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Baby signs: caregiver perceptions of their use and benefit to children

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Baby Signs:

Caregiver Perceptions of Their Use and Benefit to Children

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ABSTRACT

Gesture use is a precursor to spoken language, and children who exhibit frequent use of gesture have higher rates of speech comprehension and production when tested between 13 and 15 months of age (Bates et al, 1989). The purpose of this study was to learn more about caregivers' perceptions of the use and benefits of sign to their children. Fifty-three caregivers were recruited for the study, and 33 (62%) of these caregivers reported that they had used or were currently using baby signs with one of their children. Six (18%) of these caregivers also reported that their children presented developmental delays, whereas the others reported that their children were developing language typically. Information about these caregivers' perceptions of signs was collected through a survey.

Results indicated that no significant demographic differences existed between those who used baby signs and those who did not. The child's gender and childcare setting also did not influence a caregiver's use of sign. Results also showed that caregivers began introducing baby signs to their children around 8 months of age, and the average number of different signs produced by these children was 17. The most common signs reported by the caregivers were "more," "eat," "milk," "thank you" and "all done." Perceived benefits of sign use included the facilitation of their children's communication skills (40%), reduction of child frustration (32%), caregiver-child enjoyment (15%), and caregiver-child bonding (13%). The clinical status of the children minimally influenced the results; however, caregivers of children with developmental delays reported that they used signs more frequently and for a longer period of time than caregivers of children without developmental delay.

CHAPTER 1
REVIEW OF LITERATURE

Language learning is far more than just learning how to talk. Before a baby's first words around one year of age, he or she has already begun to play with his or her speech system. At three months of age, vocal play with vowels begins, and by six months of age infants begin to babble. All of these vocalizations lead up to the much anticipated first word. With all of these vocalizations going on, attention is often focused on children's development of spoken language. But what if there was a way to help children develop a means to "speak" before speech actually develops?

"Baby Signs" just might be the answer to that question. Currently, the use of baby signs is being promoted to parents through a number of books and videotapes. These products are widely available and aggressively marketed. Two of these books include *Baby Talk* by Beyer (2006) and *Baby Signs: How to Talk to Your Baby before Your Baby Can Talk* by Acredolo and Goodwyn (2002). In addition to these books, numerous DVD training products can be found in stores and websites. Some of these DVDs include *Born2Sign*, *My Baby Can Talk*, and *Baby Signs.* The use of baby signs in the 2004 movie, *Meet the Fockers*, is yet another illustration of the prominence of baby signs in the modern American family. In this movie, a baby is portrayed learning and demonstrating sign language to communicate with his family. Movies, books, classes, and products such as these have brought baby signs to the forefront for parents everywhere. This has spawned a new trend in teaching normal hearing infants to sign. For children with developmental delays, a caregiver's use of sign is also frequently advocated to facilitate the children's development especially when the developmental delay involves oral language production.

The purpose of this study is to begin to explore the impact of baby signs on children's development of spoken language. Specifically, the study will use a survey method to learn about caregivers' perceptions of the use and benefit of signs to their children. Given that baby signs are symbolic gestures, the focus of the literature review is on symbolic gesturing in infants and toddlers.

Symbolic Gesturing in Infants and Toddlers

Language, whether it is produced through words or signs, involves the use of arbitrary symbols to stand for objects, ideas, and feelings. Research has shown that using gestures is not only a stage in language development for children, but also that the use of symbolic gesturing can facilitate spoken language development. A series of studies that were published by Acredolo and Goodwyn (1988) support this claim. The first study they presented in this publication involved a case study of an American infant. From this study, the authors reported that the infant spontaneously developed 13 symbolic gestures. The next two studies presented in this same publication used a group design to examine children's development of symbolic gestures and spoken words.

To conduct the first group study, Acredolo and Goodwyn studied 38 16- to 18-month-old infants (21 males and 17 females). The infants were located through local birth announcements. Interviews were conducted with the mothers to identify the child's spoken words and nonverbal gestures. All symbolic gestures and spoken words were then placed into one of five categories: object labels, requests, attribute labels, replies, and event labels. A spoken word was defined as a consistently used sound pattern. If a gesture included a sound then at least one nonauditory component had to be present.

