

OKLAHOMA STATE UNIVERSITY

Talking is Teaching Evaluation Research Findings

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Executive Summary

The present report presents findings from the evaluation of the Talking is Teaching initiative in Tulsa, Oklahoma, using both qualitative and quantitative data collected from participants in multiple studies. The report focuses primarily on the results of the distribution of Talking is Teaching toolkits by the Parent Child Center of Tulsa's nurse educators to parents of newborns at local Tulsa hospitals (i.e., Bright Beginnings). Below is a brief summary of key findings.

Implementation

- Parents found the toolkit useful, particularly the book and the bath towel, and had a very positive response to the Bright Beginnings delivery of the toolkit and related messaging.
- Mothers found the timing of the distribution of the toolkits in the hospital difficult, but still enjoyed the experience overall.
- There is value in presenting this information at birth, so that parents can start engaging in positive behaviors early (talking, reading, singing, and calming babies), and avoid dangerous behaviors such as shaking a baby.
- Mothers suggested keeping the information presented at the hospital focused and brief, and following up with a phone call or home visit.
- Mothers requested additional tips on child development and how to promote positive interactions with their babies.

Outcomes

- Attitudes towards the importance of talking, singing, and reading to babies were extremely positive.
- People in Tulsa are aware of the Talk, Read, Sing messaging, particularly after receiving a toolkit.
- Preliminary findings indicate that men, younger parents, Spanish speaking parents, and individuals with lower levels of education have less positive attitudes toward talking, reading and singing to babies. These are potential leverage points for intervention.

Impact

- The majority of parents reported using the materials in the toolkit after birth, and six months later.
- Parents reported that the items in the toolkits made a difference in their families. Mothers reported changing their interactions as a result of the toolkit and messaging (e.g., talked to their babies at a younger age) and that the toolkits impacted the whole family.
- Parents in Tulsa who received the toolkit versus those who did not receive the toolkit reported talking (i.e., telling stories, repeating sounds) and reading more to their babies.

Overview of the Evaluation

The present report presents formative and summative evaluation results of various components of the Talking is Teaching initiative in Tulsa, Oklahoma. Findings are described in terms of implementation, outcomes, and impact. Both quantitative and qualitative findings are reported.

The protocols and measures described below were approved by the Institutional Review Board at Oklahoma State University. All studies were conducted in both English and Spanish.

Qualitative methods

We conducted one-on-one interviews with mothers of children 0-14 months of age who reported receiving the Talking is Teaching tote bag at the hospital where they delivered their baby. Nineteen mothers (8 White/Caucasian, 7 of Hispanic origin, and 4 African American) participated in the in depth interviews. The interviews were coded by four members of the research team using the qualitative software NVivo. In the first round of coding, participants' opinions were classified into categories related to perceived utility of the Talking is Teaching toolkit (tote bag), the experience of receiving the toolkit at the hospital, recall of information conveyed by the Parent Child Center of Tulsa nurse educators when they delivered the toolkit and educational session, and recommendations to improve the toolkit and toolkit delivery. In the second round of coding, participants' opinions were categorized by toolkit item, to determine how families were using the different elements in the toolkit, experience receiving the toolkit (positive, neutral, or negative), and recall of information about Talk, Read, and Sing, the Period of Purple Crying, and Never Shake a Baby.

In addition to the face-to-face interviews, in a follow-up telephone survey administered to participants enrolled in the Parent Child Center of Tulsa (PCCT), we used a combination of open-ended and multiple choice questions to inquire about favorite items in the toolkit, use of the toolkit items, and whether the toolkit made a difference in the way parents interacted with their babies.

Quantitative methods

We implemented a prospective study (*PCCT Study*) which collected data at three time points from participants who received the toolkit in the hospital. We also collected data from parents enrolled in the text4baby messaging service (*text4baby Survey* or *t4b Survey*) and the Tulsa community (*Tulsa Community Survey* or *TC Survey*) in order to gain information about community attitudes toward talking, reading, and singing to babies.

- The PCCT Study includes survey data collected by nurse educators affiliated with the Parent Child Center of Tulsa during visits to parents of newborns in Tulsa's hospitals prior to mothers receiving the toolkit and educational information (Time 1); phone or

email/text surveys collected approximately six weeks after mothers received the toolkit (Time 2); and a follow-up phone/email/text survey approximately 6 months after mothers received the toolkit (Time 3). The nurse educators collected data in person from **923** participants at Time 1. The OSU research team collected data via telephone, email, and text messages from **307** participants at Time 2, and from **191** participants at Time 3. In total, data collection efforts yielded **165** participants with three time points.

- The *text4baby Survey* includes data collected from **2,138** participants who were pregnant and/or parents of children 0-1 year of age enrolled in the text4baby messaging service in Tulsa and similar communities.
- The *Tulsa Community Survey* (TC Survey) collected data from **200** parents of children 0-3 years of age and was collected in person in public settings in Tulsa, OK, such as Walmart and Babies R Us.

Parent-Child Center of Tulsa Study (PCCT Study)

All data collection took place between December 2015 and December 2016. Surveys included demographic information, attitudes toward talking, reading, and singing to babies; frequencies of talking, reading, and singing to infants; opinions about and use of the toolkit; and knowledge of and use of information regarding the the Period of Purple Crying (PoPC) and Never Shake a Baby. Table 1 shows the data collected at each time point. Table 3 presents the demographic characteristics of the PCCT Study participants.

