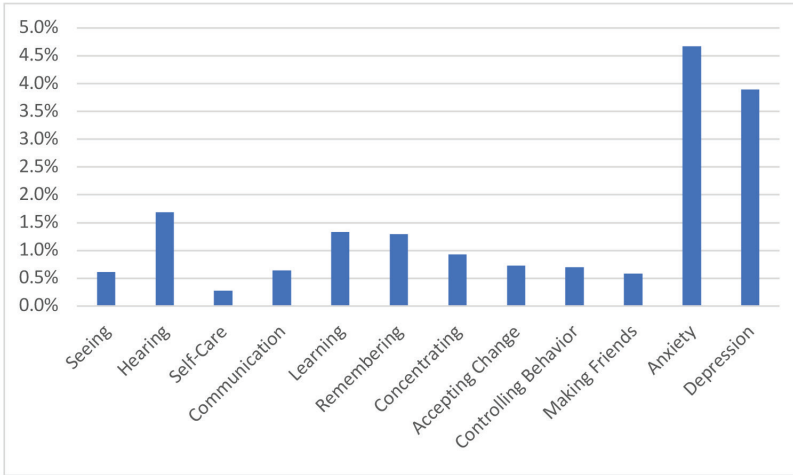
The Washington Group Questions include learning as a domain in which children can report having difficulty. Because the domains of learning, concentrating, and remembering may be closely related to making learning progress, we reran the analysis first while excluding children reporting difficulties in the learning domain, then again excluding those reporting difficulties in the learning, concentrating, and remembering domains. Given that we focused only on children who had two learning measurements and excluded those who did not, due to our inability to distinguish between no progress and nonresponse, we reran the analysis including these children as having made no progress. If having a cognitive or psychosocial difficulty was associated with making no progress, we might have seen a stronger association between the cognitive or psychosocial difficulties and learning in the sensitivity analysis. Results from all sensitivity tests were broadly in line with the main results and are available from the authors on request.

## RESULTS

### DESCRIPTION OF ANALYTICAL SAMPLE

We included 7,191 children in the analysis; 8.0 percent reported having a cognitive or psychosocial difficulty. Of these children, a larger proportion reported having multiple functional difficulties; 4.9 percent reported having two or more, and 3.2 percent reported having only one. The proportion reporting for each domain is shown in Figure 3. Sensory difficulties captured by the Washington Group Questions pertained to seeing and hearing; 0.6 percent of children experienced difficulty seeing, and 1.7 percent experienced hearing difficulties. Difficulty in self-care was reported by 0.3 percent; 0.6 percent reported communication difficulties; and having difficulty accepting change and controlling behavior were both reported by 0.7 percent. Having difficulty learning was reported by 1.3 percent, and difficulties remembering and concentrating were reported by 1.3 percent and 0.9 percent, respectively. Difficulties making friends and controlling behavior were reported by 0.6 percent and 0.7 percent of the children, respectively. Anxiety and depression were the two most frequently reported domains—4.7 percent and 3.9 percent, respectively.

Figure 3: Proportions Reporting Each Domain of Cognitive or Psychosocial Difficulties



The sample included 52.4 percent girls and 47.6 percent boys. All the children in Aleppo were in the Jebel Saman school district. In Idleb, children were in the districts of Ariha (14.7%), Harim (9.9%), Idleb (32.9%), and Jisr-Ash-Shugur (7.0%). Most of the children (73.7%) entered a Manahel classroom at the first learning level; 20.5 percent were in level two, 5.8 percent in level three or higher. In terms of learning outcomes, the majority of the children (61.7%) moved one level, 21.9 percent moved two, 9.9 percent moved three, 4.8 percent moved four, and 1.7 percent moved five or more levels.