From the interviews, Acredolo and Goodwyn found that 148 gesture/referent pairs met the symbolic criteria (62 object signs, 50 request signs, 30 attribute signs, 3 reply signs, and 3 event signs). Some examples of these signs were: panting as the object sign for "dog," smacking lips as the request sign for "food," blowing hand as the attribute sign for "hot," open palms as the reply sign for "I don't know," and clapping as the event sign for "basketball." Signs also were reported to be used on a daily basis to depict many different objects, desires, or states. Most commonly observed were the object signs "flower," "dog," and "horse;" the request signs "out" and "up;" and the attribute signs "hot" and "all gone."

In order to explore the relation between the verbal and nonverbal systems, each child was assigned a score from 0-10 based on the number of words estimated to be in his or her vocabulary at the time of the interview. These scores were correlated to the number of signs in each of the five previously mentioned categories. Then, multiple regression analyses were conducted with the dependent variable being the size of the children's spoken vocabulary. The first set of covariates included sibling status, sex, and mother's education level. As expected, these variables were found to be significantly correlated to the children's spoken vocabulary. Next, the number of object signs, request signs, and total signs was entered into the regression. Object signs were found to be significantly correlated to the children's spoken vocabulary scores.

In the final study that was published as part of the Acredolo and Goodwyn (1988) paper, the authors conducted a longitudinal study for 9 months. The participants were 16 children who were studied from 11-20 months of age. In this study, they examined the age of onset of the children's symbolic gestures and the relation of these gestures to the children's first spoken words. Three of their findings are relevant to the current paper. First, age of onset for object

gestures was determined to be 15.59 months, for request gestures it was 14.16 months, and for attribute gestures it was 15.27 months. Second, the data showed that females produced more symbolic gestures than males. Third, a child tended to have either a gesture or a word for a referent but not both.

In addition to these findings, the authors were interested in the timing of the children's spoken and gestural symbols. To answer this question, each child's verbal vocabulary was broken down into five stages: zero words, 1-10 words, 10-25 words, 25-50 words, and 50+ words. Results strongly supported symbolic gesturing as a part of early language development, with 80% of gestures occurring before the child reached the 25 word stage. Finally, the authors examined the relation between the number of object gestures and the age of the children at the 10-word stage. Results showed that the greater the number of object gestures a child had, the younger the child was when the 10-word milestone was reached. These findings further support a relation between symbolic gesturing and early spoken language development.

In another study conducted by Acredolo and Goodwyn (2000), 103 eleven-month-olds were divided into three groups: an experimental group whose parents were taught to use signs (ST Group), a control group in which parents modeled verbal labels (VT Group), and a second control group in which parents knew nothing about signs (NC Group). *The MacArthur Communicative Development Inventory* (Fenson et al, 1993) was used in the study as a baseline measure of expressive vocabulary. Through the use of this tool, no significant differences between the three groups were found at baseline. At baseline, the groups were also compared on gender, birth order, and maternal and paternal education, and no significant differences were found among these measures.

Parents of infants in the ST group were then instructed to model gestures and to pair the gestures with spoken words. They were also told to use signs that made sense to them and that they felt would easily relate to the intended referents. The VT group was created as a way to control for training effects. Parents of infants in this group were instructed to promote spoken language by labeling as many things as possible during daily interactions.

The infants were studied at 11 months and then again at 15, 19, 24, 30, and 36 months. At the end of the study, the average number of gestures acquired by toddlers in the ST group was 20.38 (SD = 12.64). Parents further reported that the gestures enabled their children to express observations about daily life, observations that without gestures might have gone undetected.

To see if participating in a study played a part in the children's spoken language development, the VT control group was compared to the NC group. The VT group did not significantly outperform the NC group on any standardized test of receptive or expressive language. The ST group was then compared to the NC group. On standardized tests of receptive and expressive language, the ST group outperformed the NC group at all ages tested. Since no such advantage was found among children in the VT group, there was evidence that the performance of the ST group was not simply due to involvement in a research study, but to the parents' use of gesturing.