Table 1. PCCT Study's data collection protocol

Survey Component	Timing
Demographic data of the participants	T1 and T2
Attitudes toward talking, reading, and singing to infants	T1 and T2
Behaviors related to talking, reading, and singing to infants	T2 and T3
Opinion about and use of the toolkit parents received at the hospital	T2 and T3
Use of the educational resources about PoPC and Never Shake a Baby	T2 and T3

text4baby Survey (T4B Survey)

A survey with comparable questions to those in the PCCT Study was electronically sent to parents enrolled in text4baby in Oklahoma, the Dallas-For-Worth area, Kansas City, MO, Wichita, KS, and Little Rock, AR. Survey data were collected at two different time points (December 2015 and April 2016). The second time data were collected from new participants or participants who had not taken the December 2015 survey. Data from both surveys were combined into a single dataset for analysis. Zero to Three and Voxiva were instrumental in

broadcasting the surveys. Table 3 presents information about the number of users included in each broadcast of the survey and the number of respondents (survey participants). Table 2 shows the number of text4baby users included in each broadcast of the survey and the number of participants who took the survey.

Table 2. Number of users, respondents, and response rates in the T4B Survey broadcasts

	English Users	Spanish Users	Total Users	Survey Respondents	Response Rate
T4B December 2015	10,146	802	10,948	1,058	10.35%
T4B April 2016	10,634	890	11,524	1,080	10.67%

The surveys asked about attitudes toward talking, reading, and singing to infants; behaviors related to talking, reading, and singing to infants; sources of knowledge about the importance of talking, reading, and singing to infants; opinions about the tote bag given at local hospitals by the PCCT nurse educators (participants living in the Tulsa Metro Area only); and demographic information. Table 3 presents demographic information about text4baby participants.

Tulsa Community Survey (TC Survey)

The TC Survey was conducted in Tulsa, OK between May and June 2016. Members of the OSU research team collected data from **200** parents with children 0-3 years of age outside local stores, parks, churches, and educational centers. The survey asked about attitudes toward the importance of talking, reading, and singing to infants, and demographic characteristics of the participants. Table 3 presents demographic information about the TC Survey participants.

Table 3. Demographic characteristics of the PCCT Study, T4B, and TC Survey participants

Source	PCCT Study	T4B Survey	TC Survey
Total number of participants	923	2138	200
Age in years (average and range)	28 (13-43)	28(13-63)	30 (18-51)
Gender	(%)	(%)	(%)
Female	87.1	98.09	81
Male	12.8	1.91	19
Marital Status	(%)	(%)	(%)
Married/living as married	66.1	65.2	69.5
Single	30.5	30.4	24.5
Other	3.4	4.4	6.0

Education Level	(%)	(%)	(%)
Less than high school	12.8	12.3	12.5
High school degree/GED	24.6	28.0	17.5
VoTech/Associate's degree/some college	35.3	42.1	34.0
Bachelor's degree or higher	27.3	17.6	36.0
Hispanic Origin	(%)	(%)	(%)
Hispanic of Mexican origin	9.2	18.5	16.2
Hispanic of other origin	4.6	12.7	4.3
Non Hispanic	86.2	68.8	79.5
Race/Ethnicity (multiple choices)	(%)	(%)	(%)
White	65.7	64.5	70.5
Black	17.9	12.8	24.0
American Indian	14.6	11.2	8.5
Asian	2.3	3.1	2.0
Hawaiian/Pacific Islander	1.1	0.6	1.0
Annual Income in Dollars	(%)	(%)	(%)
< 10,000	21.4	28.7	NA
10–19,900	15.0	20.8	NA
20–29,900	11.7	21.2	NA
30–39,900	10.0	12.3	NA
40–49,900	7.1	7.0	NA
>50,000	34.8	10.0	NA
Place of Residency	(%)	(%)	(%)
Tulsa County	65.0	14.3	NA
Other counties in Oklahoma	24.8	57.9	NA
Out of state	10.2	27.8	NA

Implementation

Findings regarding the implementation of the toolkit delivery program at local hospitals come primarily from the qualitative one-on-one interviews with mothers who received the toolkits (tote bags with Talking is Teaching materials). Qualitative data about parents' experience with the toolkit (tote bag) and the interaction with the PCCT nurse educators at Tulsa hospitals are complemented with quantitative data and answers to open-ended questions collected through the PCCT Study and the text4baby Survey. The following section presents information regarding the qualitative interviews about the toolkit and findings that integrate qualitative and quantitative data.

Qualitative Interviews about the Toolkit

One-on-one interviews with **19** mothers of children 0-14 months of age who reported receiving the Talking is Teaching toolkit (tote bag) at the hospital where they delivered a baby were conducted by members of the OSU research team. The sample included a diverse group of mothers recruited through the PCCT Study, parenting groups, and word of mouth. Mothers were interviewed in places such as libraries, churches, and the OSU-Tulsa campus.

- 8 White/Caucasian mothers
- 4 African American mothers
- 7 Hispanic origin mothers

Of the 19 participants, 12 spoke primarily English and 7 spoke primarily Spanish. The Spanish speaking mothers were Hispanic and had been born in Mexico or Central America. All Hispanic mothers classified as of low socioeconomic status (SES), whereas the English speaking mothers were a mix of low and middle income. SES was determined based on a combination of place of residency in Tulsa, level of education, and job positions mothers held presently or in the past.

At the start of the interview, the tote bag and the accompanying materials were displayed in front of the participant and questions were asked about the use of each item in the bag. A tote bag with materials in English was presented to English speaking mothers and a tote bag with materials in Spanish was presented to Spanish speaking mothers. The interview guide was structured around the following topics:

- Perceived utility of the Talking is Teaching toolkit (tote bag)
- Experience receiving the toolkit at the hospital
- Recall of information related to Talk, Read, and Sing
- Recommendations to improve the toolkit and toolkit delivery

Perceived Usefulness of the Talking is Teaching Toolkit

Overall, moms spoke enthusiastically about the Talking is Teaching toolkit they received at the hospital. When we took the items from the bag and displayed them on a table, most moms began talking about the items in the toolkit without any prompting, as they recognized the materials. When the items were presented to them, several moms spontaneously pointed at the items that their children “loved” the most. Several moms said they appreciated receiving the toolkit. A mom said, *“I thought it was really nice that somebody put together this bag and brought it to me.”* Another mom shared her enthusiasm about receiving the toolkit this way,

“I really liked it, because when my other children were born, they wouldn’t give you this bag. When they come to your room and give you that bag, it’s something very special, a gift for you, after you have had your baby. I started to take the things out of the bag and I got all excited, I saw [the T-shirt] and thought, ‘Well it’s a little too big, but one day he will wear it.’”