Table 1: Profile of the Analytical Sample

Characteristics	Percentage N=7,191
<b>Functional difficulty</b>	
Any psychosocial/cognitive difficulty	8.00
<b>Multiple psychosocial/cognitive difficulties</b>	
One psychosocial/cognitive difficulty	3.20
Two or more psychosocial/cognitive difficulties	4.90
<b>Gender</b>	
Female	52.40
Male	47.60
<b>District</b>	
Ariha	14.70
Harim	9.90
Idleb	32.90
Jebel Saman	35.43

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Characteristics	Percentage N=7,191
Jisr-Ash-Shugur	7.00
<b>Initial learning level</b>	
Level one	73.70
Level two	20.50
Level three or higher	5.80
<b>Learning progress (number of levels moved)</b>	
One	61.70
Two	21.90
Three	9.86
Four	4.83
Five or more	1.71

**COGNITIVE OR PSYCHOSOCIAL DIFFICULTIES AND LEARNING OUTCOMES**

Table 2 shows the odds ratio (OR), a 95 percent lower confidence interval (CI), a 95 percent higher CI, and the *p*-value for the estimated association between any cognitive or psychosocial difficulty and learning outcomes. Cognitive or psychosocial difficulties were associated with lower odds of moving more than one learning level compared with children with no cognitive or psychosocial difficulties (OR=0.72%, CI=0.55-0.93). This implies that children with cognitive or psychosocial difficulties were less likely to move multiple learning levels than those without functional difficulty in these areas.

*Table 2: Association between Cognitive or Psychosocial Difficulties and Learning*

Cognitive or Psychosocial Difficulty (Reference group is those reporting no difficulty)	OR	95% Lower CI	95% Higher CI	<i>p</i> -value
Any cognitive/psychosocial difficulty	0.72	0.55	0.93	<i>p</i> =0.002

*Note:* Model adjusted for gender, sensory difficulty, district, literacy level at entry, and learning duration; children were nested within classrooms (N=7,191).

Each domain of cognitive or psychosocial difficulties was entered into a regression model with adjustment for confounders. The results from each of the regression models for each domain are shown in Table 3 and Figure 4. Significant associations were found between learning (OR=0.37, CI=0.21-0.67), remembering (OR=0.32, CI=0.17-0.60), and concentrating (OR=0.20, CI=0.10-0.40). Children with these forms of functional difficulty were less likely than their counterparts to move

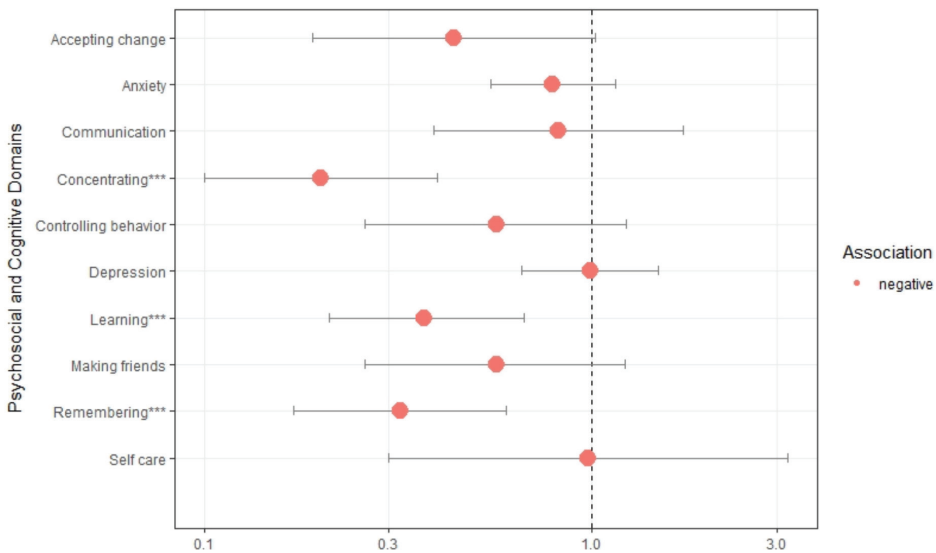
multiple learning levels. Accepting change did not have a significant association, but it was close to the 0.05 significance threshold ( $OR=0.44$ ,  $CI=0.19-1.02$ ). We did not find significant associations between learning outcomes and self-care, seeing, making friends, hearing, depression, controlling behavior, communication, or anxiety.

