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研究課題名（和文）Home Learning Environment Inequality and Early Childhood Development Outcomes in Bangladesh

研究課題名（英文）Home Learning Environment Inequality and Early Childhood Development Outcomes in Bangladesh

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研究成果の概要（和文）：この研究では、家庭学習環境と子どもの発達に関連性に焦点を当て、性別の違い、就学前教育の有無、社会経済的地位の多様性といった要素を考慮しながら、就学前の子どもの発達に対する家庭学習環境の重要な役割を調査しました。分析結果は、効果的な養育インタラクション活動や年齢に適した学習および遊びのリソースを通じて、支援的な家庭学習環境を提供することが幼児の発達にとって重要であることを示しています。特に、女兒、就学前教育経験がある幼児、および高い社会経済的地位世帯の幼児は、家庭学習環境活動のさまざまな要素から恩恵を受け、発達の可能性をより高める傾向があります。

研究成果の学術的意義や社会的意義

This study clarified how specific elements of home learning environment influence specific domains of early childhood development outcomes for preschoolers across different backgrounds. The findings are helpful for the government to design appropriate guidelines on the tailored parenting programs.

研究成果の概要（英文）：This study investigates the relationship between home learning environment (HLE) and preschoolers' holistic development and the domain-specific development outcomes in literacy-numeracy and social emotion in Bangladesh, across gender, early childhood education (ECE) enrollment, and socio-economic (SES) diversity. The results indicate that facilitating a supportive HLE is vital for early child development outcomes through promoting effective caregiving interaction activities and age-appropriate learning and playing resources, particularly for children in low SES households. Girls, ECE enrollments, and preschoolers in high SES households are more likely to fulfill their developmental potential, benefiting from different components of HLE activities. The domain-specific components of HLE are not only associated with child development outcomes within their respective domains but also across domains.

研究分野：Early Childhood Development

キーワード：Early Childhood Home Learning Bangladesh

## 1 . 研究開始当初の背景

Early Childhood Development (ECD) is perceived as the continuous and interactive process of acquiring skills and abilities, aiming to foster child holistic developmental potential across the domains of physical, social- emotional, cognitive, and motor development (UNICEF, 2017). These fundamental developmental skills lay the foundation for lifelong learning and wellbeing across an individual's entire life. In low- and middle-income countries (LMICs), more than 250 million children under five years old are at risk of not reaching optimal early childhood development outcomes (McCoy et al., 2016). To fulfill child developmental potential, in addition to the widely implemented center-based early childhood education (ECE) programs, facilitating a supportive home learning environment (HLE) has also been recognized as a critical approach (Pisani et al., 2018). The Government of Bangladesh (GoB) aims to promote ECD to reach children's full developmental potential irrespective of background (Bhatta et al., 2020). Despite the emphasis on promoting children's developmental ability, a substantial number of preschoolers still have a potential developmental loss. Meanwhile, most caregivers lack the awareness and capability to facilitate a supportive HLE to stimulate optimal literacy- numeracy and social-emotional development outcomes. A significant disparity in the quality of HLE and children's holistic development outcomes exists among children with different backgrounds in gender, household location, and socio-economic (SES) (BBS & UNICEF Bangladesh, 2019).

## 2 . 研究の目的

This study examines 1) how overall HLE influences preschoolers' holistic development in Bangladesh by gender, rural-urban location, and SES, and 2) how HLE activities influence preschoolers' literacy-numeracy and social-emotional development in Bangladesh by gender, rural-urban location, and SES.

## 3 . 研究の方法

Based on the cultural capital theory, this study employs the probit model based data from the 2019 Bangladesh Multiple Indicator Cluster Survey (MICS) in UNICEF, targeting children from 36 to 59 months. As the interested independent variable, the HLE index is created by constructing summative scales based on nine home learning activities. The higher index indicates the higher level of caregivers involved in HLE activities. Following the framework of the HLE, as the representative of the domain-specific process of HLE, caregiver-children interaction activities are categorized into literacy-numeracy interaction and social-emotion interaction. The general process of HLE is indicated by the availability of children's books and toys. As the dependent variables, two sets of dichotomous variables are treated as the proxy for children's developmental status: 1) ECDI: indicating whether preschoolers are overall developmentally on track or not; 2) literacy\_numeracy and social\_emotion: indicating whether preschoolers are developmentally on track or not in literacy-numeracy and social-emotional skills.

This study performs the probit model, expressed in the equation below.

$$Pr (y_i = 1 | X) = G (\beta_0 + X\beta)$$

Where  $y_i$  is the dependent variable,  $y_i = 1$  if children fulfill on-track development outcomes and  $y_i = 0$  if children do not fulfill on-track development outcomes;  $\beta_0$  is the intercept, and  $X$  is a vector of the predictors used in the analysis. The predictors include the children's individual-level characteristics (age, gender, ECE attendance, and health status) and household-level characteristics (mother's age, parental education, household size, wealth status, residence of location), and HLE variables. HLE variables are treated as the variable of interest, referring to the number of caregiver-child home interaction activities (literacy and numeracy), number of kid books, and variety of play materials, whereas other variables are treated as the control variables in the analysis.