During the face-to-face interviews, families often shared stories that suggested not just the baby and the mother, but older siblings also benefited from the use of the toolkit.

“With my oldest, her favorite book was One Fish, Two Fish, by Dr. Seuss. That was her favorite book and I would have to read it every night. Now that she has gotten older, she kind of reads it herself; you know she’s learning how to read. So, that’s another thing that’s really helpful the fact that she is so much older and she is learning how to read now. So, I can be like, ‘Well, why you don’t read a book to your little sister?’ She can read to her and she [baby] is hearing it.”

Some parents are using items in the toolkit to bond as a family while helping their children learn.

“I must tell you; even I have learned the songs [laughs]. For example, in the morning, when I am driving them to school, the songs accompany them. I let them play the CD and I sing along with them. The children request almost every day that we play the CD, but sometimes, when I want to hear something else, I change the music [laughs].”

Some moms anticipated that what they considered the most useful items would change as their baby developed. One mom said, *“Um, honestly I think the three most useful for me personally is the towel, the book, and right now the little [Milestones] flashcards. But I think, as she gets older, it would be the towel, the book and the CD.”*

To complement the qualitative data from the face-to face interviews, we asked PCCT Study participants at Time 2 (approximately 6-8 weeks after they received the toolkit) and the text4Baby participants who received the toolkit to indicate the perceived usefulness of each item. The possible answers ranged from 1 star to 5 stars. Table 4 shows the ranking of the items in the toolkit according to participants’ ratings.

It should be noted that toolkits contained either the baby towel *or* the baby blanket, and the T-shirt *or* the onesie. The proportion of parents who received the blanket instead of the towel and the onesie instead of the T-shirt is unclear. Moreover, the Milestone Cards were an insert in the Sesame Guide for Parents; many parents had not detached the Milestone Cards from the Parent Guide and thus considered the Milestones Cards to be part of the Guide. It is noteworthy that the ranking of the baby towel/blanket and the children’s book based on their perceived usefulness is comparable among PCCT Study participants and text4baby Survey participants.

Table 4. Perceived useful of the toolkit items by PCCT Study participants (T2) and T4B participants

Item in the Toolkit	Average Score (Range 1-5)	
	PCCT Study (T2) <i>n</i> = 215	T4B Survey <i>n</i> = 357
Baby Towel/Blanket	4.19	4.20
Children’s Book	4.08	4.27
Sesame Guide for Parents with Milestones Flashcards	3.61	4.03
T-Shirt/Onesie	3.54	4.20
Sesame CD with Silly Songs	3.42	3.88
text4baby Post Card	2.80	3.87
Big Words Flashcards	1.81	3.66

Baby Towel

The vast majority of moms participating in the face-to-face interviews said that the baby towel was the most useful item. Some moms mentioned that they had not received a baby towel from family and friends before the birth of their baby. A mom said, *“People don’t give you baby towels at baby showers; I got lots of blankets, but not towels.”* All of the moms used the bath towel and many considered it to be the most useful item because they go through “a lot” of towels with the baby. Most moms were using it presently. The prompts on the towel were used by one mom whose baby was 17 months. This mom said, *“So, on the towel when we’re washing him, bathing him up, and we’re drying him off, he likes looking at it. Now he can point out things.”*

Children’s Book

For some families this was the only children’s book that they had at home. About half of the moms said they had used the book, and 8 moms said that they used the book frequently. Some moms stated that they were waiting to read to their infant until the baby was “older”.

“Well, whenever I got the bag and there was a book in it, I was surprised that you can read to them (babies), that you’re supposed to be doing that. I wouldn’t have known to do that.”

Several moms, particularly Hispanic ones, said that their older children read the book to the younger ones, including the baby.

Sesame CD with Silly Songs

Moms said that their children enjoyed the music and that older children enjoyed singing and dancing along with the songs in the CD. Five moms had not used the CD, and 2 moms said that they liked and had used it, but they had lost the CD. The moms not using the CD did not have a CD player at home or in their car.

“I love the idea of silly songs, cause I think a lot of parents don’t remember the words to nursery rhymes, or feel silly because they are getting the words or the tune wrong and feel kind of insecure about it, and I mean, most people stop singing.”

One mom shared how, through the educational session and the toolkit, she came to appreciate the importance of singing to her baby, and learned to use music to calm her baby.

“The sirens were going off and I was freaking out; and I know me freaking out wasn’t helping her; so she was like really fussy, and I just turned on music. I started singing all the songs to her, rocking her back and forth, and she calmed down. Honestly, I think with my oldest one, I don’t ever think I sang to her or anything like that. I talked to her about everything that we’d do; I’d be like, ‘Yeah we are going to go do this, we are going to go do that.’ I’d talk to her, but I didn’t ever sing to her until she was way older and we’d sing the color songs like, ‘R-E-D red’, stuff like that. I didn’t really sing to her when she was this age [youngest child’s age].”

Sesame Guide for Parents

A Spanish speaking mom told us how helpful the Spanish version of the Guide had been to her, and how she used some of the ideas in the Guide to talk to her children.

“I think the Guide is very good, because I didn’t have any experience with babies, and I don’t speak to my children in English. But now I tell her, ‘Let’s eat!’ And to my son, I say, ‘Let’s eat now; I’m going to give you’—if it’s in the morning, ‘cereal’—or at lunch, I tell him, ‘I’m going to give you soup.’ I start talking to them about what I am going to feed them.”