Table 3: Association between Each Domain of Cognitive or Psychosocial Difficulty and Learning

Cognitive/Psychosocial Domains (Reference group for each is those not reporting difficulty in that domain)	OR	95% Lower CI	95% Higher CI	p-value
Accepting change	0.44	0.19	1.02	0.057
Anxiety	0.79	0.55	1.15	0.221
Communication	0.82	0.39	1.72	0.593
Concentrating	0.20	0.10	0.40	7.09E-06
Controlling behavior	0.55	0.24	1.28	0.152
Depression	0.99	0.66	1.48	0.963
Learning	0.37	0.21	0.67	8.540E-04
Making friends	0.57	0.26	1.22	0.148
Remembering	0.32	0.17	0.60	3.320E-04
Self-care	0.98	0.3	3.2	0.972

Note: Model adjusted for gender, sensory difficulty, district, literacy level at entry, and learning duration; children were nested within classrooms (N=7,191).

Figure 4: Odds Ratios (95% confidence intervals) for Each Domain



Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$



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**MULTIPLE COGNITIVE OR PSYCHOSOCIAL DIFFICULTIES  
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Each child could report up to ten cognitive or psychosocial difficulties. More than half of those who reported having cognitive or psychosocial difficulties reported having more than one; few reported having three or more. The regression results presented in Table 4 show the likelihood of moving multiple learning levels for two groups of children—those with one cognitive or psychosocial difficulty, and those with two or more cognitive or psychosocial difficulties—as compared to children with no cognitive or psychosocial difficulties. The estimate for those with one cognitive or psychosocial difficulty was not significant ( $OR=0.96$ ,  $CI=0.67-1.38$ ). The chance of moving multiple learning levels for children reporting two or more difficulties was lower than for those without a cognitive or psychosocial difficulty. Their odds ratio was 0.55 ( $CI=0.38-0.78$ ), meaning that they were about half as likely as children without a cognitive or psychosocial difficulty to move multiple learning levels.

*Table 4: Association between Multiple Cognitive or Psychosocial Difficulties and Learning*

<b>Multiple Cognitive/Psychosocial Difficulties</b> <i>(Reference group is those reporting no difficulty)</i>	<b>Number of Disabilities</b>	<b>OR</b>	<b>95% Lower CI</b>	<b>95% Higher CI</b>	<b>p-value</b>
	One cognitive/psychosocial difficulty	0.96	0.67	1.38	.543
	Two cognitive/psychosocial disabilities	0.55	0.38	0.78	7.130E-12

*Note:* Model adjusted for gender, sensory difficulty, district, literacy level at entry, and learning duration; children were nested within classrooms (N=7,191).

## DISCUSSION

### MAIN FINDINGS

Our findings indicate that children with a cognitive or psychosocial functional difficulty made less learning progress than those without any kind of functional difficulty. When individually examining the association between each cognitive or psychosocial domain and learning outcomes, the remembering, concentrating, and learning domains each showed a significant association with reduced

learning outcomes. Although we did not find significant associations between other psychosocial domains and learning outcomes when we considered them individually, we did conduct a sensitivity test wherein we removed the remembering, concentrating, and learning domains, due to their closeness to cognitive ability; this test did find a significant association between having any cognitive or psychosocial difficulty and learning (excluding the three domains). This suggests that, although important, these three domains do not explain the entire association found. We regressed whether children had just one cognitive or psychosocial difficulty, or two or more such difficulties, on learning; we did not find a significant association between having one cognitive or psychosocial difficulty and learning. Having two or more cognitive or psychosocial difficulties was associated with poorer learning progress.

### FINDINGS IN RELATION TO CONTEXT

Most children in the study (73.7%) entered the Manahel program at level one or level two, meaning that they could only understand letters or read short words. This is consistent with another study on recipients of an education intervention in Syria, which found that the majority of children in grades two to eight could not read at a second-grade level (International Rescue Committee 2017). Our research found that the two most frequently reported domains from the Washington Group Questions were anxiety and depression, which were present in 4.7 percent and 3.9 percent of the children, respectively. This possibly reflects the trauma the children have experienced during years of conflict, displacement, and loss. Other research has indicated a greater need for mental health and psychosocial services among similar populations; among children living in refugee camps in Turkey, 60 percent had symptoms of depression, 45 percent had PTSD, and 65 percent had psychosomatic symptoms (Özer et al. 2013); however, differences in how these conditions were measured and the population groups means that comparability is limited. We derived our measure of cognitive and psychosocial difficulties from the Washington Group Questions instructions where, in order to be classified as experiencing anxiety or depression, one must have experienced it on a daily basis. It is possible that a less stringent measure would show a higher prevalence, which would indicate that other children may experience anxiety and depression less frequently than daily.

