



# The Week in the Life of Families Project Newsletter Summer, 2013

*Dear Families,*

*First, we would like to thank you again for taking part in the “Week in the Life of Families” Project over the last two years. Your involvement in the study was extremely valuable to us and we greatly appreciate your help!*

*The “Week in the Life of Families” Project team has listened to the LENA recordings and we have some additional results to share with you.*

*In this newsletter, we will share results from one specific part of the project with you that focused on the socialization of math in the home environment. For this part of the project, we were interested in how often families talk about math and what types of math occur most frequently in an average week.*

*We will provide some examples of what we considered “Math Talk” and ways that this talk may relate to your child’s math skills.*

*Thank you again!*

## What is the “Week in the Life of Families?”

The “Week in the Life of Families” project was designed with the hopes of gaining insight into the everyday experiences of parents of young children. In general, we wanted to learn about parenting through the conversations that parents have with their children during everyday activities. More specifically, we were interested in how parents use language to socialize their children.

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## WHY DID WE LOOK AT MATH?

Early math skills are the strongest predictors of later math achievement in school.

In addition, the ways in which families socialize mathematics at home and how preschoolers engage in mathematical activities from an early age seem to be essential factors in promoting children's development of number skills.

Thus, it is important to understand how these early math skills develop in the home environment.

This project looks at how families socialize math at home and how their math-related interactions are related to children's early math skills.

Families were then invited to participate in a follow-up of the study. In this second part of the study, mothers filled out questionnaires and children completed math and thinking activities.

### How Did We Record the Conversations Using the LENA?

The LENA recording device was placed directly on parents and children using specialized clothing.

Recording began when children woke up in the morning, and continued until the child went to bed. This way, families recorded their conversations for up to 16 hours.

After the LENA devices were returned to our research team, we transcribed four hours of conversations that happened during breakfast and dinner time over two days for each family.

Then, these transcriptions were coded for various types of **math-related conversations** ("Math Talk") that occurred among families on a daily basis.

### Families Who Participated

In total, 46 families from Southeast Michigan took part in the project during the 2010-2011 school years and over the summer. A subsample of the families, who participated over the years, was included for these analyses.

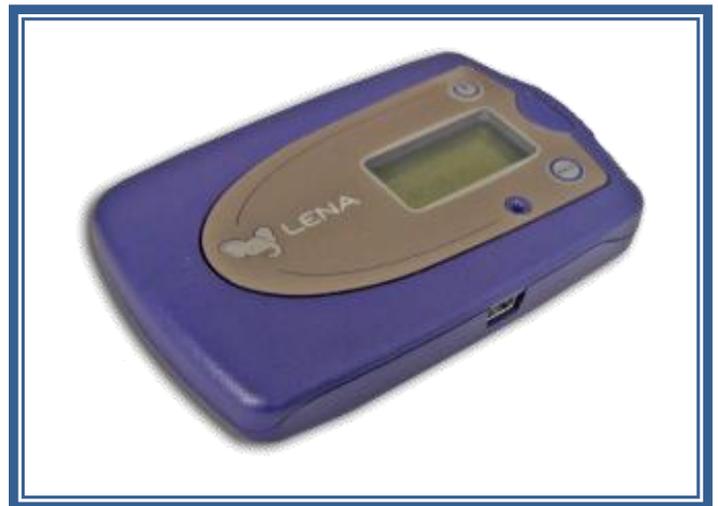
We covered the entire Southeast Michigan area: Monroe all the way up to West Bloomfield and Walled Lake, Detroit, Dearborn, Ann Arbor, Ypsilanti, and everywhere in between.

### Procedure

The Week in the Life of Families study involved two parts, one during the 2010-2011 school year, and another during winter and spring of 2012.

In the first part of the study, families recorded their conversations using the LENA (Learning ENvironment Analysis), an innovative voice-recording system that was designed especially for young children. Mothers and their children recorded all conversations that occurred during three days over the course of a week.

Mothers also filled out questionnaires about their child and their experiences as mothers, and children completed reading, language, math, and thinking activities.



## What Is “Math Talk?”

In our study, we refer to “Math Talk” as the conversations between mothers and children that include math-words or are related to math.