Latino moms seemed to benefit particularly from the encouragement the guide provides in regards to start talking to their children at a very young age. A Hispanic mom who had been reared in Mexico shared this story:

“I’m always talking to my baby; I have learned that I need to talk to him clearly. One day, my mom told me, ‘You talk to your baby like he’s a grownup.’ I told her, ‘Mom, I do it because I’ve learned that we need to talk to them clearly, so they learn the words.’ [The toolkit materials] have given me many ideas on how to talk, read, and sing. About singing—I have always sung to my children, because my grandmother and aunt used to sing to me when I was little. Those songs are disappearing; you don’t hear them anymore; but I continue singing them to my children.”

Milestone Flashcards

The majority of the moms said they had at least browsed the Guide and the flashcards in the center of the Guide. Moms who had read the Sesame Guide and the accompanying Milestones Flashcards said that they found the information “useful” or “very useful,” even if they already had children. Several moms referred to the Milestone Flashcards to learn about what to expect as their babies developed. These two quotes exemplify how these materials helped moms understand their babies’ behaviors and anticipate their developmental milestones.

“We are like the first one [milestone], the new born to three months. It kind of gives you like an idea of what their milestones will be like, what to start noticing. Like in one of the first ones it says, ‘They [babies] can tell one person’s voice from another,’ and I didn’t really realize that, you know, that young they can tell. But once I read that, I started noticing that she can definitely tell the difference between who is holding her and who’s talking to her. Her grandmother will hold her, but she doesn’t really like that much [laughs]; she will start talking to her [baby], ‘Its grandma holding you, huh,’ and she will start getting fussy.”

“I’ve been reading all these other ones, like the three to six months one, ‘Copying sounds and movements.’ I’m excited from that [laughs]. I sit there and I make weird different little sounds to her all the time and she’s just now starting to do her little cooing and stuff, so I’m excited for her to start copying me when I make different sounds, or when I stick my tongue at her, her sticking her tongue back at me; I’m excited for that.”

Some moms found it challenging to come up with topics to talk about with a child who was pre-linguistic. Thus, they appreciated the tips offered in the Guide to help talk with their babies.

“Right and they are definitely helpful. I mean the back of them has more like you know. It tells you like what you need to do, not what you have to do but like something that would be helpful like talking to your baby more, singing to them.”

Baby Blanket

The toolkits contained either the towel or the blanket. Moms liked the blanket as well and used it often. They said that their babies liked the “colorful, soft blanket,” and some of them used the prompts to talk to their baby.

Canvas Bag

Several moms were using the canvas bag containing the toolkit items as a diaper bag, to carry children’s clothing (e.g., when they went on an outing), or as a grocery bag. Some Hispanic moms liked that the prompts on the tote bag were very colorful and the bag was “washable.” The label in the canvas bag specifies that it is not meant to be washed, but moms who did wash it said it retained its colors well.

T-Shirt or Onesie

Moms thought the T-shirt was very “very cute” and “colorful.” Several moms, however, said that it was too big for their baby to wear now, but that they would wear it in the future. Moms with older siblings said the older child was wearing the T-shirt now.

Big Words Flashcards, text4baby Card, and Facebook/Twitter Card

Most participants had not used the Big Words Flashcard, primarily because they felt the words were too complex for an infant to understand. The majority of participants stated that they did not use the Facebook card because they do not use the application. No participants reported using the Twitter card because they did not have Twitter accounts.

Items parents were using at Time 3

When we interviewed parents over the telephone, 6 to 8 months after receiving the toolkit, we asked them which items they were still using. Given that parents received either the towel or the blanket and the T-shirt or the onesie, we had a single category for those two sets of items.

Table 5. PCCT Study – Items that parents are still using at Time 3

Items (Participants could choose more than one item)	Parents still using the item (n = 191) %
Baby Towel/Blanket	70.2
Children’s Book	63.4
T-Shirt/Onesie	49.7
Sesame Guide for Parents with Milestone Cards	47.1
Sesame CD with Silly Songs	42.9

Experience receiving the toolkit at the hospital

Two themes emerged about the experience of receiving the toolkit at the hospital: the experience with the nurse educator and the timing of the delivery of the toolkit.

All of the moms reported vague recollections of the nurse who gave them the tote bag. Most of the moms said the nurse was “nice” and that the visit was a positive experience. The following comment was typical of most other comments made by moms, “*Um, I’m trying to think... I mean, my impression of it was that it was a positive exchange but I don’t remember any specifics.*” Most moms recalled the physical appearance of the nurse more than the information the nurse educator shared with them. For example, *[The nurse educator] was an older white woman it’s all I remember (chuckles). She was friendly. She was sweet. Um, you know you see so many people [at the hospital].*”

Timing of distribution

The majority of moms thought that delivering the toolkit at the hospital was not an ideal context for them to fully assimilate the information provided by the nurse educator. The reasons for this were being in pain, being sedated, having family and staff coming in and out of the room, and feeling that the nurse educator was intruding in their private time with their baby. Below are sample quotes from three different moms, which represent most all moms.

“It was kind of hectic, like I had a lot of family coming in and out. I mean, I have like 8 brothers [chuckles] and sisters. I had quite a bit of people coming in and out, so I don't really remember much, if anything, of what she [nurse educator] told me.”

“She [nurse educator] didn't say much. She just talked about the bag, and asked if I would think I would use it and if you guys could call me and do an interview if you wanted to. I told her, “Yes.” She showed me everything that was in the bag, kind of briefly explained to me what it was, but I had a C-section so I was kind of drugged up [chuckles].”

“I think she [nurse educator] came by, maybe, the first day he was born, and hubby said I was in and out of it that day. I don't remember. I thought I was pretty coherent, but apparently I wasn't [chuckles]. She was really nice. She briefly explained, and afterwards I said to my husband, ‘Did she explain?’ He said, ‘Yes, did you not listen?’ I was like, ‘I heard some of it.’”

