

Exploring Opportunities for Parent-Child Math-Related Guided Play at Home

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Introduction

- Math skills before school entry relate to parent-child engagement in math-related activities (e.g. Dearing et al., 2012).
- Variability in parent-child math related activities is thought to relate to parents' child-specific math beliefs (Douglas et al., 2019; Sonnenschein et al., 2012) and some parent-child demographic factors (Levine et al., 2010; Vandermaas-Peeler et al., 2009).
- Parent-child guided math exploration may be particularly important to children's early math development since it may enable children to benefit from aspects of play and formal instruction (Weisberg et al., 2016).

Questions

- How frequently do parent-child dyads engage in activities that provide opportunities for guided math exploration at home?
- How does this frequency relate to parents' child-specific math beliefs and parent-child demographics?

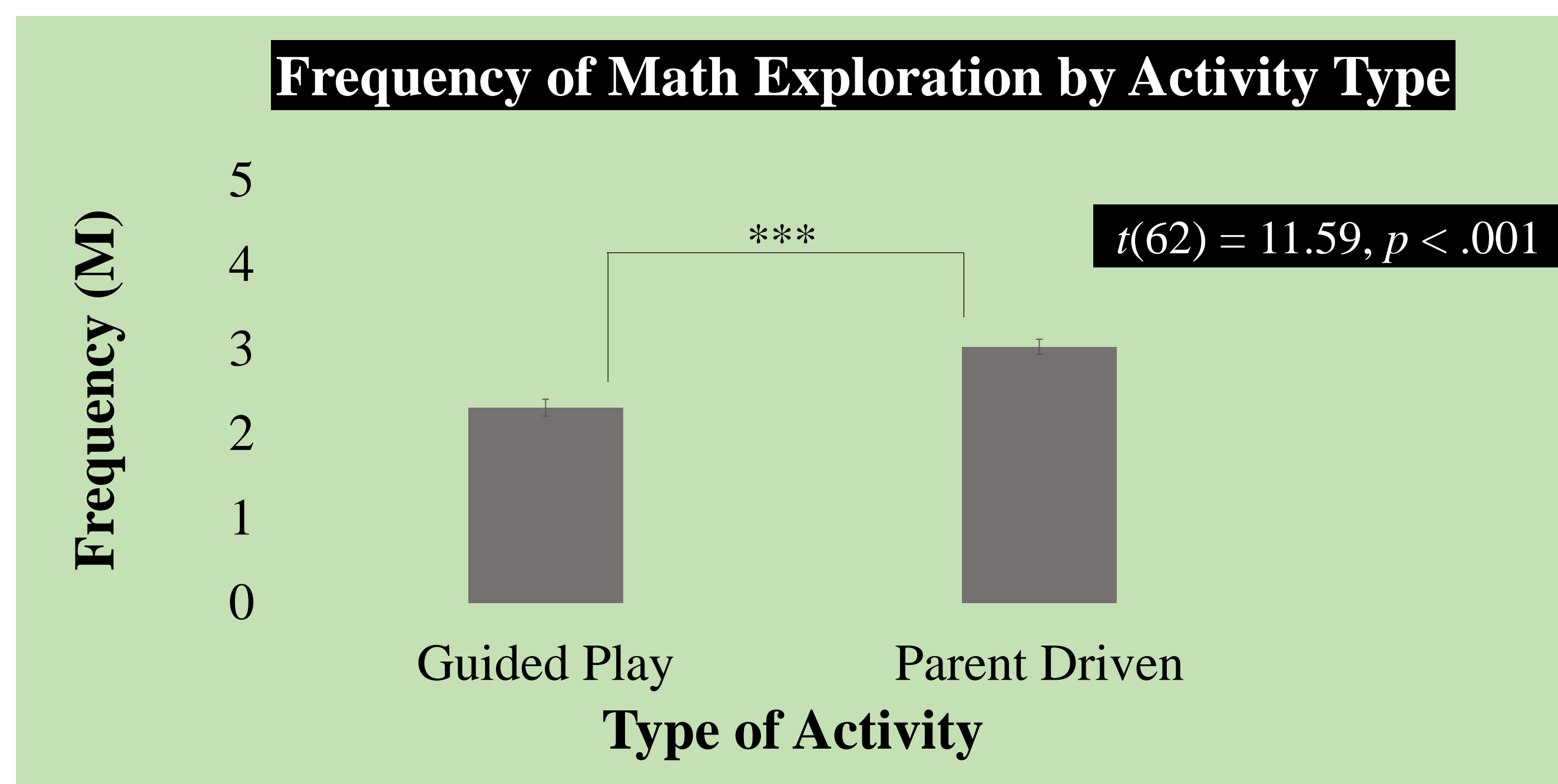
Participants

- Sixty-three parents (86% mothers) of pre-kindergartners were recruited from 6 preschools in a Southeastern U.S. city.
- About half of the parents were from minority races or ethnicities (40% Black, 10% Biracial/Multiracial, 3% Asian, 2% American Indian) and most reported having at least an Associate's degrees (91% of mothers and 73% of fathers).
- Children ($M = 4.58$ years, $SD = .29$) were 52% girls and 57% from minority races or ethnicities (43% Black, 6% Multiracial/Biracial, 3% Middle Eastern 3% Hispanic, 2% Asian).

Method

- Parents rated the frequency of parent-child math-related activities at home on a 6-point survey scale where 0 = never, 1 = once a month or less, 2 = 2 to 3 times a month, 3 = 1- to 2-times a week, 4 = 3 to 4 times a week, and 5 = daily.
- Each activity was coded as a guided play or parent-driven activity depending on whether it likely provided opportunities for guided math exploration.
- Parents also reported their child-specific math beliefs.

Results



Frequency of Math Activities by Parent-child Demographics

Demographics	n	Frequency of Math Exploration <i>M(SD)</i>	
		Guided Play	Parent-driven
Home Language(s)			
English only	58	2.38(.75)*	3.12(.67)**
Not English only	5	1.53(.79)	2.08(.58)
Parent Race ^a			
White	28	2.18(.68)	2.86(.63)*
Minority	34	2.47(.81)	3.22(.70)
Mother's Education			
Less than a bachelor's	36	2.26(.73)	3.01(.69)