In addition to studies by Acredolo and Goodwyn, two additional studies have been conducted by Bates and colleages. Bates, Thal, Whitesell, Fenson, and Oakes (1989) looked at how language and gesture can be integrated in infancy. This study was based on the concept of parallelism, which is the idea that linguistic and gestural schemes for objects are related in early development because they both depend on knowledge of underlying symbolic functions. This is

the approach that was also argued in Piaget (1962) and Werner and Kaplan (1963). Their claim was that word comprehension, word production, and symbolic play are clear, public manifestations of a cognitive shift from sensorimotor processing to the use of symbols in many aspects of thinking, problem solving, and communication.

The Bates et al. study had 95 participants between 12 and 16 months of age. The data for this study was collected through the use of a questionnaire that was sent home with the parents. The first part of the questionnaire included a list of 500 words that were organized into semantic categories (food words, bedtime, etc). The second part of the questionnaire included a list of 64 gestures that are frequent in the repertoires of one-year-olds. Parents were asked to check the words that their children produced or comprehended and to check the gestures and actions that they have seen their children produce.

Subscale scores were obtained in word comprehension, word production, and gestural production. According to the parents, the children had an average comprehension vocabulary of 121 words. Slightly less than one half of these words were names for objects (M = 55.5). Parents reported these same children produced an average of 25 words. Slightly more than one half of these were names for objects (M = 13.9). Finally, comprehension and production were found to be moderately correlated, r = .46, to each other.

For the gesture scale, the children produced an average of 37 gestures, with a mean of 24 object gestures (range 6-39). On average, 9.87 (range 0-15) reflected gestural routines such as "Patty Cake" and an average of 3.55 (range 1-4) reflected deictic gestures. Most importantly, it was found that the children's total gestural vocabularies were significantly correlated to their word comprehension scores, r = .57. Finally, there was not one child in the study who produced

more object words than object gestures even though the list of possible words was longer than the list of possible gestures. This finding not only suggests that gestures and vocal naming appear around the same time in development, but also that vocal production tends to lag slightly behind gestural production.

In a second study by Bates, Thal, Fenson, Whitesell, and Oakes (1989), 41 children between the ages of 13 and 15 months were taught a number of object concepts and gestures. To examine the data, children were first divided based on their level of comprehension at the start of the study. The three groupings were: high (131-233 words, n = 13), mid (60-118 words, n = 14), or low (9-57 words, n = 14). When this was done, gestural performance was found to increase as a function of the children's comprehension level. In the high comprehension group, an average of 4.31 (SD = 1.65) spontaneous gestures were produced. In the mid comprehension group, an average of 3.71 (SD = 1.63) spontaneous gestures were produced and in the low comprehension group, an average of 2.50 (SD = 1.74) spontaneous gestures were produced. Children were also divided based on their production level. Those with ten words or less were placed in the low group and those with ten words or more were placed in the high group. Differences between these two groups were smaller than the differences between the comprehension groups. Specifically, the low production group produced on average 3.09 (SD = 1.81) spontaneous gestures while the high production group produced 3.90 (SD = 1.74). These results show the existence of individual differences among children depending on their level of comprehension and production.

In summary, the literature on symbolic gesturing indicates that gestures are used more often than not by children, and gesture may be an easier output modality than spoken words for

infants. The literature also suggests that symbolic gesturing can facilitate children's verbal language development; however studies also show the existence of individual differences.

The purpose of this study was to learn more about caregivers' perceptions of using baby signs with their children. The main questions guiding the research were:

1. Who is using baby signs with their children?
2. How are caregivers using baby signs with their children?
3. What are caregivers' perceptions of their use and benefit of baby signs to their children?

CHAPTER 2
MATERIALS AND METHODS

Participants

Participants were recruited for this study if they were a caregiver of a young child. Recruitment targeted the following sites in Louisiana: LSU Lab Preschool in Baton Rouge, the Leblanc Center for Learning in Abbeville, the Mount Carmel Preschool in Abbeville, and Kindermusik classes in Lafayette. Total enrollment of these four childcare centers equaled 153. An additional 10 caregivers were recruited from area playgroups consisting of stay-at-home mothers. In total 53 caregivers agreed to participate.