The input given by some moms also highlight the barriers the nurse educators must overcome to accomplish their goal of gaining the trust of families, and delivering the toolkit and the educational session in the midst of less than ideal conditions at the hospital.

“My instinct was to ask her [the nurse educator] to leave, because you just want the nurse to leave; you want everyone to leave you alone [laughs]; you just want to be alone with your baby. I'm trying to think if there is a better way to approach it that makes it less abrasive or invasive really, cause it's your private bubble and someone is coming in again, and talking about stuff you're not thinking about yet.”

“She [nurse educator] was giving something for free, and giving advice and valuable—but it did feel a little like, I mean almost like a door to door salesmen where you are like, ‘I don't have time right now, no thank you' kind of thing. So I don't know—I mean nothing, no insults against her, I mean, she was trying to be helpful.”

Although many moms felt overwhelmed by the amount of information they received at the hospital from various sources, other moms expressed gratitude at the opportunity to have a one-on-one short session with the nurse educator.

“That's the things I do remember and I was happy to receive them [the toolkit]. It was a nice little visit, it was nice having someone come and talk with me and I was having a hard time, cause I had him downstairs in the N.I.C.U. and I was upstairs in my room; so I was kinda of

having a hard time and receiving these things from somebody and having someone come in and talking to me about it. It was really helpful. I was happy about it.”

Giving the time constraints at the hospital, most moms appreciated a short educational session.

“So I'm glad that they just didn't try to explain for like 20 minutes what the kit is, especially if it's not your first child, you kind of understand already what to expect, but it's great.”

Comments by one mother who might have received the kit from a staff nurse at the hospital, not the PCCT nurse educator, highlight the importance of providing the educational session, albeit a short one, in conjunction with the toolkit.

“Well, she didn't really talk-- they didn't really explain anything to me what the bag is for, what it's trying to promote, and going up to parent, trying to promote the reading and things to children. So they just gave me the bag and said for me to look at it, but they didn't take individual pieces out to try to explain in depth which book or pamphlet, and what it was about. They kind of just explained overall what the bag is.”

The need to provide the educational session about talking, reading, and singing to babies, together with the toolkit was also underscored by a mom who missed her educational session.

“I think that if someone's in the room, that you should be like, ‘I'll come back,’ and then actually come back to explain the packet and tell me a little bit about what you do, what are you doing it for. I would've liked that because I like to know things. I'm one of those people. I'm always learning. And so I think it would've been better if she had been able to come back in and speak.”

Recall of Information Related to Talk, Read, and Sing

When asked, “What do you remember the nurse educator talking to you about during her visit at the hospital? Most moms were unable to recall anything specific. However, when moms were asked whether “anyone” had shared information with them about the topics while they were at the hospital: The Period of Purple Crying, Never Shake a Baby; and brain development and the importance of talking, reading, and singing to babies, a majority of moms (60%) were able to recall specific pieces of information as well as tips to talk, read and sing to their babies that they learned while at the hospital and from the Talking is Teaching toolkit.

Moms remembered learning about the topics, but they did not remember the specific person who gave them the information. Most moms said that there were “so many” hospital staff and non-family members coming in and out of their rooms, and that they received “so much” information about various topics all at once that they could not recall “who told them what.” In addition, most moms said they were tired, sleepy, unwell, or stressed out while at the hospital, and thus the high load of information they received from various sources left them feeling “overwhelmed.”

Still, moms appreciated the information given to them at the hospital and found it useful.

“After talking about it (importance of talking, reading, and singing to babies) with her (the nurse educator), I wasn’t embarrassed or anything to talk to my baby; I knew he may not understand me and I’m sitting in maybe a public place and talking to my baby. It made me feel like it was very useful and it was a helpful thing to know.”

Participants’ Suggestions to Improve the Toolkit

Three themes emerged related to improving the toolkit. The first theme was that the toolkit was just fine; participants “liked everything about it”. A second theme referred to ways to improve the toolkit materials, and a third theme referred to improving the tote bag itself.

Suggestions to improve the materials in the toolkit included the following:

- Adding more books to the bag, including a plastic bath time book.

“With the toolkit, I think it maybe should have some more books in it, just maybe some more reading materials for the children, because it’s like if they see the book, they’ll play with the book, and they’ll get you to read the book if they’re in a taller age. And with him, it’s just something easy to do, so maybe more books.”

- Making the songs in the CD available through a streaming service such as the iTunes Store, or an app they could download. Several moms did not own a CD player.

“I mean if it’s just really streamlined and easy (to use), cause even people who are really savvy... It’s tiring to have a baby, but if you could basically just push a button and then a song would come— you know—make it really simple.”

- Include more tips and information on how to get baby engaged in talking, reading and singing as he/she gets older.

Ideas for improving the bag included:

- Making the bag bigger, more like the size of a diaper bag
- Adding pockets to the inside and outside of the bag to hold smaller items
- Making the prints on the bag (the Talk, Read, and Sing prompts) washable and thus more durable. Some participants had washed the bag, although the label inside the bag says, “Not meant to be washed. Washing may result in discoloration.”

Outcomes

Attitudes toward Talking, Reading, and Singing to Infants

We measured attitudes toward talking, reading, and singing to babies in three samples: the PCCT Study, the T4B Study, and the Tulsa Community (TC) Study. Analyses showed the following:

- Across samples, attitudes towards the importance of talking, singing, and reading to babies were extremely positive.
- PCCT Study participants endorsed more positive attitudes towards talking, reading, and singing to babies than participants in the T4B Survey, and the TC Survey.

