Basics Insights Text Messaging: Overview and Estimated Impacts on Parenting of Children Aged Birth to 3

TEXT MESSAGING FOR EARLY CHILDHOOD CAREGIVING BROUGHT TO YOU BY THE BASICS, INC.

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EXECUTIVE SUMMARY

Basics Insights (BI) text messaging is a program of The Basics, Inc., which sends parents twice-weekly content in text messages designed to support them in applying The Basics Principles of early childhood caregiving with their children. The five Principles are: Maximize Love, Manage Stress; Talk, Sing, and Point; Count, Group, and Compare; Explore through Movement and Play; and Read and Discuss Stories.

BI is a key component of The Basics Strategy for early learning and brain building. Parents of all backgrounds enroll, but a priority is making sure BI messaging is helpful and accessible to families with low literacy levels or living in less advantaged circumstances. The text messages are delivered currently in English and Spanish, while efforts are underway to add Brazilian Portuguese and other languages.

Invitations to enroll in BI reach families through a variety of collaborating institutions in communities of the Basics Learning Network (BLN), which The Basics, Inc. coordinates. The BLN strives to ensure that even the least advantaged families have access to information, social supports, and routine reminders linked to The Basics Principles of early childhood caregiving and BI plays an important role in this regard.

Organized around The Basics Principles, BI's twice-weekly text messages address all core domains of early childhood development: cognitive development, social-emotional development, language development, physical development, and approaches to learning. Messages are aligned with the *Head Start Early Learning Outcomes Framework* as well as the *Massachusetts Early Learning Guidelines for Infants and toddlers.*

Data in this report are from the pilot implementation of BI in which 37 organizations enrolled 2,296 individuals with children from birth to 3 years of age during the period from January through October 2020 (coinciding with the Covid-19 pandemic).

Of the 2296 enrollees, 780 (34%) responded to a baseline survey and 213 answered a 3.5-month follow-up survey, which they accessed by clicking on a link in a text message. These 213 responses represent 12% of those that had been enrolled at least 3.5 months with a child not yet 3-years old at the time of the survey. This response rate at 3.5 months is in the typical range for cell phone surveys.[i] Of these respondents, 110 had completed the baseline survey as well, making it possible to measure changes over the 3.5-month interval in their self-reported parenting practices.

Featured Findings

PARENTS REPORT SATISFACTION: Parents have embraced Basics Insights text messages. The following bullets represent responses from parents after receiving the messages for 3.5 months.

- 74% report they have *talked about the messages* with a friend or relative.
- 82% totally agree and 16% mostly agree that *they would recommend* the messages.
- 61% totally agree and 30% mostly agree that the messages *help them understand* their child.
- 60% totally agree and 33% mostly agree that they *learn new things to do* with their child.
- 84% totally and 13% mostly agree the messages *keep them thinking* about how to help their child learn.
- 38% use all of the messages and 46% use most of them, for a total of 84% who use all more most of the messages.

THERE ARE APPARENT IMPACTS ON PARENTING: On top of changes in caregiving activity that occur normally as children get older,[ii] the following growth over 3.5 months between the baseline and follow-up surveys appear attributable to Basics Insights:[iii]

- growth of 12.9 percentage points in the proportion of respondents who talk multiple times daily with their child about feelings—up from a baseline of 32%;
- growth of 14.0 percentage points in the proportion who report talking multiple times daily about numbers or counting objects—up from a baseline of 31%; and
- 20.2 percentage points in the number who play on the floor with their child multiple times daily—up from a baseline of 41%.

PARENTAL SELF-PERCEPTIONS PREDICT HOW MUCH CAREGIVING IMPROVES: The greatest reported increases over 3.5 months in Basics-related parenting behaviors were achieved by respondents who rated their predispositions *low* at baseline regarding *Future Orientation* (survey item: *I am the type of person who plans for the future.*) and *Persistence* (survey item: *I am the type of person who keeps on trying when something is really hard to do.*) [iv]

These findings suggest that BI text messaging may have its greatest impacts on families whose baseline dispositions make them least likely in the absence of BI to implement Basics-related parenting practices. Essentially, once they begin receiving the messages, their attention becomes more focused on helping their child learn, and their parenting practices become more similar to those of parents who were already more focused on practices consistent with The Basics Principles. They substantially, though not completely, caught up with parents whose baseline responses reflected more frequent use of the caregiving practices. Other recent research on inducing parental behavioral changes has arrived at similar findings regarding the effectiveness of reminders for parents prone to be more present- than future-oriented.[v]

The report opens with background on the BI offering, then proceeds to review how awareness of The Basics Strategy and BI text messaging is spreading, what users say about the value of the text messages, and estimated impacts on parenting practices of receiving BI messages.

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BACKGROUND ON BASICS INSIGHTS

These days virtually every adult has a cellphone. That's according to a 2019 survey by the Pew Research Center which found that 99% of 18- to 49-year-olds own a cellphone of some kind, while 94% own a smartphone.[vi]

The proliferation of cellphones combined with texting technology opens up new opportunities to influence adult behavior. Over 95% of text messages get read[vii] compared to only 25% of emails.[viii]

The result has been dramatic growth in the number of interventions that harness recent insights from behavioral science, using text messages that "nudge" people to follow through on a range of beneficial behaviors.[ix]

And the messaging matters. Evidence is growing that prompts and reminders in text messages can improve a variety of health, education, and life outcomes, from early literacy[x] to K-12 course performance[xi] and college attendance. [xii]

What is The Basics Insights Program?

Basics Insights text messages deliver developmentally appropriate guidance for establishing strong parent-child attachments and teaching young children. The tool builds strategically on conversations about The Basics principles that are already occurring in communities, while also serving as a stand-alone, bite-sized curriculum for busy caregivers.

Basics Insights has the following features:

A three-year curriculum spanning from birth to age three. Parents and caregivers can enroll at any point.

- **Two messages per week.** The first message shares a science-based "Fact" related to the child or caregiver's development. The second message offers a "Try This," a specific suggestion for the caregiver related to the previous fact.
- **Complementarity with other Basics resources.** The content for each week is explicitly aligned with one of the five Basics Principles. The text messaging can be used in combination with other Basics materials, such as videos and handouts from The Basics Community Toolkit;
- **Developmental sequencing.** The program uses the child's birthdate to send content that gets more complex as the caregiver and child grow together.

The Basics Principles

1. Maximize Love, Manage Stress

2. Talk, Sing, and Point

3. Count, Group, and Compare

4. Explore through Movement and Play

5. Read and Discuss Stories

Figure 1 shows the percentage of messages representing each Basics principle. All five principles are woven throughout the three-year sequence. *Maximize Love, Manage Stress* is emphasized from the very first week and represents the largest share of messages, followed by *Explore through Movement and Play*.