## 4 . 研究成果

This study first examines the influence of overall HLE on children's holistic development to generally picture how HLE contributes to preschoolers' overall developmental potential across various backgrounds in Bangladesh. The analysis results suggested that HLE for which caregivers engaged in higher levels was more positively associated with the estimated probability of preschoolers reaching on-track holistic development. This finding is consistent with previous studies (e.g., Forry et al., 2013; Frongillo et al., 2017), implying that children living in a favorable HLE enjoy the advantages of fulfilling their early developmental potential. The narrowed-down analysis results further evidenced that preschoolers with different backgrounds benefited from HLE to a varying degree to reach their holistic developmental potential. Children living in higher-wealth-level households and having higher-education mothers were more advantaged at fulfilling their holistic developmental potential than their counterparts in lower-wealth and

lower maternal-education groups, benefiting from HLE. This finding is consistent with previous comprehensive studies (e.g., Rodriguez & Tamis-Lemonda, 2011; Son and Morrison, 2010). Besides, ECE enrollments were more favored by supportive HLE, contributing to their overall developmental ability compared to their none ECE counterparts. Previous studies have assumed that children with ECE learning experiences might positively influence parenting quality through active interaction with caregivers (Yamaguchi et al., 2018).

Table 1 Marginal effects of overall HLE on overall on-track child development outcome in full sample, by gender, ECE enrollment, and household SES

	(1)	(2)		(3)			
		Gender		ECE			
	Full Sample	Male	Female	Yes	No		
VARIABLES	ECDI	ECDI	ECDI	ECDI	ECDI		
HLE_scale	0.013*** (0.002)	0.013*** (0.003)	0.013*** (0.003)	0.019*** (0.005)	0.012*** (0.003)		
Individual-level variables			Yes				
Household-level			variables				
Yes							
Observations	7,683	3,967	3,716	1,405	6,278		
	(4)			(5)			
	Household Wealth			Maternal Education			
	Poor	Middle	Rich	None	Primary	Secondary	Secondary +
VARIABLES	ECDI	ECDI	ECDI	ECDI	ECDI	ECDI	ECDI
HLE_scale	0.010*** (0.004)	0.013*** (0.004)	0.018*** (0.004)	-0.011* (0.006)	0.009* (0.005)	0.021*** (0.003)	0.026*** (0.006)
Individual level variables					Yes		
Household level variables					Yes		
Observations	2,687	2,604	2,392	987	1,962	3,703	1,031

Note: Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.10

Source: Estimated by the authors based on MICS (2019)

This study further details the component of HLE into the general and domain-specific processes to explore how the specific component of HLE influences the domain-specific child development outcomes in literacy-numeracy and social emotion. The estimation reflected that HLE activities did not consistently predict child literacy-numeracy and social-emotional development but evidenced that certain components of HLE were associated with specific domains of child development outcomes. The association varies to a larger degree across children's gender, ECE enrollment, and household SES. Overall, the general process of HLE remained a stable factor in predicting child literacy-numeracy and social-emotional development. Numerous previous studies have evidenced the positive role of learning and playing materials on children's cognitive and social-emotional development through reading, narrating stories, and role-playing activities using toys (e.g., Weisleder et al., 2016). The negative influence of learning and playing materials was also spotted, for which further investigation is needed. Healey et al. (2019) have suggested that selecting age-appropriate and high-quality toys and the engagement of caregivers in toy playing with children was essential to fostering children's cognitive development, language ability, problem-solving skills, and creativity. The domain-specific processes of HLE influenced child development outcomes within and across domains. A significant association was found between home literacy-numeracy interaction activities and preschoolers' literacy-numeracy development but not between home social-emotional interaction activities and preschoolers' social-emotional development. The plausible reason might be that social-emotional parenting practice is more complex and challenging to operate than literacy-numeracy parenting practice to promote child development outcomes (Jeong et al., 2019).

In a gender comparison, this study found that the influence of specific HLE activities on children's developmental outcomes varied, depending on the components of HLE. Female children

benefited more from supportive literacy-numeracy home interaction activities stimulating literacy-numeracy development than male children. In contrast, male children benefited more from learning and playing materials promoting literacy-numeracy and social-emotional development than female children. Some previous researchers have argued that children's early learning abilities might differ by gender, relevant to biological characteristics. In an ECE comparison, ECE enrollments were not consistently advantaged by all the components of HLE stimulating early developmental outcomes. Non-ECE enrollments benefited more from literacy-numeracy home interaction activities than their ECE counterparts. The plausible reason might be that ECE enrollments primarily receive the discipline on literacy-numeracy skill cultivation at ECE institutions, contributing more to literacy-numeracy development outcomes. However, home learning is the dominant channel through that non-ECE enrollments can acquire literacy-numeracy skill cultivation from caregivers' interaction activities and learning materials, which accounts for a more significant proportion of the literacy-numeracy development of non-ECE enrollments.