1. How important do you think it is to talk to babies?

	PCCT Study T1 n = 918	T4B Survey n = 1,913	TC Survey n = 200
	%	%	%
Extremely important	84.5	83.9	73.0
Very important	14.9	16.0	26.0
Somewhat important	0.5	0.1	1.0
Slightly important	0.0	0.0	0.0
Not at all important	0.0	0.0	0.0

2. How important do you think it is to read to babies?

	PCCT Study T1 n = 918	T4B Survey n = 1,913	TC Survey n = 200
	%	%	%
Extremely important	74.1	71.6	67.5
Very important	24.0	24.6	29.5
Somewhat important	1.9	3.6	3.0
Slightly important	0.0	0.0	0.0
Not at all important	0.0	0.0	0.0

3. How important do you think it is to sing to babies?

	PCCT Study T1 n = 918	T4B Survey n = 1,913	TC Survey n = 200
	%	%	%
Extremely important	52.7	47.8	44.7
Very important	34.9	40.8	39.7
Somewhat important	11.7	9.8	12.6
Slightly important	0.7	1.3	2.5
Not at all important	0.1	0.3	0.5

PCCT Study participants: Comparing attitudes and behaviors among same participant at Time 1 and Time 2

- Among the participants who answered the same questions at T2 and T3 (PCCT study), we did not find statistically significant differences regarding attitudes towards the importance of talking, reading, and singing.

4. How often do you talk to your baby about something you are doing?

	PCCT Study T2 n = 308	PCCT Study T3 n = 189	T4B Survey n = 1,913
	%	%	%
More than once a day	85.7	89.8	75.6
Almost everyday	11.0	10.2	20.0
2-3 times per week	1.6	0.0	1.7
About once a week	0.6	0.0	1.3
1-3 times a month	0.3	0.0	0.5
Less than once a month	0.3	0.0	0.2
Never	0.3	0.0	0.6

5. How often do you read to your baby?

	PCCT Study T2 n = 308	PCCT Study T3 n = 189	T4B Survey n = 1,913
	%	%	%
More than once a day	37.3	33.9	26.4
Almost everyday	20.8	28.0	40.2
2-3 times per week	18.5	24.3	20.2
About once a week	8.8	5.8	6.4
1-3 times a month	1.0	1.6	2.5
Less than once a month	2.3	1.6	1.7
Never	11.4	4.8	2.6

6. How often do you sing to your baby?

	PCCT Study T2 n = 308	PCCT Study T3 n = 189	T4B Survey n = 1,913
	%	%	%
More than once a day	63.5	63.5	56.1
Almost everyday	16.4	20.6	32.5
2-3 times per week	11.2	7.4	7.8
About once a week	4.9	4.2	1.4
1-3 times a month	1.3	1.6	1.1
Less than once a month	1.3	0.0	0.4
Never	1.3	2.6	0.7

Behaviors toward Talking, Reading, and Singing to Infants

- Parents know it is important to talk, read, and sing, but they do not engage in these behaviors as often as they could. Although they are engaging in them at high rates.
- In general, preliminary analyses indicate that attitudes toward talking, reading, and singing to babies are less positive for:
 - Individuals with less education

- Families with lower incomes
 - Fathers (males)
 - Non-white parents
 - Younger parents
 - Hispanic and Spanish speaking parents
- These demographic groups present areas of opportunity for interventions regarding talking, reading, and singing to babies.

Impact

Impact of the Talking is Teaching education and toolkit distribution in hospitals provided by the PCCT nurse educators

The delivery of the Talking is Teaching toolkit and the education session about the importance of talking, reading, and singing to infants; the Period of Purple Crying, and Never Shake a Baby is part of the Parent Child Center of Tulsa’s Bright Beginning Program.

- In the qualitative interviews about the toolkit, the great majority of moms had a very positive view of the services delivered by the PCCT nurse educators. One mom said, *“Yeah I love the program. I love the idea behind it at least. I think it’s great.”*

The information provided by the nurse educators seemed to prime parents to recall information about taking, reading, and singing to babies they had seen previously. A mom said, *“I don’t really remember what we said or what she said, or what we talked about. Although, I remember thinking that it was a great idea and I remember seeing the billboards actually.”*

- All moms found the information they learned at the hospital useful, even if they already had children. For moms with other kids, the educational session was a refresher.

“When she was explaining to me it’s kind of a refresher because, for me, my oldest was six when I had my youngest so it was just refreshing and bringing back to my memory like, ‘Okay. This is what to expect with your newborns, because talking is loving, and reading, and singing to him. It’s just all part of making him grow. So I like the way that she presented it to me.”

- Some moms mentioned that the information provided by the nurse educator could be particularly useful to younger and first-time moms.

“I guess it [the information] could have been more helpful to me if I was with my first child. I did have one at 16. With a child, you don’t know anything about what they’re doing. It can be very helpful for a first-time mom.”

Potential impact of the hospital toolkit and educational session on awareness of the message about talking, reading, and singing to infants

To assess the potential impact of the hospital toolkit and educational session on awareness of the message about talking, reading, and singing to infants, we asked PCCT Study participants (Time 1 and Time 2) and T4B participants Survey participants about their sources of information about the importance to talk, read, and sing to babies.

- A comparison of PCCT Study participants’ responses between Time 1 (hospital survey) and Time 2 (phone/email/text message survey) indicate a “priming” effect by which the

toolkit and the educational session at the hospital seem to predispose PCCT Study’s participants to be pay more attention to the messages about talking reading, and singing to babies they receive from various sources.

From which sources have you learned about the importance of talking, reading, and singing to babies(all received the toolkit)?

Sources of Knowledge about talk, read, and sing (Participants could choose more than one)	PCCT Time 1 %	PCCT Time 2 %	T4B Survey %
	n = 923	n= 307	n = 357
Hospital, during delivery of the baby	56.7	81.1	34.6
Other medium	7.8	30.9	24.1
None	7.5	4.2	13.1
Radio programs/ads	3.3	15.3	13.9
Doctor’s office	2.9	49.2	50.7
Billboards	2.6	20.8	6.2
Head Start Centers/CAP Tulsa	2.5	17.0	9.0
text4baby messages	2.3	25.1	75.8
Church, during literacy nights	1.6	13.4	9.2
Educare Centers	1.2	8.1	10.0

Impact of the tote bag on talking, reading, and singing behaviors among text4baby Survey participants

Among the text4baby Survey participants, we assessed differences in the frequency of talking, reading, and singing behaviors between participants who had received the toolkit at one of the Tulsa hospitals when they delivered their baby, and participants who had not received the toolkit at Tulsa hospitals. We assessed talking, reading, and singing behaviors overall and talking, reading, and singing behaviors during routines such as bathing and feeding time.