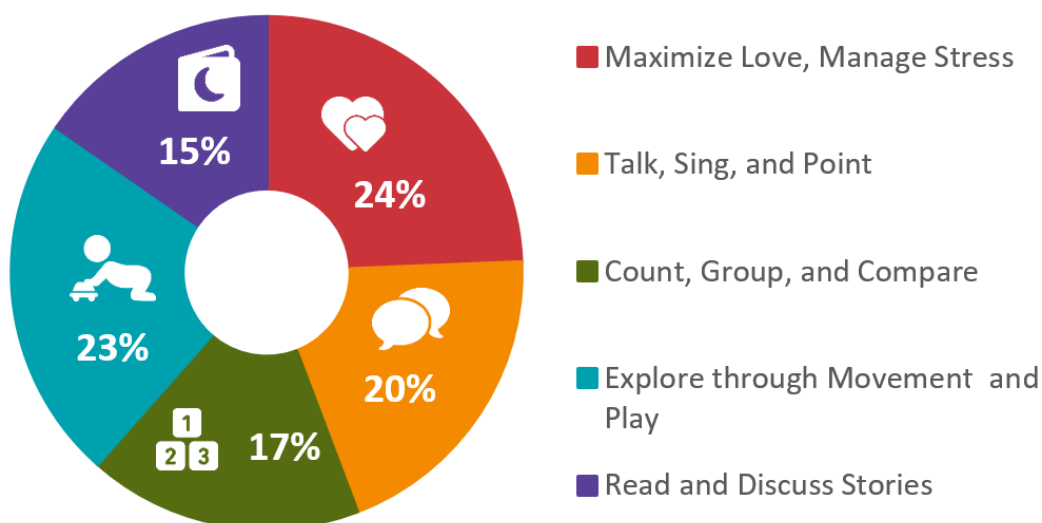**Figure 1: The Share of Basics Insights Messages Covering Each of the Five Principles**

Figure 2 illustrates how messages evolve in a developmental progression in response to the child's emerging skills. It uses examples of *Talk, Sing, and Point* messages for weeks 17, 61, 101, and 144, where the first message each week is the "Fact" and the second is the "Try This."

The messages are designed to increase the impact of Basics-related conversations in healthcare, child care, and other community settings by providing parents and caregivers with behavioral "nudges" to reinforce use of The Basics Principles in the course of their everyday routines.

In addition, messages address the caregiver's own wellbeing and social-emotional needs. This holistic approach sets Basics Insights apart from other emerging technology for caregivers, where support for social-emotional development tends to be underrepresented.[xiii]

The Basics™

Figure 2: *Talk, Sing, and Point* Messages for Weeks 17, 61, 101, and 144

Age	Basics Principle	FACT	TRY THIS
Week 17	*Talk, Sing, and Point*	FACT: Your baby is experimenting with making sounds and learning that they get your attention. By responding, you encourage them to keep practicing! You are building their language and communication skills.	TRY THIS: When your baby makes a sound, show excitement in your face and voice. Let them finish so they know you are listening. Then respond with real words. See how long you can keep the "conversation" going back and forth by responding to their sounds and expressions.
Week 61	*Talk, Sing, and Point*	FACT: Your child understands a growing number of words, even though they can't say them yet. Talking to them builds their vocabulary and strengthens your relationship.	TRY THIS: Tell your child each part of them that you love and give that part a kiss after you say its name. "I love your nose. I love your elbow. I love your toe." Be silly.
Week 101	*Talk, Sing, and Point*	FACT: Children like to know that you are paying attention to them. They will make more of an effort to think and talk if they know that you will listen and respond in a supportive way	TRY THIS: Show your child you are listening carefully. This may mean avoiding distractions, such as your phone. If you are busy, stop to say, "Wait a minute until I finish this, then we can talk. Okay?" Assure them that you are interested in what they have to say.
Week 144	*Talk, Sing, and Point*	FACT: Your child may ask tons of questions. When you ask a question back, instead of just giving the answer, you help them develop problem-solving skills and confidence.	TRY THIS: Involve your child in answering their own questions. When they ask a question, respond, "Hmm, what do you think?" Listen and show that you value their ideas. Have a back-and-forth conversation.

Experts Helped Ensure Quality

The Basics team developed the messages during 2017 and 2018, based on early childhood science as well as the recommendations of relevant professional organizations, such as the American Academy of Pediatrics.

As messages were developed, each was classified under a corresponding Basics Principle. Expert advisors, including prominent scholars and pediatricians reviewed initial drafts for content, phrasing, and sequencing, and messages were refined in response to their feedback.

Alignment with Early Childhood Frameworks

Basics Insights supports the whole child by addressing all core domains of early childhood development: cognitive development, social-emotional development, language development, physical development, and approaches to learning.

Coverage of Head Start Outcomes

The *Head Start Early Learning Outcomes Framework* (ELOF) identifies five domains, or "broad areas of early learning and development from birth to 5 years that are essential for school and long-term success."[xiv] Specifically, they are: Approaches to Learning, Social and Emotional Development; Language and Literacy; Cognition; and Perceptual, Motor, and Physical Development. Each domain is subdivided into Goals, which are "broad statements of expectations for children's learning and development" that are tailored to different developmental periods.[xv]

Our detailed analysis of the Head Start framework demonstrates that Basics Insights messages cover all five of its developmental domains and almost all of the goals it delineates.

More specifically, using a conservative approach to coding, 57 of the 59 Head Start goals (96%) are represented by one or more Basics Insights messages. This analysis was also conducted with the *Massachusetts Early Learning Guidelines for Infants and Toddlers* and revealed a similar pattern: 48 of the 56 Massachusetts learning guidelines (86%) are congruent with one or more Basics Insights messages (some of the 56 guidelines are not relevant as they pertain to educational settings outside home environments).

