Child Mathematical Talk Reflects That of Their Parents

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Preschool children's ability to correctly compare magnitudes predict their advanced mathematical skills for up to five years later (Rittle-Johnson et al., 2017). Parents may be able to support their children's growing magnitude comparison skills during play by discussing the relative size of numbers (e.g. by identifying which of two numbers or amounts is bigger). The current study aimed to compare the frequency and accuracy of children's magnitude comparison to the frequency of their parents' magnitude comparison during a play session. Likewise, we aimed to identify if parents' self-reported frequency of engaging their children in magnitude comparison activities at home was related to the accuracy of their children's magnitude comparison during a play session.

Participants were forty-five preschoolers (M = 4.38, SD =.65) along with a parent. Children were 60% male and 83% white. Parents were mostly mothers (73%) and had at least a bachelor's degree (80%). Dyads were videotaped playing two card games before and after listening to a description of magnitude comparison, including its' lasting effects on children's later math skills. Additionally, parents completed a survey about one week after their play session to report the frequency of parent-child play at home. Parents' and children's magnitude comparison talk were coded separately in 10-second intervals.

Parents talked about magnitude comparison during 26% of the 10-second intervals (SD = 8%) while children talked about magnitude comparison during 18% of the intervals (SD = 9%). Additionally, children's magnitude comparison statements were often accurate (throughout 84% of intervals during which they compared magnitudes; SD = 15%). Parents reported providing input about magnitude comparison at home once per week on average (M = 3.03, SD = 1.48).

Children's age and the duration of the play session were controlled for in further analyses. The frequency of parents' and children's magnitude comparison talk were significantly correlated, $pr(40) = .74$, $p < .001$. Likewise, the frequency of parents' magnitude comparison talk was correlated with the accuracy of children's magnitude comparison, $pr(40) = .66$, $p < .001$. However, the frequency of home magnitude comparison was not significantly correlated with the accuracy of children's magnitude comparison during the play session, $pr(32) = -.11$, $p = .53$

Findings suggest that the accuracy and frequency of a child's magnitude comparison talk is strongly related to the frequency of their parent's. This suggests that the more parents discuss magnitude comparison in a given context, the more a child will compare magnitudes accurately. Future research should focus on parent-child magnitude comparison interactions in the home setting to gain more knowledge on activities that support children's magnitude comparison skills.

References

Rittle-Johnson, B., Fyfe, E. R., Hofer, K. G., & Farran, D. C. (2017). Early Math Trajectories: Low-Income Children's Mathematics Knowledge From Ages 4 to 11. *Child Development*, *88*(5), 1727–1742. https://doi.org/10.1111/cdev.12662