Materials

The materials required for the interview were a script for obtaining verbal parental consent which included the researcher's contact information as well as contact information of the advising professor and Louisiana State University's Institutional Review Board, and a caregiver survey (see Appendix A). The survey included 25 items, but one was excluded from the analysis because it could only be answered by caregivers who had more than one child. Of the remaining 24 items, nine of the items on the survey requested socio-demographic information from the families, three asked about the source from which caregivers learned about baby signs, eight asked about the caregivers' use of baby signs with their children, and four asked about the child's use of baby signs.

Procedures

Participants were asked for their verbal consent to participate in the study. The study was explained to them, and they were insured of the anonymity of their answers. Once the participant agreed, if time permitted, the researcher used the survey to conduct an interview immediately. If

time did not allow, the participant was given the survey and asked to return it to their child's daycare or preschool the following day or the participant was given a business card and asked to contact the researcher within the next 2 days. Caregivers filled out the survey independently and were allowed to choose multiple answers for some questions. If no contact was made, it was assumed that the caregiver decided not to participate.

Data Coding

Survey information was coded as numerical data whenever possible. All data were entered into a database for analyses. Analyses were descriptive in nature.

Reliability

Twenty percent (n = 7) of the survey responses were entered into a database by another student to examine reliability of data coding and data entry. There were 308 opportunities for agreement. Agreement between coders was 99% (306/308 responses).

CHAPTER 3
RESULTS

Of the 53 caregivers surveyed, 33 (62%) reported that they had used or were currently using baby signs. The demographic profiles of the caregivers who used baby signs and those who did not did not differ. For example, the average age range of the caregivers who were using or had used baby signs was 30-35 years with the youngest age group being 20-25 years and the oldest being 35-40 years. Caregivers who did not choose to use baby signs reported an average age range of 30-35 years as well, with the youngest age group being 25-30 years and the oldest age group being 35-40 years. Results also showed that 94% of the caregivers who used baby signs were Caucasian, 3% were Hispanic and 3% were not specified. A similar racial/ethnic distribution was found for the caregivers who did not use baby signs because 95% of these caregivers were also Caucasian. Also, within both groups of caregivers, the majority were married (97% who used signs; 100% who did not) and their average level of educational attainment was a Bachelor's degree (with the range of educational attainment by both groups of caregivers spanning high school to post graduate training); see Table 1.

Table 1 Age and education of caregivers.

Age in Years		Education in Years	
20-25	3%	High school	3%
25-30	24%	Some college	15%
30-35	46%	Bachelors	46%
35-40	27%	Post-graduate training	36%

The remaining items on the survey were completed by the 33 caregivers who reported using baby signs with their children. For these caregivers, most (52%) reported that they used baby signs with their youngest child. Another 36% reported using them with their oldest child, whereas only 12% of the caregivers reported that they used the signs with their middle child. Also, 61% of the children receiving signs were female, and 58% were enrolled in a daycare or preschool. As indicated by these results, a child's birth order appears more of a factor in a caregiver's use of signs than a child's gender or childcare setting. However, to fully evaluate the role of birth order one would need to know the distribution of the children's birth orders within the settings sampled. Without this information it is possible that the settings samples enrolled more last born children than children born first or in the middle. Finally, of the 33 caregivers who used baby signs, 27 (82%) reported that their child was typically developing and six (18%) reported that their child presented a developmental delay. Disabilities listed by the caregivers included: motor dyspraxia (n = 1), autism (n = 1), language delay (n = 3), and gross motor developmental delay (n = 1). Given these findings, results are reported first for the group and then as a function of the children's clinical status.

Results indicated that 37% of caregivers sampled who used baby signs with their children heard about it from reading the newspaper, a parent magazine, or book, and 34% heard about baby signs through some other source such as a speech-language pathologist, a college professor, or the television. A smaller percentage of caregivers reported hearing about baby signs from a friend (26%) or their pediatrician (3%). Also, 43% of the caregivers reported that they gained training in the use of baby signs by reading a book whereas 26% indicated another means of learning such as a DVD/video, other moms or a speech-language pathologist. In addition, 18%

reported that they took a class, and 13% made up their own signs. The most frequent reason the caregivers reported using signs was to facilitate their children's development and promote communication skills (40%), however, 32% of the caregivers also reported that they used baby signs to ease their children's frustration levels. Smaller percentages of caregivers reported that their motivation for using baby signs was for entertainment (15%) and bonding (13%).