Figure 3 below shows examples of how Basics Insights messages address each developmental domain in the *Head Start Early Learning Outcomes Framework: Age Birth to Five* (ELOF)[xvi] and the *Massachusetts Early Learning Guidelines for Infants and Toddlers*.[xvii]

Figure 3: Basics Insights Align with Developmental Domains in Head Start Early Learning Outcomes Framework and Massachusetts Early Learning Guidelines
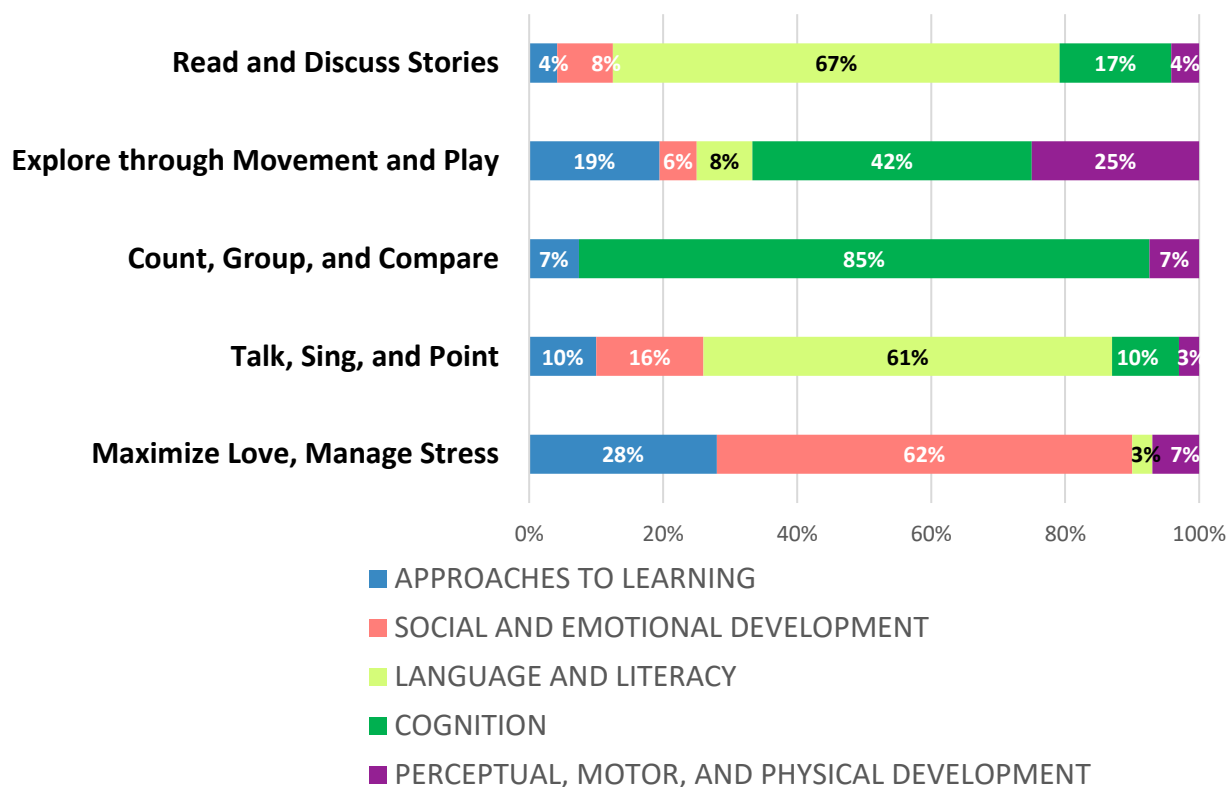
Head Start Domain	Massachusetts Domain	Basics Insights Message
Approaches to Learning	Approaches to Learning	TRY THIS: When your child is struggling with a task, give them just enough help so they can succeed. You might need to give them a boost or move an object within reach. Then cheer them on to overcome the challenge. They might also signal that they need help by looking at you or gesturing.
Social and Emotional Development	Social-Emotional Development	TRY THIS: Live in the moment this week while you bond with your newborn. Hold them against your body. They'll be soothed by the warmth of your skin. Your gentle touch will make them feel loved.
Language and Literacy	Language and Communication Development	TRY THIS: Sing or recite rhymes during daily routines, like changing your baby's clothes or diaper. You can make up a song about what you are doing together. Smile and look into their eyes. See if they watch your mouth as it moves.
Cognition	Cognitive Development	TRY THIS: Find moments to play a fun game of "peek-a-boo." Hide your face with your hands, and then open them up to show a big smile. "Where did daddy go? Here he is!" Keep playing as long as your baby is interested and enjoying it.
Perceptual, Motor, and Physical Development	Physical Health and Well Being Development	TRY THIS: Babies should sleep on their backs, but during the day while they are awake, make sure your baby gets some "tummy time." They may fuss at first, so start with just a few minutes at a time. Make it fun by getting on the bed or floor with them, making silly faces, and chatting.

Based on the Head Start ELOF analysis, Figure 4 tabulates how the Head Start domains relate to the five Basics Principles. Overall, this tabulation demonstrates that there tends to be one Head Start domain that characterizes the majority of the messages associated with each Basic Principle.

For example, 85% of messages classified as *Count, Group, and Compare* were coded as Cognition in the Head Start alignment analysis. *Maximize Love, Manage Stress* is also highly dominated by a single Head Start domain, with 62% of messages coded as Social and Emotional development. *Talk, Sing, and Point* and *Read and Discuss Stories* are most associated with Language and Literacy (61% and 67% respectively). Finally, messages classified as Cognition account for 42% of those falling within *Explore through Movement and Play*.

Figure 4: Percentages of Basics Insights Messages Corresponding to Each Head Start Domain, by Basics Principle

The bottom line is that Basics Insights text messages nudge parents and other caregivers to carry out behaviors across key domains for promoting young children's learning and wellbeing.
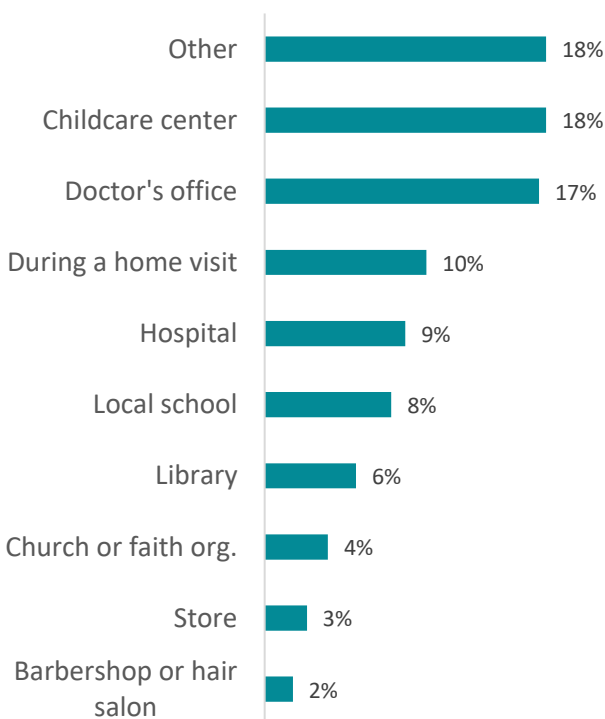
FINDINGS FROM THE IMPLEMENTATION PILOT

The pilot implementation of Basics Insights enrolled 2,296 individuals with children from birth to 3 years of age from early 2020 through mid-October 2020. Of these, 780 (34%) responded to a baseline survey and 213 responded to the 3.5-month follow up survey that repeated questions from the baseline. The 213 represent 12% of those eligible to respond, by virtue of having been enrolled for at least 3.5 months with a child that had not turned 3 by that time. This is a typical response rate for surveys embedded text messaging.[xviii] Of these 213 that responded to the 3.5-month survey, 110 had also responded to the baseline survey. The group that responded to both surveys makes it possible to examine changes over the 3.5-month interval.