Thus, “Math Talk” includes a wide range of topics and concepts, and not only number operations such as counting.

So, we also looked at different math-related conversations such as those about measuring, time, money, and more, while analyzing conversations.



**Counting:** Conversations in which mothers and children list numbers in an increasing or decreasing order of regular intervals.

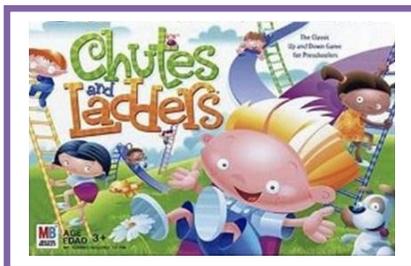
**Money:** Any interaction involving money, such as using or counting money, playing store with a cash register, or comparing amounts of different coins.

**Fractions or Percentages:** Exchanges including fractional values or percentages. For example, a mother tells her child that her sibling is only two-and-one-half years old.

**Comparing Items:** Interactions that compare items in terms of size, weight, length, width or height. For example, a child tells a mother that his toothpaste is small while hers is big.

**Measuring:** Talking about size or weight by using a unit of measurement, or specific tools such as cooking utensils, tape measures, or scales.

**Number Books or Games:** Reading books about numbers or playing games involving numbers, such as board games, card games, matching games, etc.



## “Math Talk” Categories

These are the math-related conversations that we looked at:

**Naming Numbers:** Conversations in which families describe a number of objects, without counting or using further math operations. These interactions include using number words to refer to cardinal values (ex: “read me one book”), age (ex: “when you were three”), and number comparisons (ex: “that’s not ten, that’s zero”).

**Ordinal Numbers:** Exchanges that include putting numbers in order on the basis of “first”, “second”, or “third,” or just using ordinal numbers in conversations.

**Adding or Subtracting:** Conversations that involve either combining two or more numbers (addition) or taking one or more numbers away from another number (subtraction).

**Time:** Telling time or talking about when something happened or will happen with regards to a specific time. For example, the child tells the mother that it is 8:30 pm.

We also looked at other math-related conversations, such as those involving *dates, estimating, equality, grouping, naming shapes*, among others.

## “Math Talk” Complexity

We were also interested in exploring the complexity of the “Math Talk” and we classified the conversations into two categories:

**Lower Complexity:** Conversations that involve math-related words, but are not necessarily used with the intention of explaining something about math. An example of a lower complexity conversation could simply be a child pointing out that he has eaten one out of the four slices of pizza but there is no further discussion involving math.

**Higher Complexity:** Conversations about math that involve an explanation, further discussion about mathematics, or clarification about math procedures. Higher complexity conversations about math involve a more detailed discussion about mathematics. For example, when the child mentioned the slices of pizza he ate, the mother explains that he ate a fourth of the pizza so there are three fourths left as the pizza can be divided into four equal portions.

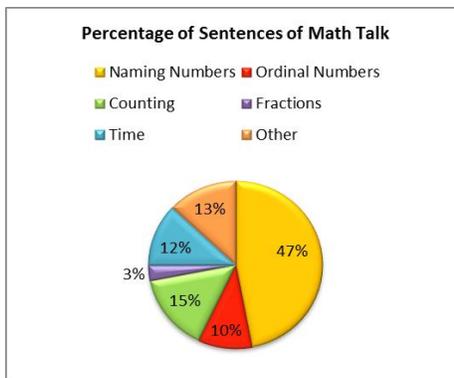
## “Math Talk” Between Mothers and Children in Our Study

After analyzing the conversations that happened in all families and coding the various types of “Math Talk,” we were able to distinguish which types of math occurred the most on an average day. To do so, we calculated the number of times in which all families talked about different aspects of math.

All families in this study engaged in “Math Talk,” but the number of times varied among families.

On average, 48% of the “Math Talk” exchanges involved *Naming Numbers*, 15% involved *Ordinal Numbers*, another 15% involved *Time*, 10% involved *Counting*, 4% involved *Fractions or Percentages*, and another 8% included all other aspects of “Math Talk.”