The mean child age that caregivers reported introducing baby signs to their children was 8.26 (SD=3.68) months; the youngest child that was introduced to baby signs was 3 months old and the oldest child was 18 months old. When asked how often caregivers used baby signs with their child, 35% reported that they sometimes used baby signs, and 31% reported that they used baby signs all the time. Another 31% of caregivers reported that they had used them but have since stopped. A smaller percentage (3%) of the caregivers had just begun to use baby signs with their children. When asked to describe who used baby signs with their children, 38% reported that just the primary caregiver used baby signs, however 62% also indicated that others used baby signs with their children (26% reported siblings, 23% reported relatives, and 13% reported friends).

Given that 18% of the caregivers reported that their children presented developmental delays, the data were also examined to determine if the above mentioned results differed as a function of the children's clinical status. When this was done, similarities and differences were noted in the caregivers' responses (see Table 2). Specifically, the majority of caregivers in both groups learned how to implement the use of signs by reading a book or taking a class. Also, both groups introduced signs to their children at about the same age. However, a greater percentage of caregivers with children who presented a developmental delay reported that they used signs to

facilitate development and ease frustration whereas some caregivers of children who were typically developing reported that they used signs for caregiver-child entertainment and bonding.

Table 2 Caregiver responses by clinical status of children.

	Typically Developing	Developmental Delay
Source for learning about signs		
Made up your Own	14%	11%
Class	14%	33%
Book	46%	45%
Other	26%	11%
Age in months at which signs were introduced		
Mean	7.81	10.60
Standard Deviation	3.63	3.36
Range	6- 15	3-18
How often signs are used from day-to-day		
Always	30%	40%
Sometimes	33%	40%
Have used and have since stopped	33%	20%
Just started	4%	0%
Motivation for using signs with child		
Facilitate development/communication	36%	50%
Ease frustration	29%	50%
Bonding	17%	0%
Entertainment	19%	0%
Length in months of sign use with child		
0-3	7%	0%
3-6	11%	0%
6-9	15%	0%
9-12	19%	17%
12-24	48%	83%

Response differences were also evident in the frequency and length of time that the caregivers reported using baby signs with their children. Specifically, 40% of caregivers of children with developmental delay reported that they used signs all the time, whereas 33% of

caregivers of typically developing children used sign all the time. A greater percentage (83%) of caregivers of children with developmental delay also reported that they used sign for 12-24 months, while only 48% of caregivers of typically developing children reported to have used signs for that length of time.

The last set of items on the survey asked about the caregivers' perceptions of their children's use of signs. The caregivers reported that their children produced an average of 17.39 (SD 21.429) signs, with a range of 0-100 signs. When asked about their children's sign level production, 34% of caregivers reported that their child's sign production was imitative, 7% indicated that they were produced spontaneously, and 59% reported that the children's signs were first imitative and then they used them spontaneously.

When sign production was examined for clinical status, similarities and differences were found in the number of signs produced and in the level of the children's sign production. As shown in Table 3, the majority of the children in both groups produced 0-20 signs, although 1 of the caregivers of a child with a developmental delay indicated that her child used 100 signs. Twenty percent of the caregivers of children with a developmental delay also reported that their children produced signs spontaneously, but only 4% of the caregivers with typically developing children reported this level of sign use by their children. However, a majority of caregivers of children in both groups (58% typically developing vs. 60% developmental delay), reported that their child's sign level production was first imitative then spontaneous.

Table 3 Children's sign production.