This report reviews how awareness of The Basics Strategy and Basics Insights text messaging is spreading, what users say about the value of the text messages, and compares baseline responses regarding parenting practices to follow-up responses on the same topics 3.5 months later.

How Awareness Spreads

The pursuit of *socioecological saturation* means trying to reach every infant and toddler caregiver with multiple exposures to conversations and other supports that encourage them to apply The Basics Principles with their child. The survey asks respondents, "*Do you ever hear about The Basics around your community? If yes, where? (Check all that apply.)*" Twelve percent of respondents checked more than one option. Figure 5 shows the percentages that selected each listed sector from a forced-choice menu.

Figure 5: Sectors where People Hear about The Basics
(% that selected each sector. Some respondents did not select a sector.)

Sector	%
Other	18%
Childcare center	18%
Doctor's office	17%
During a home visit	10%
Hospital	9%
Local school	8%
Library	6%
Church or faith org.	4%
Store	3%
Barbershop or hair salon	2%

Responses listed for "Other":

1. A friend posted about it on Facebook
2. Community/Flyers
3. County Government newsletter
4. Family
5. Friend talked about it
6. Found it searching social media
7. Organized play group
8. Parenting Workshop
9. PBS
10. Speech Therapy
11. Found the Website
12. WIC Program
13. "An organization I belong to"
14. At work (school system employee)

Organizations in the sectors on Figure 5 are places where parents may learn about the availability of Basics Insights and be invited routinely into conversations about the messages.

Figure 6 shows that 26% percent of respondents answered "*Yes*," to the question, "*In the last few months, have you ever had a conversation about Basics Insights text messages with a provider, such as a nurse, doctor, or childcare provider?*"

In addition, 72% responded "*Yes*," to the question, "*In the last few months, have you talked about Basics Insights text messages with a friend or relative.*"

Figure 6: Parents Discuss Basics Insights with Providers, Friends, and Relatives

6A
In the last few months, have you ever had a conversation about Basics Insights text messages with **a provider, such as a nurse, doctor, or child care provider***?*

6B
In the last few months, have you talked about Basics Insights texts messages with a **friend or relative**?
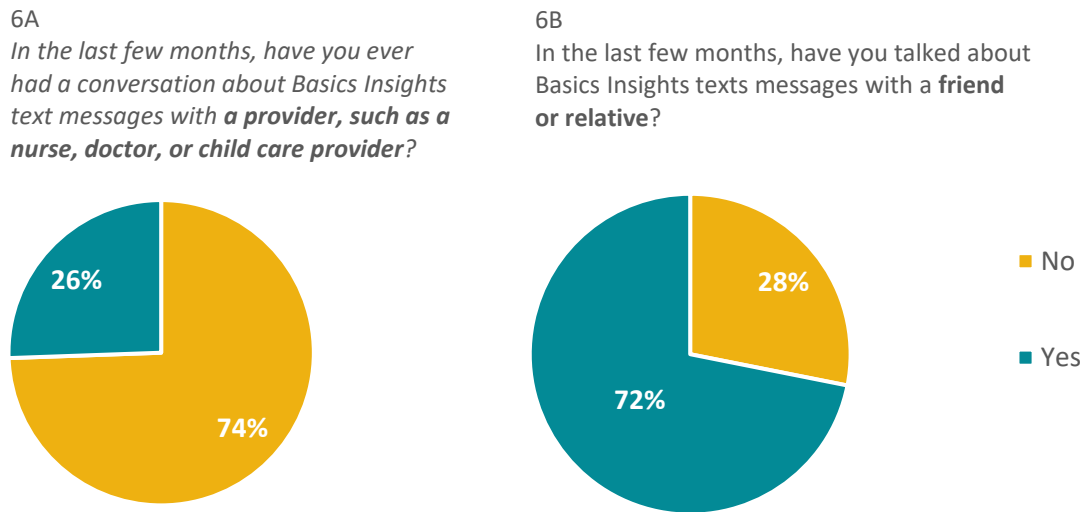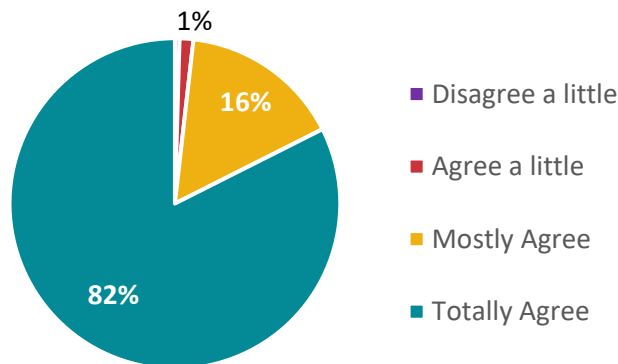

Figure 7 shows that 82% *Totally Agree* and 16% *Mostly Agree* they would recommend the text messages to other parents and caregivers.

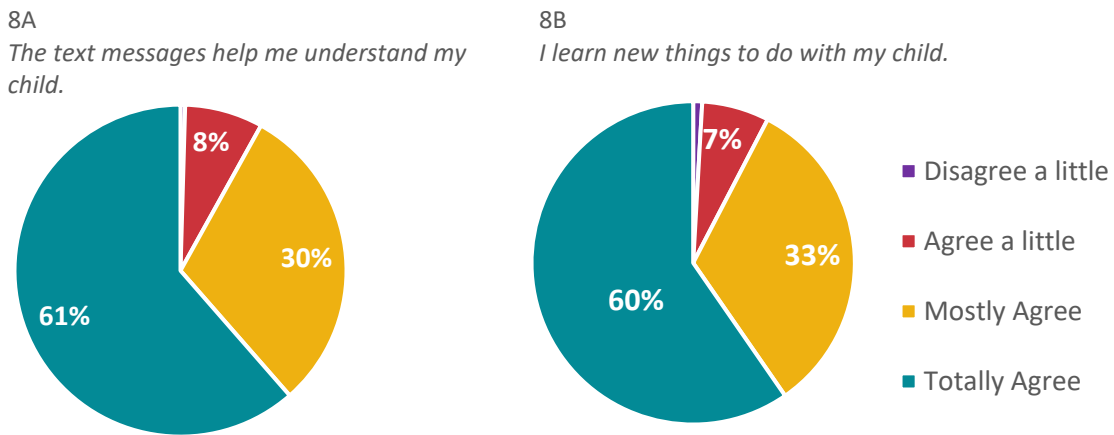**Figure 7: Parents are Willing to Recommend Basics Insights**

"I would recommend the text messages to other parents and caregivers."

