

Subdomain-specific relations between home math activities and 4-year-old children's math skills

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BACKGROUND

- **Results are mixed** for links between the **home math environment (HME)** and **children's math skills**
- Few studies consider associations between HME and math skills in a **specific math subdomain**
- Counting/cardinality, set comparison, number identification, adding/subtracting, and patterning are five **math subdomains critical** for preschool children

AIM

- To explore **specific relations** between the **home math environment** and **math skills** for each of the **five subdomains**

METHODS

1. HME was assessed using a parent survey
2. Children's math skills were assessed using the Preschool Early Numeracy Scale (PENS) and the Early Patterning Assessment



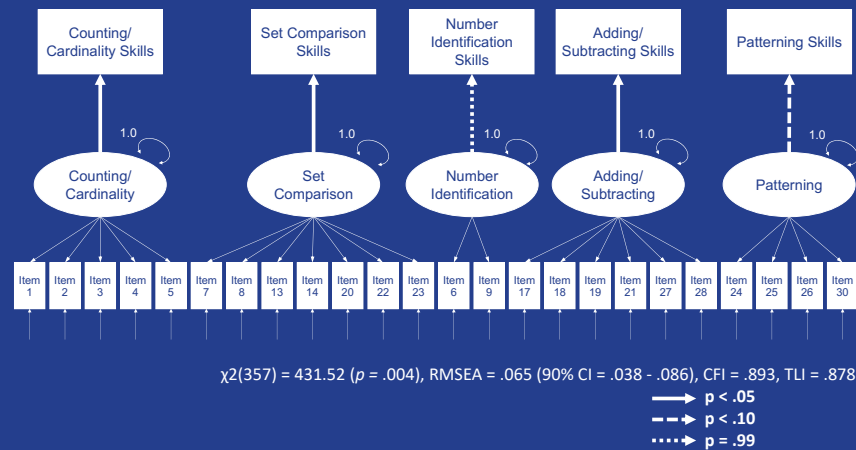
RESULTS

- **Positive associations** between HME and child math skills for **comparison, adding/subtracting, and patterning** using OLS regressions
- All items had **medium to strong loadings** onto latent variables **except three counting/cardinality items**
- **Positive associations** between HME and child math skills for **counting/cardinality, comparison, and adding/subtracting** using SEM

DISCUSSION

- HME **positively relates** to child math skills but only in **certain math subdomains**
- **Specificity** of these associations by subdomain may help explain the **mixed results** on the link between **HME and child math skills**
- **More alignment** is needed in the future between **HME activities** surveyed and **child math skills** assessed

Home math activities positively relate to preschool children's math skills in subdomains such as comparison, but not others such as number identification.



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TABLES

Descriptive Statistics for Home Math Activities and Child Math Skills

	Mean	SD	Min-Max
Home Math Activities			
Counting/Cardinality	2.61	0.49	1.75 - 4.0
Set Comparison	2.69	0.59	1.29 - 4.0
Number Identification	3.10	0.73	1.5 - 4.0
Adding/Subtracting	2.11	0.76	1 - 4.0
Patterning	2.38	0.76	1 - 4.0
Child Math Skills			
Counting/Cardinality	54.62	37.13	0 - 100
Set Comparison	69.55	31.12	0 - 100
Number Identification	65.90	31.93	0 - 100
Adding/Subtracting	50.64	32.73	0 - 100
Patterning	51.07	22.53	16.67 - 100

Results of OLS Regressions Examining Associations between Home Math Activities and Child Math Skills

	B	SE	p
Counting/Cardinality	14.71	8.04	.072
Set Comparison	17.20	5.57	.003
Number Identification	6.92	4.87	.159
Adding/Subtracting	20.62	4.51	<.001
Patterning	6.71	3.20	.039

COVARIATES

- OLS regressions controlled for child age, child sex, and parent education

PARTICIPANTS

- 78 parents with 4-year-old children ($M_{age} = 53.20$ months, $SD = 3.43$; 45% female)
- Parents were 96% mothers, 86% White, 87% with at least a college degree
- Recruited from online research platforms and local childcare centers

RESPONSE OPTIONS

1	2	3	4
Not at all	Once a week	Several times a week	Every day

- Response options were collapsed for SEM analyses to 1 = "Once a week or less" and 2 = "Several times a week or more" due to a lack of distribution across some variables

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