	Typically Developing	Developmental Delay
Total # signs produced		
0-10	44%	33%
10-20	15%	17%
20-30	4%	0%
30-40	7%	0%
40-50	7%	0%
50 or more	0%	17%
Sign production level		
Imitative	38%	20%
Spontaneous	4%	20%
First imitative, then spontaneous	58%	60%

When asked to list as many different signs that the children produced, the caregivers reported a total of 92 different signs. These signs reported are displayed in Table 4. Signs are listed according to the number of caregivers who listed them, beginning with the most frequently reported sign. As can be seen, the most common signs reported were those dealing with feeding (i.e., "more", "eat", "milk"). When examined for clinical status, no differences were noted in the most common signs reported. Both children with developmental delay and those who were typically developing had the same frequency of production of the 10 most common signs found, as reported by caregivers. These ten signs were: more, eat, milk, thank you, all done, please, bye-bye, drink, hot, and yes/no.

Table 4 Signs listed according to frequency of caregiver report.

Frequency of caregiver report	Sign
17	more
12	eat
11	milk
9	thank you
8	Please, bye-bye, all-done
6	drink, bath, sleep
5	hot, baby, love you
4	yes/ no, mom, dad
3	hat, ball, pick up, toilet, stop, play, cookie, cold, outside, dog, diaper
2	juice, light, mine, want, toy, popcorn, sorry, help, clean up, apple, happy, duck, bear, banana, water
1	here, all gone, cup, bowl, rainbow, open, help, bed, music, clean, cry, dance, peek-a-boo, hungry, work, train, French fries, nap, in, sad, car, kiss, chair, table, refrigerator, doll, school, candy, cheese, crackers, cook, friend, hamburger, ketchup, wait, elephant, horse, cow, flower, rain, airplane, helicopter, sister, brother, grandmother, grandfather, bug, favorite

When asked if the use of baby signs made a difference in the frustration level of the child, 14% reported that the child was more compliant, 24% reported that the child had fewer tantrums, 21% reported that the child was less irritable, and 41% noticed no difference in the frustration level of their child. When the data was examined for clinical status, a greater percentage of caregivers of children with developmental delay perceived a difference in their child's frustration level than the caregivers of typically developing children (89% vs. 54%). These differences are shown in Table 5.

Table 5 Child frustration level.

	Typically Developing	Developmental Delay
More Compliant	6%	33%
Fewer Tantrums	24%	33%
Less Irritable	24%	23%
No Difference	46%	11%

Finally, all of the caregivers surveyed who used baby signs indicated that they would recommend their use to other mothers. All but one of the caregivers also indicated that they would give a baby signs book or video as a gift to a new mom if they thought the caregiver would use it. These results were found regardless of the child's clinical status.

CHAPTER 4
DISCUSSION

The first question asked about the demographic characteristics of caregivers who use baby signs with their infants and toddlers. When caregivers who used baby signs and those who did not use baby signs were compared based on their age, race/ethnicity, marital status, and education level, no demographic differences were noted between the groups. Although the child's gender and childcare setting did not appear to influence a caregiver's decision to use baby signs, birth order did seem to have an effect because more children who were born last were more likely to receive baby signs from their caregivers than children born first or in the middle. However, as stated in the results, interpretation of this finding is limited by a lack of information about the distribution of the children's birth orders at the settings sampled.

The second question asked how caregivers are using baby signs with their children. Across caregivers, most (69%) reported that they either learned baby signs from a book or some other source such as a speech-language pathologist. These results did not differ as a function of the children's clinical status and they indicate that caregivers are seeking the resources that are available to them to enhance their child's communication development.

When the length the time that they used baby signs with their child as a means to communicate or supplement verbal communication was measured, the two groups differed in that slightly more caregivers of children with developmental delay reported that they used signs all the time (40% vs. 33%). Also, 83% of the caregivers of children with a developmental delay reported that they used sign for at least 12-24 months as opposed to 48% of caregivers of typically developing children who reported this length of sign use.

A majority (40%) of the caregivers reported that they use baby signs to facilitate development. When examined for clinical status, results indicated that more caregivers of children with a developmental delay reported using baby signs to facilitate development and ease frustration. In contrast, in addition to facilitating development and easing frustration, some of the caregivers of children without delays also reported that they used baby signs for bonding and/or entertainment. This suggests that caregivers of children with a developmental delay are seeking out ways to give their child a means to communicate and one of these ways is baby signs. Caregivers of children without developmental delay reported a greater variety of reasons for using signs.