Parents Learn from Basics Insights

Research on behavioral change has established that people are more likely to implement recommended actions if they understand how taking those actions will help them achieve outcomes that they value.[xix] The Basics Insights messages that arrive each Monday provide information that helps the parent understand how and why the suggestions that arrive on Wednesday will contribute to their child's development. Figure 8 shows percentages of the 224 respondents to the 3.5-month survey reporting that they learn to understand their child as well as about things to do with their child.
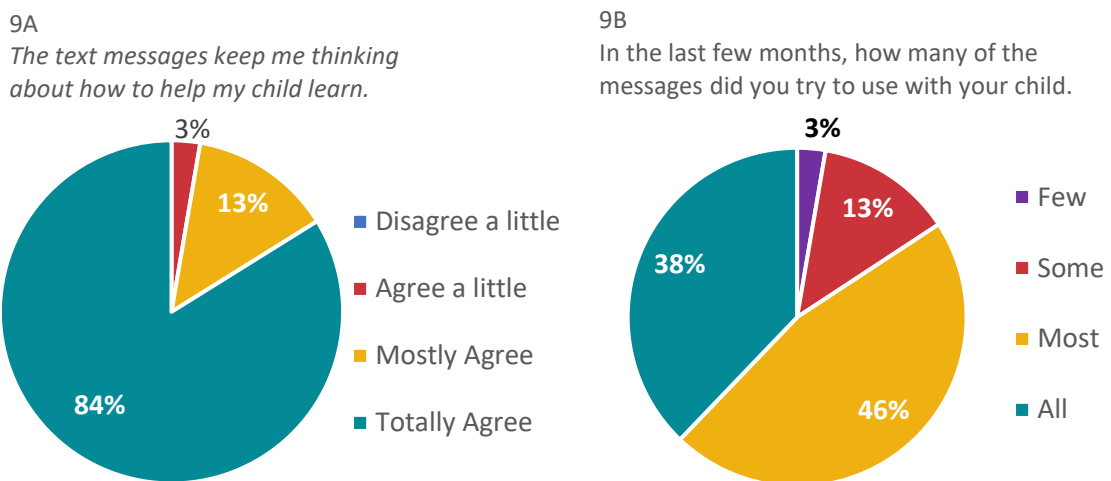
Figure 8: Messages Help Parents Understand the Child and Learn New Things to Do

8A
The text messages help me understand my child.

8B
I learn new things to do with my child.

- Disagree a little
- Agree a little
- Mostly Agree
- Totally Agree

Messages Affect Parents' Thoughts and Behaviors

Parents report that Basics Insights affects what they think about as well as what they do. Panel A of Figure 9 shows that 84% *Totally Agree* and 13% *Mostly Agree* that Basics Insights keeps them thinking about ways to help their child learn. Panel B shows that 83% (i.e., 38% plus 46%) report using *All* or *Most* of the messages.

Figure 9: Messages Keep Parents Thinking about How to Help the Child Learn and Using the Messages

9A
The text messages keep me thinking about how to help my child learn.

9B
In the last few months, how many of the messages did you try to use with your child.

- Disagree a little
- Agree a little
- Mostly Agree
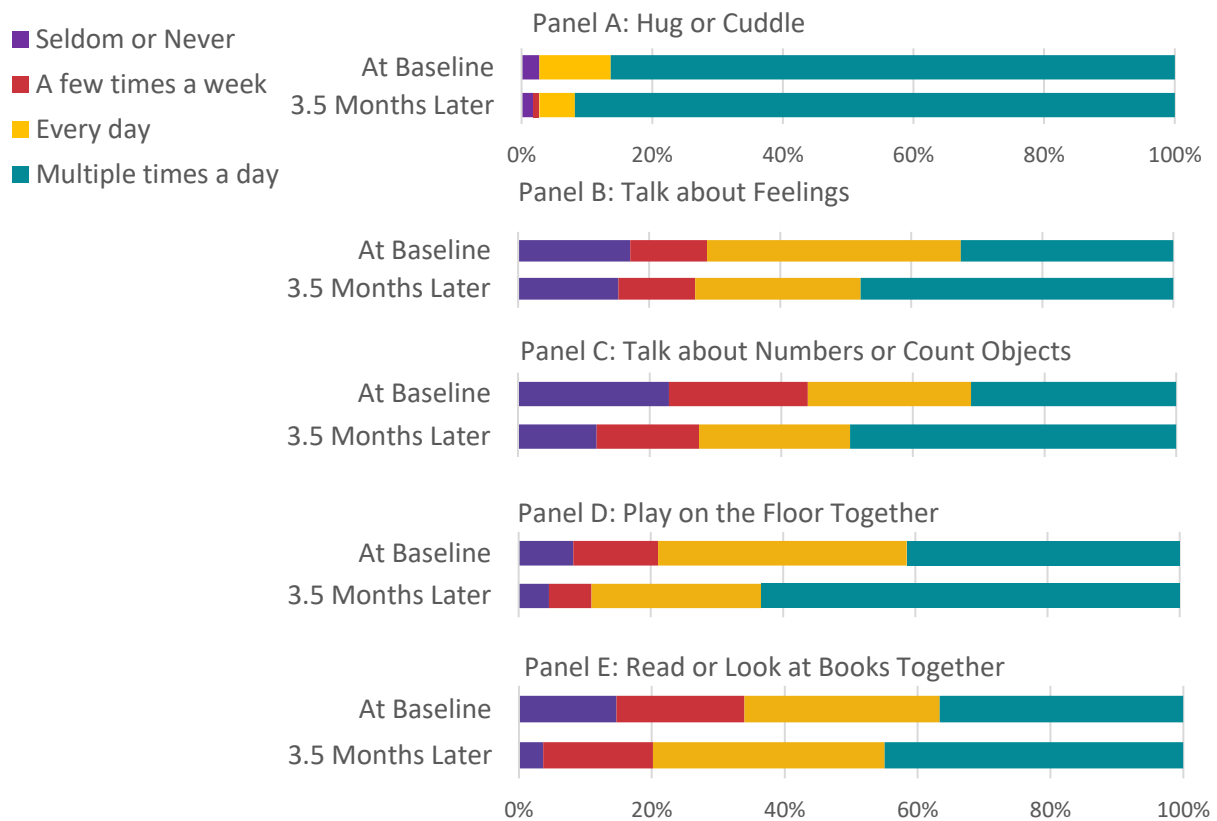- Totally Agree

- Few
- Some
- Most
- All

Basics-Related Parenting Becomes More Frequent

There were 110 individuals who responded to both the baseline and the 3.5-month survey. Comparing how these parents characterize their parenting at the baseline with how they characterized it at the 3.5-month follow-up gives us an estimate of how much their parenting changed over this period of receiving Basics Insights.