- Statistical analyses showed that participants who received the toolkit at one of the Tulsa hospitals reported enacting the following behaviors more frequently than participants who did not received the toolkit at the hospital (all participants were living in the Tulsa area). These differences were statistically different.

Parents in Tulsa who got the toolkit are more likely to:

- **repeat sounds their babies made**

- **tell stories to their babies**
- **read to their babies**
- **talk to their babies when changing a diaper**

Impact of the Period of Purple Crying and Never Shake a Baby education provided by the PCCT nurse educators

In the qualitative face-to-face interviews about the toolkit and the educational session with the nurse educator, the vast majority of moms said that it was very important to let parents know, particularly those having their first child, that the Period of Purple Crying (PoPC) is a normal developmental period, and to teach them strategies to deal with their babies' cries as well as with their own frustration.

“I remember talking about that (PoPC) and I think that’s helpful for parents to know, because I have been through that already, but I can imagine. I remember, as a new parent you do feel like you are failing your kid because they are crying and it can be really frustrating; and if you don’t have good coping techniques or, let’s say, you don’t have a lot of support at home, then I could see how you could really go crazy, especially with colic babies or fussy babies. So, I think it’s important to really talk about that with moms, and make sure they know it’s normal, and that it’s ok to put your baby in a safe place like their crib and walk away. Walk out of the house, go sit on the porch, take a deep breath, its ok. Those kinds of things, you can never hear that enough as a new parent, I think. So, I do remember having that conversation. I didn’t remember it as coming from her [the PCCT nurse educator], but I remember that.”

- In the qualitative face-to-face interviews about the educational session with the nurse educator, moms were able to describe strategies they had learned from the nurse educator to safely deal with their babies and calm themselves down. A mom recalled, *“Yes, I learned that babies can cry a lot and that you first check that everything is okay, and if not, then call the doctor, or take them to the ER to find out if they are sick”*. Two other moms shared the following:

“[The information was] very good, because I was still trying to get my emotions back together, and I was getting frustrated; so I was like, ‘Okay, just sit here. I don't know what's wrong with you. I'll just leave you there.’ It was telling us, ‘if I'm frustrated at the baby, put him in a safe place to calm down for a minute, then get him and try to make him calm again.’ I liked that because it kind of gave me a little help.”

“Yeah [it was useful]. I put him in his crib and make sure there's nothing in there, and I go sit down for a second, and get my mind together, and then I come back, and I'm not gone that long. I just stay away for like maybe five or six minutes just to get it together and then I'll come back to him. That's the easiest thing to do because he can't hurt himself. He can't fall off anything, and I can just go cool off for a second and then come back and we'll figure it out together.”

- Moms, even if they had previous knowledge about the Period of Purple Crying and Never Shake a Baby, appreciated the opportunity that the nurse educator’s visit afforded them to recall useful strategies, and educate other family members who might be taking care of their baby. Two moms shared how the PoPC educational session and materials helped their partners.

“They told me that babies, I guess they tend to cry for no unexplained reason [chuckles], you know they scream and cry, and just be patient and calm. And when I was watching the DVD, you know there's a mom saying how I guess her husband shook the baby when they were in the Period [of Purple Crying], so that the baby ended up having extreme conditions because of that. So I remember watching that. I think the Purple Crying did explain a lot for my husband. With a baby, if you change them, and you feed them, and things like that, and they still cry, that's normal. Don't get mad; because it's not you. So I think it really helps my husband because it has been his first child. Yeah, he gets frustrated. So I think it helps him to kind of understand what's going on, and what he can do to help that, or to just let him know, it's ok if you can't make him stop crying. Just put him down and walk away. That's fine too. So I think that it did help.”

“Yeah, you know, and what’s nice about having someone say it to you too is that then it gives you the excuse to re-say it even if you know it. Like, I wouldn’t really be at risk for shaking my baby cause that’s not how I handle my frustration or my anger, with violence, but I think that people can say to their step-siblings or boyfriends, or husbands or whoever, ‘Hey, that lady mentioned this, remember? You have to keep your calm.’ So, it’s not coming from the mother. I mean, some people um have an easier time hearing a message coming from an expert or an authority figure, as opposed to just the mother kind of nagging or being like ‘Don’t do this to my baby.’ It’s kind of a good way to give information to other people too.”

Impact of the Talking is Teaching toolkit on PCCT Study’s parents and babies measured at Time 3

To complement the qualitative data collected during the qualitative interviews about the toolkit, we asked the PCCT Study participants two more questions about the toolkit during the second telephone/email/text survey we conducted (6-8 months after the parents had received the Talking is Teaching toolkit). The first question inquired whether the materials in the talking is teaching tote bag they had received at the hospital had made a difference in the way they interacted with their baby. The second, a follow-up, questions, asked parents in what ways had the materials in the toolkit made a difference in the way they interacted with their babies.

- Almost 2/3 of participants reported that the toolkit had made a difference in their interactions with their baby.
- Almost 2/3 of participants answered that the toolkit had made a difference by providing resources such as learning materials and clothing for their baby. A Third of parents also said that the toolkit had benefited them by providing useful information about their

children’s development, such as milestones, and the importance of talking, reading, and singing for brain development and early literacy.

Have the materials in the talking is teaching tote bag you received at the hospital during delivery made a difference in the way you interact with your baby?