In this paper, we have identified a relationship between having a cognitive or psychosocial functional difficulty and learning outcomes among children in Syria. This suggests that there may be value in incorporating MHPSS into education delivery in crisis settings. As a result of the findings of this study, the Manahel program has attempted to ensure that children are provided with literacy, numeracy, and mental health and psychosocial support. The number of focused MHPSS sessions

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in Manahel classrooms has increased, MHPSS has been mainstreamed in numeracy and literacy sessions where possible, and the Manahel program has made a greater investment in hiring specialized and paraprofessional MHPSS staff members. At the same time, the program is investing in understanding how to support change in teacher behavior that will enable them to respond more effectively to the individual requirements of children with a need for mental health and psychosocial support. This is being done through research on changes in teacher attitudes and practices in response to targeted professional development.

### FINDINGS IN RELATION TO THE LITERATURE

Our review of the literature did not find any similar research undertaken in crisis settings that we could use as a comparison. Our findings do support those from studies in Western contexts, which have found that MHPSS is positively associated with learning. An evaluation of an MHPSS intervention in the United States found a positive association between the intervention and learning (Reback 2010). An evaluation of a social and emotional learning intervention in the United States found similarly that exposure to the intervention was associated with teacher reports of improved ability and skill in their students; however, it was not associated with improvement on more objective measures, such as grade or standardized test scores (Jones et al. 2017). A study from Australia found that a trauma-informed positive education training initiative with teachers was associated with improvements in reading and attitudes toward school among their students (Stokes and Brunzell 2019). These studies are neither exhaustive nor directly comparable in terms of context, but they do imply a relationship between MHPSS and learning. The literature from more comparable contexts, including a social and emotional learning intervention in the Democratic Republic of Congo (Torrente et al. 2019), a study of mental health and psychosocial support interventions conducted in Burundi and South Sudan (Jordans et al. 2016), and an evidence review from low- and middle-income countries (Kuper, Saran, and White 2018, 1-57), had findings suggestive of an association between MHPSS and learning, but the review had a poor-quality methodology. Furthermore, how learning and MHPSS interventions were contextualized and measured differed between these studies and our own.

### STRENGTHS AND LIMITATIONS

The main limitations of this study relate to the sample included in the analysis, the loss of data from the walking domain (i.e., difficulty walking) in the Washington Group Questions, and how learning was measured.

Our analysis was restricted to children with two learning measurements, which limits what we can infer about all children from the Manahel program. We conducted a sensitivity analysis (available from the authors on request) that included those excluded as nonlearners/nonresponse, and the similar results indicate that the associations in the main analysis were consistent for children without two learning measurements. The characteristics of those included in the main analysis were similar to those in the initial study sample (shown in the Appendix). Given the diversity of children receiving education in emergency contexts, we accept that our findings are not generalizable to other crisis settings.

While being able to estimate and control for variation at the classroom level strengthens our confidence in the associations found, not having data on teachers, classrooms, or schools meant that we could not explore how their characteristics affected learning or the association between difficulty risk and learning. Ideally, we would have conducted standardized assessments of learning progress and collected additional information about the children being supported in the education program. We did not have data on child characteristics, and the gender variable derived from the children's names was limited by a high level of missingness because it was not always possible to reliably infer gender from the name.

The study benefited from the cognitive and psychosocial difficulties measured with the Washington Group Questions, which cover sensory and psychosocial health. However, our use of the Washington Group Questions was limited by the exclusion of the walking domain from the analysis due to a data-entry error, and we thus were unable to control for the effect of the risk of a physical difficulty. Teachers answered the Washington Group Questions for their students, thus a limitation of this study is that the responses to the Washington Group Questions could have been influenced by the teacher's perceptions and may not be as precise as a diagnostic assessment of the risk of physical difficulty. Teachers may over- or underestimate children's risk of difficulty, making it less precise. The Washington Group Questions were asked when children first entered a Manahel classroom, which coincided with the first assessment of literacy. However, this may subsequently have changed, such that children who did not experience difficulties upon entering the program may have developed them later, and vice versa. Finally, in the study we did not include an analysis of mild difficulties and their relationship with learning outcomes.