Generally, there were statistically significant increases in Basics-related parenting. The items on the survey were kept simple in order to be easy to answer. In a forced-choice question, parents were asked: In the past week, how often did you: *Hug or cuddle with your child? Talk to your child about feelings/ their feelings? Talk to your child about numbers or count objects? Play with your child on the floor? Read or look at books together?* Figure 10 shows the patterns at baseline and follow-up in how respondents answered. Each respondent could indicate either multiple times a day, daily, a few times a week, or seldom/never.[xx]

Figure 10: Frequencies of Basics-Related Caregiving Behaviors Increase from Baseline to 3.5-Month Follow-up, among Respondents who Answered both Baseline and Follow-up surveys.

All of the patterns on Figure 10 shifted toward more frequent use of the parenting behaviors, and the average changes from baseline to 3.5 months in Panels C, D, and E are highly statistically significant, at better than the 0.001 significance level. Even though the overall change in the average value of Talking about Feelings in Panel B is not statistically significant, the results reported below on Figure 11 indicate that the shift of some parents from "Every day" into the "Multiple times a day" category (apparent on Figure 10 for Panel B) *is* statistically significant.

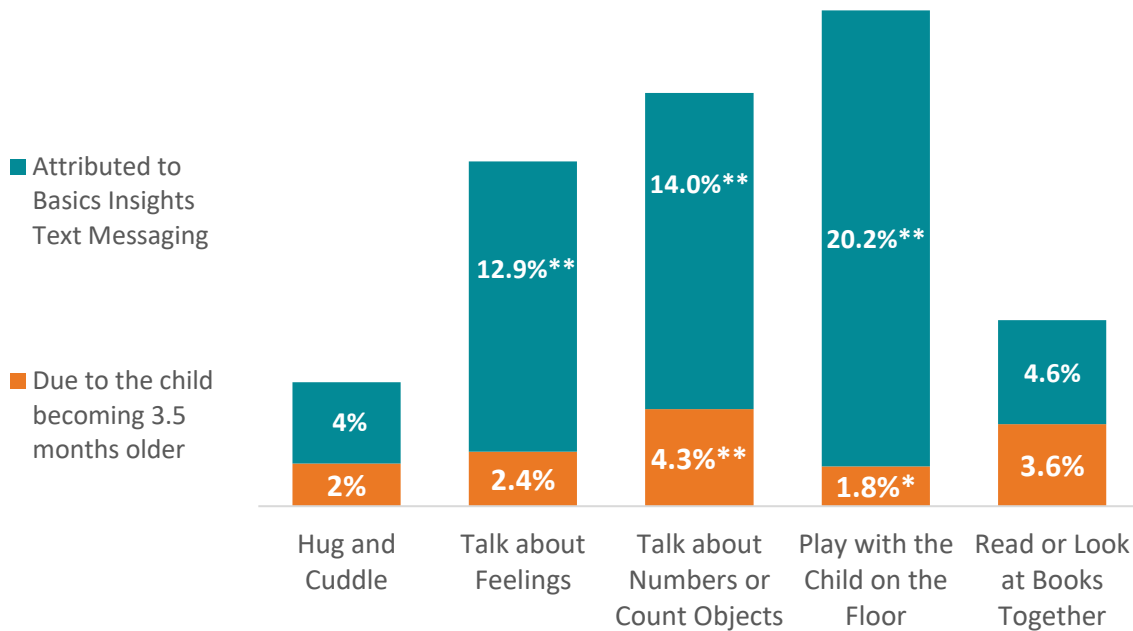## Parsing Age vs. Basics Insights as Explanations for Increased Frequency

How much of the increase from the baseline to the 3.5-month follow-up, in the percentage of respondents reporting that they do a particular parenting practice <u>multiple times a day</u>, is due to receipt of Basics Insights messages versus simply the child getting older? In other words, how much of the difference between the baseline and the 3.5-month follow-up is simply because parents normally increase their use of such practices as children get older?

To answer this question, we conducted a multivariate statistical analysis.[xxi]

Figure 11 shows the findings. The height of each bar shows the answer for a particular parenting activity (listed along the x axis). Each bar has two segments. The orange segment at the bottom shows the increase predicted by the child becoming older over the 3.5-month period. Even when statistically significant, these magnitudes are small.

The largest changes from baseline to the 3.5-month follow-up are represented by the teal section of each bar, which represents the estimated impact of receiving Basics Insights messages. The changes for talking about feelings, talking about numbers and counting objects, and playing with the child on the floor are all statistically significant at the 95% confidence (sig. ≤0.05) level or better.

Figure 11: Increases Over 3.5 Months in the Percentages of Parents Responding that they Perform Listed Parenting Practices Multiple Times a Day
(among parents who responded to both baseline and follow-up surveys)

** indicates two-tailed statistical significance at the 0.05 level; * indicates significance at the 0.10 level.

Parents' Baseline Dispositions Help Predict their Improvement

A recent experimental trial conducted by Susan Mayer at the University of Chicago and several colleagues found that parents of young children who were more present-oriented, as opposed to future-oriented, benefited the most from receiving reminders to read to their children, which was something they planned to do but might not otherwise have done.[xxii]

We checked to learn whether a similar statement might apply for Basics Insights.

The baseline survey for Basics Insights invited parents to rate themselves on Future Orientation and Persistence using the following two items: [xxiii]

- Future Orientation: *I am the type of person who plans for the future.*
- Persistence: *I am the type of person who keeps on trying when something is really hard to do.*

The two follow a similar pattern in their relationships to other variables,[xxiv] so for the sake of simplicity in reporting, we combined them into a single four-valued metric that we refer to as Future Orientation and Persistence (FOAP), representing their responses on the baseline survey. Each of the four values represents a similar number of parents at baseline.

To measure parenting for this part of the analysis, we combine the parenting variables represented on Figure 10, to form a single composite Caregiving Frequency variable.[xxv] We define four ranges from "Lowest Caregiving Frequency" to "Highest …," correspond to quartiles of the baseline sample of 780 respondents.

Helping a child learn has mainly future payoffs and can, at times, test a parent's patience. Therefore, we hypothesized that parents lowest on FOAP might achieve lower values of Caregiving Frequency than parents with higher FOAP values.