<i>Participants = 191</i>	<i>%</i>
Yes, it has made a difference	61.8
No, it has not made a difference	26.7
Don’t know/No answer	11.5

If “Yes,” In what ways have the materials made a difference to you and your baby?

<i>Participants = 191</i>	<i>%</i>
Provided learning materials and clothing	63.6
Educated parents about child development	36.4
Fostered parent-child interaction, play, and bonding	12.7

Stories from the PCCT’s nurse educators distributing the toolkit and providing the educational session about the importance of talking, reading, and singing

The PCCT nurse educators have shared information about some of the feedback they receive from the parents they encounter at the hospitals about the toolkit and the education they provide.

“A mom was very excited about the gifts. Her eyes lit up at the sight of “Talking is Teaching” bag. She said she was a firm believer in talking to your baby. It was a natural instinct for her to talk and sing to her babies. She did it with her first daughter and that little girl grew up to be really intelligent. She was an early talker and does well in school now. She also loved books at an early age because her mom took the time to read to her as well.”

“Another mom was delighted that we have a program dedicated to child development and learning. She said she was grateful that someone came to validate what she was already doing with her children. I emphasize that something as simple as talking to your baby sends a tremendous message to your child that they are important and acknowledged.”

“Another mom, who was from out of state, had never heard of the Talk, Read, Sing Campaign , or PoPC. She said it was wonderful that we delivered this type of education to all the moms.”

“One young couple were both early education teachers. They were absolutely thrilled to get this information and were super appreciative! They said they felt more confident to take better care of their baby after receiving this info. They are going to spread our messages!”

“One family shared with me how they read and talked to both their babies before they were born. They thought the Talk, Read, Sing Campaign was a great addition to our community and expressed that early education was very important to them and they loved what we were doing.”

Impact of the Period of Purple Crying and Never Shake a Baby Initiative

A significant piece of the PCCT nurse educators is to educate parents about the Period of Purple Crying and teach them strategies to prevent hurting their baby when they might become frustrated by their inability to calm their baby down. Several questions were included at Time 2 and Time 3 in the PCCT Study surveys to assess the impact of the nurse educators’ efforts. The tables below present results from the questions included in Time 2 and Time 3 surveys. The results correspond to participants who answered both surveys, not just one of them.

1. From which sources did you learn ways to calm your baby (choose all that apply)?

PCCT participants = 156 at T2	%
Family members	83.3
The PCCT’s nurse educator	50.6
Books, parenting magazines	49.4
Pediatrician	46.8
Other sources	27.6

2. Did you watch the PoPC DVD given by the PCCT nurse educator? (n = 176)

- **Yes - 31.8%**

3. Did you share the PoPC DVD given by the PCCT nurse educator with any other person caring for your baby? (n = 171)

- **Yes - 20.0%**

4. If you shared the PoPC DVD, with how many people? (n = 33)

- **1-2 people = 84.8%**
- **3-4 people = 12.1%**
- **More than 6 people = 3.0%**

5. Did you share any of the soothing strategies with your baby's other caretakers? (n = 183)

- **Yes - 65.0%**

Several questions were included at Time 2 and Time 3 in the PCCT Study surveys to assess the impact of the nurse educators' efforts. The tables below present results from the questions included in Time 2 and Time 3 surveys. The results correspond to participants who answered both surveys, not just one of them.

6. Within last week how much has your baby cried?

PCCT participants = 74	Time 2	Time 3
	%	%
< 1 hour a day	57.5	64.9
1-2 hours a day	37.0	23.0
3-4 hours a day	5.5	9.5
5-6 hours a day	0.0	1.4
7-8 hours a day	0.0	1.4
> 8 hours a day	0.0	0.0

7. When your baby has cried more than normal, have you done any of the following?

PCCT participants = 74	Time 2	Time 3
Mark all strategies that apply	%	%
Asked someone else in the home for help with baby	56.8	55.4
Did something else to calm down baby or self	24.3	43.2
Placed baby in a safe place and walked away	39.2	33.8
Contacted someone outside the home for help with baby	5.4	4.1
Sought medical attention for baby	6.8	2.7

8. How often are you able to calm baby with the strategies listed above?

PCCT participants = 74	Time 2	Time 3
	%	%
Always	67.1	58.9
Frequently	27.4	34.2
Sometimes	5.5	5.5
Rarely	0	1.4
Never	0	0

9. How capable do you feel of calming your baby when she/he cries?

PCCT participants = 74	Time 2	Time 3
	%	%
Very capable	80.8	82.4
Moderately capable	11.0	8.1
Capable	6.8	9.5
Somewhat capable	1.4	0
Not very capable	0	0

10. How often do you feel frustrated when your baby cries?

PCCT participants = 74	Time 2	Time 3
	%	%
Always	1.4	0
Frequently	1.4	2.7
Never	24.7	23.0
Rarely	34.2	47.3
Sometimes	38.4	27.0

Recommendations

Recommendations to improve the toolkit

- Change the format of the Sesame Silly Songs CD to an app or downloadable format.
- Offer other music or nursery rhymes through an electronic format.
- Add a booklet of simple songs or nursely rhymes for moms to sing with their baby.
- Replace twitter and Facebook cards with a card about library resources or other tips for talking, reading, and singing to babies.
- Many moms said the book in the toolkit was the only children's book that they had. Consider including a Library card application, providing simple instructions on accessing library resources and online services (such as downloadable books and music), and giving information about the book mobile to families.
- Some moms did not seem to understand that they should begin reading and singing at birth and waited until they could "start paying attention". Including pictures of moms reading, singing and talking to very young babies could be helpful. They could be added to Milestones Flashcards, to a book of songs and rhymes, or as a new item.

Research team's Recommendations to improve the delivery of the toolkit

- Keep the message brief at the initial distribution of the toolkit.
- Plan to follow-up with a call or home visit.
- Consider delivering the toolkits or additional supports at first or second well child check-up.