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The teachers assessed learning using the eight Manahel literacy levels (shown in Figure 1). Their subjectivity may introduce measurement error, which could bias associations if teachers systematically under- or overestimated literacy levels, based on the presence or absence of cognitive or psychosocial difficulties. The learning levels as assessed in this study would not be comparable in terms of quality or objectivity with a standardized assessment provided under exam conditions. However, teachers are well placed to assess children's literacy levels and were trained to identify and support the need for mental health and psychosocial support.

### CONCLUSION

This research revealed an association between cognitive or psychosocial functional difficulties and learning among children living in a crisis setting in Syria. The evidence suggests that having multiple functional difficulties may be particularly adverse for children's learning. Our attempt to identify the drivers of this association by regressing each domain of the Washington Group Questions on learning produced less illuminating results. We found associations only for the domains most closely connected to learning (learning, remembering, concentrating). However, our sensitivity analysis, which removed these domains from the measure of cognitive or psychosocial difficulty, still found a significant association. These domains may be closely intertwined, and our analysis may not have been sufficiently sophisticated to disentangle these relationships.

Our findings have immediate implications for the delivery of education in emergency settings, as they highlight the need to address children's mental health and psychosocial support requirements in the education context. Using the Washington Group Questions in this intervention showed that they can be used effectively to measure functional difficulties in poorly resourced and highly marginalized settings. The findings from this research helped secure additional resources to provide MHPSS in the intervention, which were used to support the children's wellbeing and learning. There is an opportunity for other education in emergency interventions to support children more effectively by collecting and using data on cognitive and psychosocial difficulties. MHPSS should be considered a foundational need of children that can support their educational attainment, rather than a separate activity. Poor MHPSS and inadequate learning should be avoided in both early-onset emergency situations and protracted crises.

Further research in crisis settings is needed to help build a richer evidence base on the need for mental health and psychosocial support among children in

crises. In particular, research using the full set of Washington Group Questions would be useful in determining whether there is an association between physical difficulties and learning. Further research should be conducted using an objective measure of learning. More research from noncrisis settings also could be useful in understanding the relationship between cognitive or psychosocial difficulties and learning more broadly.

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## APPENDIX

### COMPARISON BETWEEN THOSE WITH A SINGLE LEARNING ASSESSMENT AND MULTIPLE LEARNING ASSESSMENTS

We excluded 7,103 children from the sample, as we did not have two measures of learning and could not identify if this was due to their not having made progress, whether improvement was not recorded, or whether the children had left the program. We wanted to ensure that these children were not different from those included in the analysis. If they were very different—for instance, if more children with a risk of difficulty were excluded from the analysis due to having only one learning measurement—it could imply that these children were less likely to learn and that our analysis is not representative.

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We compared the profile of those who were included in the analysis and those who were excluded in Table A1. We can see that, overall, the proportions in each group who had a cognitive or psychosocial difficulty were similar: 7.6 percent and 8.0 percent, respectively. Among those who were excluded, a slightly lower proportion had just one cognitive or psychosocial difficulty; a higher proportion had two or more cognitive or psychosocial difficulties. Jebel Saman was overrepresented in our analytical sample in terms of location, and Jisr-Ash-Shugur was underrepresented. A similar proportion was in each learning level in both the excluded group and the sample used in our analysis.

*Table A1: Comparison between Those Excluded from Analysis and the Analytical Sample*

Characteristic	One Learning Measurement	Two or More Learning Measurements
<b>Functional difficulty</b>		
Any cognitive/psychosocial difficulty	7.6%	8.0%
<b>Multiple cognitive/psychosocial difficulties</b>		
One cognitive/psychosocial difficulty	2.5%	3.2%
Two or more cognitive/psychosocial difficulties	5.1%	4.9%
<b>Gender</b>		
Male	49.6%	47.6%
Female	50.4%	52.4%
<b>District</b>		
Ariha	20.0%	14.0%
Harim	11.2%	9.6%
Idleb	32.5%	31.4%
Jebel Saman	19.4%	38.0%
Jisr-Ash-Shugur	16.9%	6.9%
<b>Initial learning level</b>		
Level one	73.3%	73.7%
Level two	20.6%	20.7%
Level three or higher	6.0%	5.6%