More than a bachelor's	27	2.38(.87)	3.07(.76)
Father's Education ^b			
Less than a bachelor's	27	2.19(.70)	2.93(.64)
More than a bachelor's	33	2.46(.86)	3.19(.73)
Child Gender			
Male	30	2.37(.73)	3.14(.64)
Female	33	2.26(.84)	2.94(.77)
Previous Preschool Attendance			
Child Attended	42	2.42(.70)	3.15(.68)
Child Did Not Attend	21	2.10(.91)	2.81(.75)
Financial Assistance ^c			
Child Does Not Receive	32	2.20(.80)	2.85(.68)*
Child Receives	29	2.49(.76)	3.30(.68)
Child Race or Ethnicity			
White	32	2.19(.72)	2.84(.70)*
Minority	31	2.45(.84)	3.23(.68)
Special Education			
Child Does Not Receive	57	2.34(.80)	3.07(.71)
Child Receives	6	2.08(.64)	2.70(.70)

Notes. * $p < .05$. ** $p < .01$. ^aData was missing for 1 parent. ^bData was missing for 3 parents. ^cData was missing for 2 children.

Results

Correlations between Frequency of Parent-Child Math Activities and Parents' Math-Related Beliefs

	1	2	3	4	5
1 Guided Play	-				
2 Parent-driven Activities	.79**	-			
3 Child Math Ability ^a	.34**	.39**	-		
4 Child Math Interest ^b	.28*	.34**	.74***	-	
5 Importance of Math for Child ^c	-.01	.08	.16	.27*	-

Notes. * $p < .05$. ** $p < .01$. *** $p < .001$.

^aThis was a composite of parents' belief that their children are currently and innately good at math and that they will be good at math in the future on a scale from 1 (not good) to 7 (very good). ^b1 (not at all) to 7 (very much). ^c1 (not at all important) to 7 (very important)

Discussion

- Parent-child dyads only engage in activities that may facilitate guided math exploration a few times per month, suggesting that more frequent guided math play can be promoted.
- Non-monolingual English speaking parents may benefit from interventions on providing their children with math input.
- Future research should examine the effect of frequent parent-child guided math play versus parent-driven math activities on children's math ability and beliefs given the differences in frequency of parent-driven math activities by some demographic factors.
- Parent-child engagement in guided math play and parent-driven math activities are both related to parents' beliefs about their child's math ability and interests but not their belief about the importance of math for their child.
- The study highlights the need for additional research on the types of activities that parent-child dyads engage in at home.

References

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