Playing Games Promotes More Number Talk Than Other Home Activities

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Background

- Parental math talk as well as engaging in math related activities are related to children's numerical abilities (e.g. Gunderson & Levine 2011; Purpura et al., 2020).
- Previous research shows parent math talk varies across different activities (Anderson, 1997; Ramani et al., 2015), however these studies used a limited number of experimenter provided activities.
- **The present study explores which *spontaneous* everyday activities engender the most child-directed math talk from parents.**

Methods

- 61 38-month-old children and their primary caregiver(s) participating in a larger longitudinal study (full sample: *n=64*)
  - 30 girls/31 boys
- Sample recruited to be representative of Chicago's monolingual English-speaking population reported on the 2000 US Census
- 90 minutes of naturalistic home interactions were recorded
- Parents told to act as they normally would
- Videos coded at the **minute level** for primary child activity (i.e. what the child was doing for the majority of the minute)
  - See table 1
- Transcripts of videos searched for all parent number words

Category	Activity Code	n	Examples
Structured-Play (SP)	Arts	41	Crafts, drawing, singing
	Building	27	Puzzles, Lego/Duplo, track/road sets
	Games	14	Card games (e.g. Uno), board games (e.g. Candyland), active games (e.g. Twister)
	Physical	37	Sports, tag, hide-and-go-seek, swing set, rough-and-tumble
	Pretend	51	Dolls, action figures, dress-up, vehicles, real object play (e.g. tea set)
Structured-Non Play (SN)	Basic Care	37	Dressing, washing, brushing teeth
	Chores	32	Cleaning room, taking care of pet
	Discipline	10	Behaviour management, time-outs
	Electronic Media	27	TV, computer, video games
	Food	47	Cooking, baking, eating, setting table
	Knowledge	32	Worksheets, flashcards, reciting ABCs/rote counting
	Print Media	33	Picture & chapter books, looking at photo album
Unstructured (U)	Rest	36	Relaxing, "hanging out" (in the absence of other activities)
	Other	60	Everything not represented in categories above (e.g. deciding what to do, transitioning between activities, aimlessly wandering)

Table 1. Activity codes with examples and number of families observed engaging in each activity.

Results

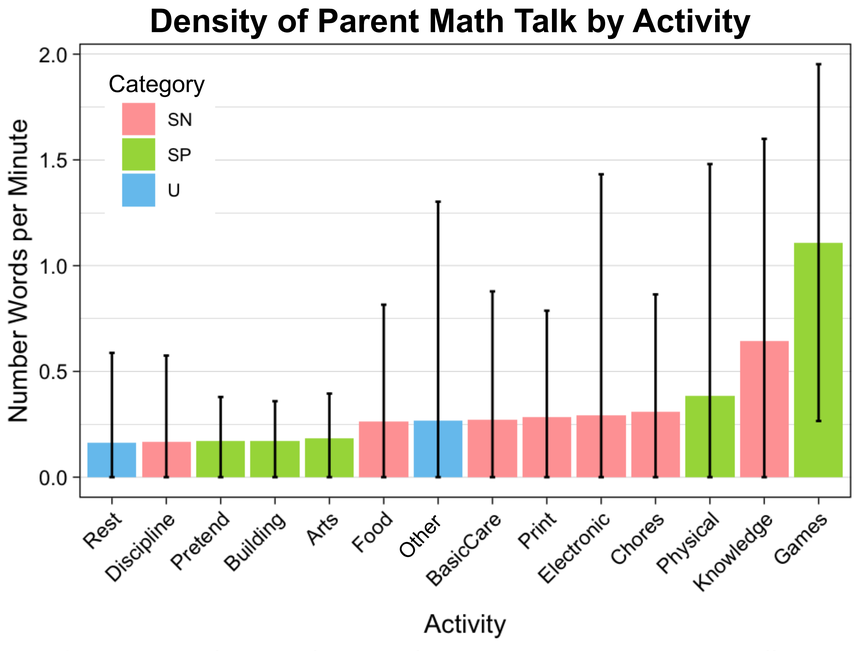

Figure 1. Number words occur during Game activities marginally more than Knowledge activities ($p<0.08$) and significantly more than all other activities (all p-values < 0.05).

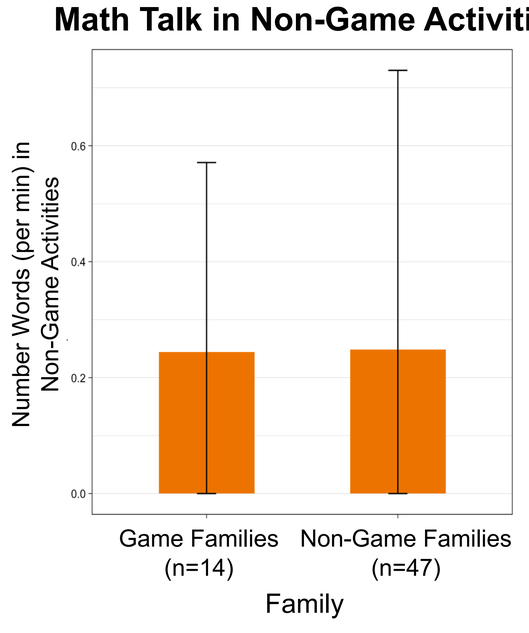

Figure 2. Parents of children who play games do not use more math talk during other activities compared to non-game playing families.

Conclusions

- Children hear the highest amount of math talk during Game activities.
  - This cannot be explained by the game playing families using more math talk in non-game activities than other families.
- Our results compliment previous research showing that experience playing games is positively correlated with numeric ability (Ramani & Siegler, 2008).
- These findings can inform targeted interventions, as well as recommendations for parents, to enhance children's exposure to math language.

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