In addition to the number of times that families engaged in different types of “Math Talk”, we also looked at the amount of sentences of “Math Talk” spoken for each category. In this case, 47% of “Math Talk” sentences corresponded to *Naming Numbers*, 15% corresponded to



*Counting*, 12% corresponded to *Time*, 10% corresponded to *Ordinal Numbers*, 3% corresponded to *Fractions or Percentages*, and another 13% included all other categories.

## Complexity of “Math Talk” Between Mothers and Children in Our Study

In terms of the complexity of “Math Talk,” the majority of the interactions did not include *Higher Complexity*. Most of the exchanges involved a few math-related words and did not include further explanations about mathematics.

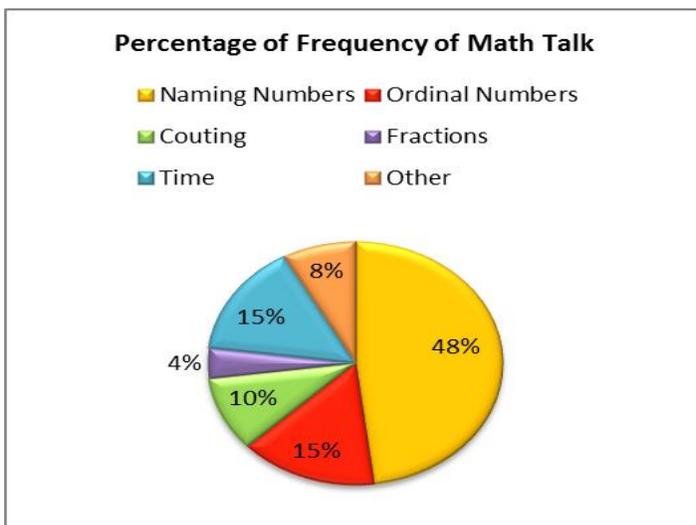
*Lower Complexity* conversations were distributed among all the types of “Math Talk” that were found in the exchanges between mothers and children in this study.

However, there were specific categories associated with *Higher Complexity* “Math Talk.” Most of the *Higher Complexity* interactions involved exchanges about *Naming Numbers, Adding and Subtracting, and Ordinal Numbers*, among others. This means that these issues were talked about in the context of longer conversations about math that might include a deeper level of talk.

## How Were These Conversations Related To Early Math Skills?

In addition to the amount of “Math Talk” used at home, we were also interested in seeing if the different categories of “Math Talk” were related to children’s early math skills. So, we also looked at how families engaged in “Math Talk” to see how these exchanges relate to how children performed on math-related tasks.

In doing so, we found that children’s early math skills were positively associated to the use of “Math Talk” about *Fractions or Percentages*.





This means that families who engaged in conversations about *Fractions* or *Percentages* were more likely to have children who performed better on tasks involving number facts, number-comparison, calculations, and understanding of math concepts. Therefore, one way in which families could promote their children's abilities in math is to engage in conversations about more complex math concepts such as *Fractions* or *Percentages*.

We also found that there was a positive association between the use of number words and children's mathematical skills. If families used numbers more often in every day conversations, their children appeared to perform better on math-related tasks.

One interesting result that we found was a negative association between *Counting* exchanges and children's math achievement. In other words, parents who discussed *Counting* more often with their children had children who did not perform as well on math-related tasks. We believe that this may be because *Counting* is becoming a skill that children master at an early age. So, parents may be spending too much time teaching their children how to count, when in fact children should be moving on to more advanced skills at this age.

### What Does This Mean For You?

After looking through all of our results, you can see that math is very prevalent in families' everyday interactions, and these interactions may relate to how children learn about math before entering elementary school.

Just like reading, we know that math is an important skill and children can learn many things about math before entering school. Developing early math skills before schooling helps children to be better prepared.

Thus, we encourage you to think about ways in which to include math to your interactions with your children. These could be very beneficial for the academic skills of your child. For example, you could set aside 15 minutes a day for math games with your child or use everyday activities, such as cooking or shopping, to engage in deeper level conversations about math.



## The Week in the Life of Families Project

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Thank you for your participation over the years!

Please feel free to contact us with any questions!

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