Using the full baseline sample, Figure 12 shows, as suspected, that respondents at the lowest value of FOAP are more concentrated in the lowest Caregiving Frequency Category. The difference between this category and the rest is highly statistically significant.[xxvi]

Figure 12: For Each Value of FOAP, the Percentages of Baseline Respondents in Each Caregiving Frequency Category, for All 780 Respondents Who Completed the Baseline Survey
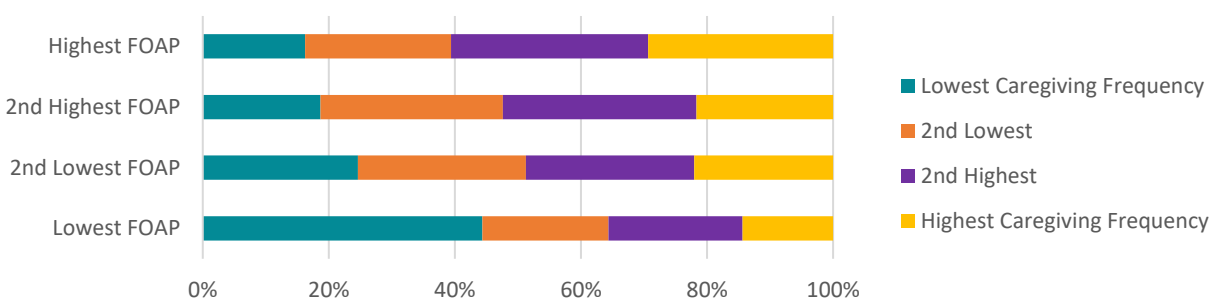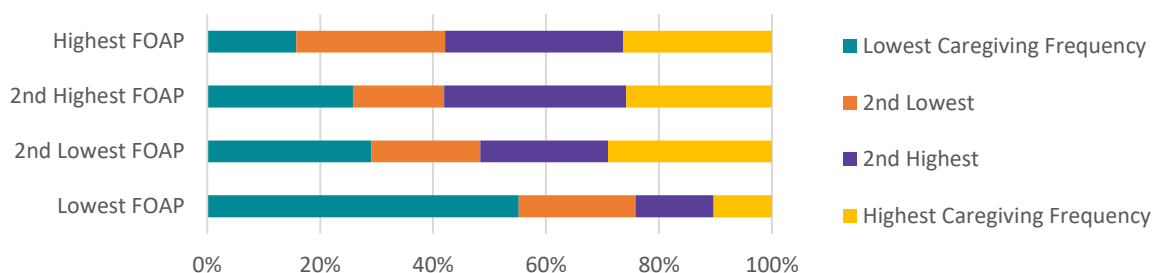

Figure 13 uses data only from the 110 parents who completed both the baseline and follow-up surveys and shows the same basic pattern for how the lowest value of FOAP compares to others, with regard to Caregiving Frequency.
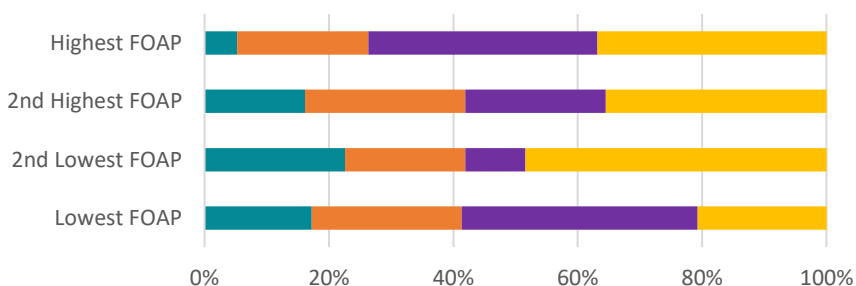
Figure 13: For Each Value of FOAP, the Percentages of Respondents in Each Caregiving Frequency Range at the Baseline for the 110 Respondents Who Completed Both Surveys

Focusing on the 110 respondents who answered both surveys allows us to compare how the exact same people respond at baseline and after 3.5-months of receiving Basics Insights messages.

Figure 14 shows that after 3.5 months, respondents from the lowest baseline FOAP category are no longer so concentrated in the lowest category of Caregiving Frequency.[xxvii] Moreover, respondents in all baseline FOAP categories are more concentrated within the top range of Caregiving Frequency and less concentrated within the bottom range, compared to Figure 13. The four FOAP categories are more similar in their parenting practices than they were at baseline, with the greatest change occurring for the lowest FOAP category—parents at the lowest baseline value of Future Orientation and Persistence.

Figure 14: For Each Value of FOAP, Percentages of Respondents in Each Caregiving Frequency Range at the 3.5-Month Follow-Up for the 110 Respondents Who Completed Both Surveys

Recall the statement "*The text messages keep me thinking about how to help my child learn,*" with which 89% totally agreed on Figure 9A. Respondents from the highest and lowest values for FOAP from the baseline survey agree with this statement to the same degree at the 3.5-month follow up.

These findings show that parents who rated lowest on FOAP at baseline experienced the greatest growth from baseline to the 3.5-month follow-up in their use of the parenting practices we measure.

The Basics movement welcomes all parents, but the findings here provide hope that Basics Insights— and the relationships that encourage parents to apply the messages—can have the greatest impacts on those parents least likely without it to carry out the brain-building practices upon which we focus.

Cautions and Alternative Interpretations

Because the results in this report are based on self-report surveys and relatively small samples, we must be cautious not to draw overly firm conclusions. One major issue is favorability bias in reporting, where respondents may have overstated their satisfaction with Basics Insights and the level of their engagement in applying the targeted parenting behaviors. Another issue is self-selection bias, where the parents who responded to the baseline and 3.5-month surveys are probably more engaged, and benefiting more, compared to families who did not respond. The first issue concerns the accuracy of responses, while the second concerns the representativeness of the parents in the analysis.

Despite these cautions, we consider these findings encouraging. Future research will include larger samples and, eventually, random-assignment experimental trials within the larger context of The Basics Strategy.

CONCLUSION

All parents want their children to become the best possible versions of themselves, but many need information, supportive relationships, and regular reminders of things to do to help their children flourish. Inviting parents to register for Basics Insights then engaging them routinely in conversations across multiple organizations about the messages they received is a promising way to help families build fertile home environments for infant and toddler development.

Text messaging is becoming a key component of our *whole-community* approach for helping parents understand the power they have to shape early learning and brain development. As a three-year curriculum, Basics Insights text messages add to the videos, handouts, discussion guides and other resources from The Basics Community Toolkit that organizations can use to reach parents and caregivers.

Please email info@thebasics.org with comments or questions.

ENDNOTES

[i] See: Elizabeth M. Brown, Lindsay T. Olson, Matthew C. Farrelly, James M. Nonnemaker, Haven Battles, and Joel Hampton (2018). "Comparing Response Rates, Costs, and Tobacco-Related Outcomes Across Phone, Mail, and Online Surveys ." *Survey Practice* 11 (2).

