MATH PLAYTIME: A PLAYFUL APPROACH TO SOCIALIZING CHILDREN'S MATH SKILLS AT HOME

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INTRODUCTION

- Playful learning at home is gaining increasing attention from researchers.
- However, most of the research focuses on children's literacy development (Sonnenschein et al., 2022).
- A playful approach to fostering children's literacy development is positively associated with the types of activities children engage in, their interest in literacy, and their literacy development (Serpell et al, 2005).

- This study considers a playful approach to children's math development.
- We document the frequency with which 4-9 year olds engage in play-oriented math activities (e.g,, playing board games) at home versus skills-oriented ones (e.g., using flash cards).
- Much of the research on math development comes from North America and, to a degree, Europe,
- We consider here similarities/differences in math engagement in the US (N = 357), Kosovo (N = 162), Turkey (N = 422), thus extending work to Southeastern Europe and the Middle East.

RESEARCH QUESTIONS

1. Is there an overall difference in children's engagement between play-oriented and skill-oriented math activities? Does this engagement vary across countries?
2. Are there differences in patterns of math engagement between boys versus girls?
3. Are there differences in patterns of math engagement between younger (ages 4-5) versus older children (ages 6-9)?

METHOD

- After obtaining consent, parents of children between 4 and 9 years from the US, Kosovo, and Turkey completed an online survey indicating the frequency with which children participated in the two types of activities.

- Adapted from a survey developed for the Language Learning and Math Achievement (LLAMA) project (LeFevre et al., 2010). All questions were translated and back-translated to/from Albanian and Turkish.

Table 1
Descriptive statistics

	Child's sex (% female)	Child's mean age	Relationship to the child (% mothers)	Parents' mean age
US	43%	7.03	99%	39.73
Kosovo	48%	6.86	84%	36.18
Turkey	50%	5.95	91%	36.35

RESULTS

1. IS THERE AN OVERALL DIFFERENCE IN CHILDREN'S ENGAGEMENT BETWEEN PLAY-ORIENTED AND SKILL-ORIENTED MATH ACTIVITIES? DOES THIS ENGAGEMENT VARY ACROSS COUNTRIES?

ANOVA analysis revealed a significant interaction effect for math engagement (play-oriented vs skill-oriented) and country (US, Kosovo, Turkey).

- Parents from both the US and Turkey reported significantly higher math engagement in play-oriented activities. There were no significant differences in the math engagement reported by parents in Kosovo.

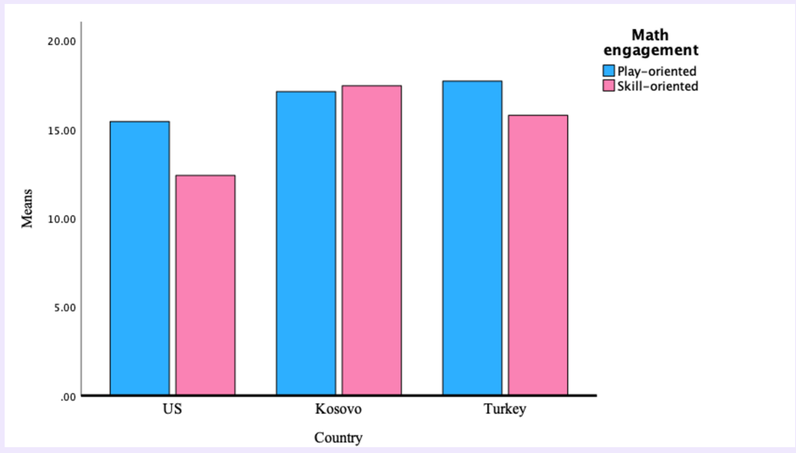
Play-oriented activities:

- Parents in both Kosovo and Turkey reported higher math engagement than parents in the US.
- There were no other significant differences.

Skill-oriented activities:

- Parents in Kosovo reported higher math engagement than parents in both the US and Turkey.
- Turkey reported higher math engagement than the US.

Figure 1
Math engagement in play-oriented and skill-oriented activities across all countries.



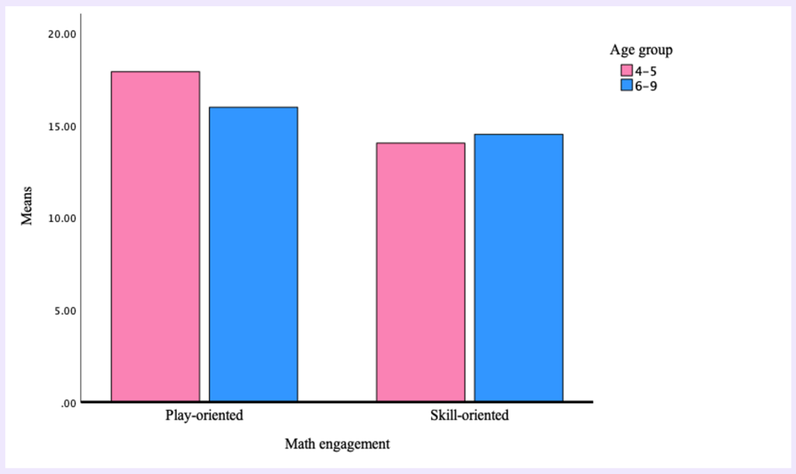
3. ARE THERE DIFFERENCES IN MATH ENGAGEMENT BETWEEN BOYS VERSUS GIRLS?

- There were no differences in math engagement for boys versus girls in any country.

4. ARE THERE DIFFERENCES IN MATH ENGAGEMENT BETWEEN YOUNGER (AGES 4-5) AND OLDER (AGES 6-9) CHILDREN?

- Younger children (ages 4-5) were significantly more likely to engage in play-oriented activities in each country whereas there were no significant differences between play-oriented and skill-oriented activities for older children (6-9).

Figure 2
Math engagement in play-oriented and skill-oriented activities in younger versus older children.



CONCLUSION

- These data confirm the importance of understanding the types of math activities children from different countries and different ages engage in at home.
- Overall, children in the US and Turkey engage more in play-oriented than skill-oriented math activities, whereas in Kosovo, children engage in both activities similarly.
- Parents in Kosovo and Turkey reported higher engagement in play-oriented math activities compared to parents in the US, with Kosovo also leading in skill-oriented activities followed by Turkey. Parents in the US are more involved in reading activities than math activities with their children at home (Sonnenschein et al, 2022). This could be due to the perception of the importance of early literacy skills compared to math skills in the US context.
- There were no gender differences in math engagement across the countries.
- Younger children (ages 4-5) engaged more in play-oriented activities, while older children (ages 6-9) engaged in both play-oriented and skill-oriented activities similarly. The shift from play-oriented to skill-oriented activities as children grow older suggests a developmental progression in math learning preferences, possibly influenced by school experiences.

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