Table 2 Marginal effects of HLE activities on literacy-numeracy and social-emotional development by gender and ECE enrollment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Literacy-numeracy		Social-emotional		Literacy-numeracy		Social-emotional	
	(Gender)		(Gender)		(ECE)		(ECE)	
VARIABLES	Male	Female	Male	Female	No	Yes	No	Yes
<b>liternumer_interaction</b>	0.087***	0.098***	-0.015	0.012	0.085***	0.051*	0.001	-0.015
	(0.012)	(0.013)	(0.013)	(0.012)	(0.008)	(0.026)	(0.010)	(0.022)
<b>sociaemotion_interaction</b>	0.001	-0.004	0.007	0.001	-0.004	0.010	0.000	0.020*
	(0.006)	(0.007)	(0.007)	(0.006)	(0.005)	(0.012)	(0.005)	(0.010)
<b>kid books (base: none)</b>								
one	0.091***	0.098***	0.016	0.008	0.093***	0.063	0.013	0.007
	(0.018)	(0.019)	(0.019)	(0.018)	(0.013)	(0.039)	(0.015)	(0.032)
two	0.143***	0.158***	-0.012	-0.001	0.160***	0.095**	-0.010	0.002
	(0.023)	(0.024)	(0.024)	(0.023)	(0.018)	(0.040)	(0.020)	(0.034)
three and more	0.232***	0.211***	-0.051*	-0.010	0.214***	0.205***	-0.025	-0.034
	(0.028)	(0.028)	(0.028)	(0.026)	(0.023)	(0.037)	(0.024)	(0.034)
<b>homemade_toy</b>	0.076***	0.074***	-0.042***	-0.011	0.059***	0.115***	-0.029**	-0.017
	(0.015)	(0.016)	(0.015)	(0.014)	(0.010)	(0.029)	(0.012)	(0.025)
<b>store_toy</b>	0.008	-0.003	-0.019	-0.018	-0.006	0.033	-0.021	0.000
	(0.025)	(0.026)	(0.023)	(0.022)	(0.017)	(0.047)	(0.018)	(0.040)
<b>Individual level variables</b>				Yes				
<b>Household level variables</b>				Yes				
<b>Observations</b>	<b>3,967</b>	<b>3,716</b>	<b>3,967</b>	<b>3,716</b>	<b>6,278</b>	<b>1,405</b>	<b>6,278</b>	<b>1,405</b>

Note: Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.10

Source: Estimated by the authors based on MICS (2019)

In a household SES comparison concerning household wealth and maternal education, this study found that the effective function of social-emotional interaction activities on child development outcomes was conditioned on highly educated (above secondary) mothers and high-level-wealth households. This result has reflected the ineffective practice of social-emotional home interaction activities for most households across Bangladesh since social-emotional skill cultivation is more complex than literacy-numeracy skill cultivation. Cultivating social-emotional development requires a higher level of requirement towards parenting practices, for which highly educated mothers were more capable. Though literacy-numeracy home interaction activities have been more effectively practiced than home social-emotional interaction activities, the household SES disparity on the contribution of home learning to child literacy-numeracy and social-emotional development still exists. These results have replicated findings in many

previous studies stating children in higher SES are more favored for child development outcomes benefiting from HLE (e.g., Kent and Pitsia, 2018). The underlying mechanism might be that household SES influences the quality of HLE primarily since household SES reflects caregivers' capacity in financial and intellectual resources relevant to child development outcomes. Caregivers in high SES are more likely to establish an effective and favorable HLE to maximize children's home learning experience (Rodriguez et al., 2011).

This study is significant and adds depth to the existing literature in the following two respects. First, this study clarified how specific elements of HLE influence specific domains of early childhood development outcomes for preschoolers with different backgrounds. The findings are helpful for the government to design appropriate guidelines on the tailored parenting programs and seek a mechanism offering better home support for promoting ECD outcomes for children with diversified backgrounds. Second, this study advanced the application of cultural capital theory in children's preschool-age period and the Bangladesh context, as cultural capital theory has previously been applied in explaining educational outcomes (academic achievement) in general education (Xu & Hampden-Thompson, 2012). This study also faces several limitations that are encouraged to be followed up in further studies in the future. First, child development outcomes are evaluated by caregivers' self-report, which might be subjective. Second, the quality of HLE can be better captured with more information, such as the duration of caregiver-child interaction activities and the quality of playing and learning materials. Third, school learning environment was not covered in the study. The interactive influence of home and school learning environment should be researched in the future study.

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5. 主な発表論文等

〔雑誌論文〕 計0件

〔学会発表〕 計0件

〔図書〕 計0件

〔産業財産権〕

〔その他〕

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6. 研究組織

	氏名 (ローマ字氏名) (研究者番号)	所属研究機関・部局・職 (機関番号)	備考
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7. 科研費を使用して開催した国際研究集会

〔国際研究集会〕 計0件

8. 本研究に関連して実施した国際共同研究の実施状況

共同研究相手国	相手方研究機関
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