Nina Hoe and Heidi Grunwald (2015). "The Role of Automated SMS Text Messaging in Survey Research." *Survey Practice* Vol. 8(5). Pp. 1-16.

Bella Struminskaya, Kai Weyandt & Michael Bosnjak (2015). "The Effects of Questionnaire Completion Using Mobile Devices on Data Quality. Evidence from a Probability-based General Population Panel." *Methods, Data, Analyses* Vol. 9(2). Pp. 261-292.

[ii] A multivariate statistical analysis adjusted for such changes. See note xvii below.

[iii] These findings are for the 110 respondents who answered both the baseline and follow-up surveys, thereby enabling within-person comparisons of responses at the two timepoints.

[iv] This aligns with other recent findings. See note viii below.

[v] Susan E. Mayer, Ariel Kalil, Philip Oreopoulos and Sebastian Allegos (2015). "Using Behavioral Insights to Increase Parental Engagement: The Parents and Children Together (PACT) Intervention," *National Bureau of Economic Research* (2015). Available: http://www.nber.org/papers/w21602

[vi] Pew Research Center (2019). "Who owns cellphones and smartphones," *Mobile Fact Sheet* (June). Available: https://www.pewinternet.org/fact-sheet/mobile/

[vii] Serena Ehrlich (2013). "Mogreet releases best practices guide for successfully navigating text marketing rules and regulations," *The Wall Street Journal* (Feb.). Available: https://www.wsj.com/articles/PR-CO-20130227-908303

[viii] Steven MacDonald (2019). "The Science Behind Email Open Rates (and How to Get More People to Read Your Emails)," *SuperOffice* (June). Available: https://www.superoffice.com/blog/email-open-rates/

[ix] Susan E. Mayer, Ariel Kalil, Philip Oreopoulos and Sebastian allegos, op. cit.

[x] Benjamin N. York and Susanna Loeb (2014). "One Step at a Time: The Effects of an Early Literacy Text Messaging Program for Parents of Preschoolers," National *Bureau of Economic Research*. Available: https://cepa.stanford.edu/sites/default/files/York%20&%20Loeb%20(October%202014).pdf

[xi] Peter Bergman and Eric W. Chan, "Leveraging Parents through Low-Cost Technology: The Impact of High-Frequency Information on Student Achievement," *Social Science Research Network* (2017). Available: http://www.columbia.edu/~psb2101/ParentRCT.pdf

[xii] Benjamin L. Castleman and Lindsay C. Page, "Summer Nudging: Can Personalized Text Messages and Peer Mentor Outreach Increase College Going Among Low-Income High School Graduates?" *Center for Education Policy and Workforce Competitiveness Working Paper* 9 (2013). Available: https://curry.virginia.edu/uploads/resourceLibrary/9_Castleman_SummerTextMessages.pdf

[xiii] The Early Learning Lab, "NextGen Technology: Insights and Recommendations to Support the Parents of Children Ages 0-3," (2017). Available: https://earlylearninglab.org/wp-content/uploads/2017/11/NextGen-Technology_Insights-and-Recommendations-to-Support-the-Parents-of-Children-Ages-0-3.pdf

[xiv] Office of Head Start, "Head Start Early Learning Outcomes Framework: Ages Birth to Five," (2015). Available: https://eclkc.ohs.acf.hhs.gov/sites/default/files/pdf/elof-ohs-framework.pdf

[xv] Ibid.

[xvi] Office of Head Start, "Head Start Early Learning Outcomes Framework: Ages Birth to Five," (2015). Available: https://eclkc.ohs.acf.hhs.gov/sites/default/files/pdf/elof-ohs-framework.pdf

[xvii] Massachusetts Department of Early Education and Care. "Massachusetts Early Learning Guidelines for Infants and Toddlers," (2011). Available: https://www.mass.gov/files/documents/2018/12/20/20110519_infant_toddler_early_learning_guidelines.pdf

[xviii] See the references listed in note i.

[xix] Kara Weisman and Ellen M. Markman (2017). "Theory-based explanation as intervention." Psychonomic Bulletin Review (2017) 24:1555–1562. DOI 10.3758/s13423-016-1207-2

[xx] The last three response options on the actual survey—once a week or less; never; child is too young/old—were combined for reporting purposes to "seldom or never."

xxi Children are many different ages between birth and 3-years old when their parents sign up for Basics Insights. Imagine a graph with children's ages in days or weeks on the horizontal axis and, for example, the parent's reported frequency of talking to the child about numbers on the vertical axis. You would see a positively sloped line, with talk about numbers rising as age increases. The estimated impact of Basics Insights on a caregiving measure over a 3.5-month interval, is the total measured change in that measure minus the change predicted based on data from the baseline survey. We conduct this analysis using a multivariate procedure, as follows.

For each Basics Insights recipient that responded to both the baseline and the 3.5-month survey, the statistical equation we estimated includes two observations in the data: one for the baseline and one for the follow-up. For every observation in the analysis, the dependent variable equals 1 if the respondent reported that they did the particular behavior multiple times a day around the time that they completed the particular survey, and 0 otherwise. (Recall that we can see from Figure 9 that more people indicated doing the behaviors multiple times a day at the 3.5-month follow up point in time.)

The key predictor in the equation is an indicator variable equal to 0 if the observation is from the baseline and 1 if the observation was from the 3.5-month follow-up. The estimated coefficient on this indicator is our estimate of the impact of Basics Insights text messaging, controlling for child's age and for whether the child is the respondent's first child. The child's age in weeks is included linearly and squared in the equation to allow for possible nonlinearity in the relationship of age to parenting practices. Bear in mind that the coefficients on age and age squared in the stacked equation capture the effects of age through both the baseline and follow up periods, which allows us to interpret the indicator variable that equals 1 for the 3.5-month follow-up observations (and 0 for baseline observations) as being net of age effects. Results were unchanged when estimated using OLS regression versus binomial probit. Equations were estimated with robust standard errors in Stata.
xxii Op. cit. Susan Mayer et. al.
xxiii Parents could indicate that these descriptions were 1 "Not like me," at one extreme, to 5 "A lot like me," at the other extreme. For each of the two items, most people rated themselves either a 3, 4, or 5 on the five-point scale, so we grouped the people who rated themselves lower than 3 with those who rated themselves 3, thus forming a three-level scale for each item. Then we added the two scales together to get a five-point scale with values from 6 to 10. The "Lowest" value on Figure 12 corresponds to 6 on this scale and the highest value corresponds to 10.
xxiv Their correlation is 0.50.
xxv We did not use the values for the hugging and cuddling variable since, as Figure 10 shows, there was little variation.
xxvi Better than the 0.000 sig. level.
xxvii The change from baseline in Caregiving Frequency category for the lowest category of FOAP is significant at the 0.02 level.