

Supporting Early Numeracy Development with Card Games: “War” Tops The Deck

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Numeracy skills vary substantially at school entry, and these skills predict later academic achievement (Rittle-Johnson et al., 2017) and are associated with socioeconomic status and educational attainment in adulthood (Ritchie & Bates, 2013). Parents’ numeracy support is related to children’s early numeracy skills (Ramani et al., 2015). Further, frequent parent talk about advanced early number concepts, those related to solving symbolic number problems, predicts children’s early numeracy skills (Ramani et al., 2015). However, this talk tends to be infrequent (Vandermaas- Peeler, 2012), and may be related to parents’ beliefs about math (Elliot et al., 2017).

Parents reportedly prefer informal math activities, those that do not focus on numeracy but from which their children can gain number knowledge, rather than formal math activities (Cannon & Ginsburg, 2008). Additionally, Daubert et al. (2018) found that parents’ number talk relates to the type of informal activity in which they are engaged, but the researchers did not examine the relationship between parents’ advanced number talk and the informal activities they were engaged in since they discussed advanced numeracy infrequently. Thus, little is known about whether certain types of informal activities inherently encourage parent advanced number talk. The current study examined parents’ talk about an advanced number concept, magnitude comparison, during parent-child card play. Magnitude comparison refers to an understanding of the relative size of numbers and is a critical component of children’s numeracy development (Siegler, 2016).

Forty-six preschoolers ($M = 4.56$ years, $SD = .29$) from diverse backgrounds engaged in a videotaped play session with a parent at their preschool. Dyads were told to play a card game of their choice or a card game described on a suggestion card (“War” or “Order Up”). Parents reported their math-related beliefs via a survey. Children’s math and verbal abilities were assessed individually. Each session was interval-coded every ten-seconds for parents’ magnitude comparison talk (e.g., “Is seven bigger than nine?”) and for what card game was played.

Most dyads played “War” ($n = 26$), while others played a variety of games and were collapsed into one group for analyses ($n = 20$). Parents who played “War” compared magnitudes ($M = 36\%$ of intervals, $SD = 16\%$) significantly more frequently than parents who played other card games ($M = 7\%$, $SD = 15\%$), $t(42.7) = 6.15$, $p < .001$. A hierarchical regression indicated that the type of card game that dyads played predicted parents’ magnitude comparison talk even after controlling for their children’s magnitude comparison talk, $F(2,43) = 22.61$, $p < .001$. Finally, correlation analyses revealed that neither parents’ math-related beliefs about themselves nor their children’s abilities were related to the frequency of their magnitude comparison talk (see Table 2).

The study suggests that the context of parent-child interactions influences the frequency of parents’ advanced number talk. Consequently, identifying and recommending card games such as “War” which encourage talk about advanced number concepts may be an effective way to help parents support their children’s early numeracy development. Future studies should explore the effects of parent-child engagement in card games like “War” on children’s skills.

Table 1

Hierarchical Regression Predicting Frequency of Parent Magnitude Comparison Talk

Model Variables	B	β	<i>t</i>	R	R ²	ΔR^2
Step 1						
Child Magnitude Comparison Talk	.81	.53	4.18***	.53	.28 ^a	
Step 2						
Child Magnitude Comparison Talk	.41	.27	2.23*	.72	.51 ^b	.23
Type of Card Game Played	.23	.56	4.49***			

^a *df* = (1,44) ^b *df* = (2,43)

Table 2

Correlations Between Frequency of Parents' Magnitude Comparison Talk, Math Beliefs About Themselves, and Child Abilities

Parent and Child Factors	Magnitude Comparison Talk
Parents' Beliefs About Self ^a	
Good at math ^b	.11
Important to be good at math	.07
Like math	.11
Anxious about math	-.02
Child Abilities	
Math	.23
Verbal	.11

Notes.

^aParents rated beliefs about themselves on a 7-point likert scale.

^b“Good at math” was a composite of parent belief that they are currently good at math and that they were good at math while they were in school.

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