The third question focused on the caregivers' perceptions of their children's use of baby signs. Across caregivers, children were found to produce an average of 17 signs. Some of the most common signs reported by the caregivers were: "more," "eat," "milk," "thank you" and "all done." When the data was examined for clinical status, no difference was noted in the signs that were reported to be produced by children because both children with developmental delay and those without were reported to produce the same 10 signs most frequently. The use of these particular signs could perhaps be an indication that caregivers find meal times to be frustrating with their children and they use signs to help ease that frustration. On the other hand, it could also be that meal times are a common routine in a child's day and the chance for the repetition of these signs by the caregiver and the use of these signs by the child is high.

Some caregivers reported a slight reduction in the frustration level of the child, however most (46%) caregivers, reported that no difference was noted. When the groups were divided based on clinical status, 89% of caregivers of children with developmental delay reported that

sign use made a difference in their children's frustration levels, whereas 54% of caregivers of typically developing children reported a difference. What this finding may show is that caregivers of children with developmental delays perceive a greater benefit of signs use than caregivers of typically developing children.

Finally, all of the caregivers who used baby signs reported that they would recommend the use of these signs to other parents. This suggests that all of the caregivers surveyed had a positive experience with the use of baby signs. The data suggests also suggests that the use of baby signs may be an effective therapeutic method for children with different types of developmental delay.

Comparisons to Literature

Caregivers in the current study reported that their children produced an average of 17.39 signs. This finding is consistent with the findings Acredolo and Goodwyn (2000) who found that children who were taught baby signs by their parents, produced an average of 20.38 signs. Comparisons of the current study to other studies in the literature review cannot be made because those studies focused on children's use and development of naturally-occurring gestures. However, most (59%) of the signs identified in the current study were object signs. This finding is consistent with Acredolo and Goodwyn (1988). Recall in that study, object gestures were also the most common type of gesture identified and they made up 42% of the children's naturally-occurring gestures. Acredolo and Goodwyn reported that the signs for "flower," "dog," "horse," "hot," and "all-gone" were most frequently produced by their children. While all of these signs were reported to be used by at least one of the children in the current study, more commonly

occurring signs were related to meal time (i.e., “more,” “milk,” “eat,” “thank you,” and “all-done”).

Limitations

Limitations to the study included the generally small and homogeneous population that was studied. Since participation was voluntary and only five sites were solicited for study, results may not be representative of the general population of caregivers. In particular, racial and ethnic groups other than Caucasian were not represented in the sample. Caregivers with less than a college degree also were not represented in the sample. Additional studies are needed to address these limitations of this study.

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APPENDIX

Interview Questions

Demographic Questions:

1. Mother's age:

1	2	3	4	5
under 20	20-25	25-30	30-35	35-40

2. Mother's race:

1	2	3	4	5
Caucasian	African American	Hispanic	Asian	other

3. Marital status:

1	2	3	4
married	single	divorced	widowed

4. Level of education:

1	2	3	4
high school	some college	Bachelor's	post-graduate

5. Child's age:

1	2	3	4	5
under 1 yr.	12-18 months	19-24 months	25-36 months	over 36 months

6. Child's sex:

1	2
male	female

7. Child's birth order:

1	2	3	4
first born	middle	last	other

8. Has the child met normal developmental milestones (typically developing)?

1	2
yes	no

If no, explain_____

9. Is the child enrolled in a daycare or preschool?

1	2
yes	no

Source of Signs Questions:

1. Have you considered using baby signs?

1	2	3
yes	no	yes, and I'm using them now

2. Where did you hear about baby signs:

1	2	3	4
read about it	pediatrician	friend	other

3. Why do you use baby signs with your child:

1	2	3	4	5
developmental help	ease frustration	bonding	entertainment	other

Adult Use Questions:

1. How did you first become interested in baby signs?

1	2	3	4
Parent magazine or book	Other parents	pediatrician	Other, please indicate_____

2. Have you used baby signs with your child?

1	2	3	4	5
always	never	sometimes	have and stopped	just started

3. At What age did you introduce baby signs to your child? (child's age)

_____

4. Has anyone else in your family used baby signs with the child or just the primary caretaker?

1	2	3	4	5
primary caretaker	siblings	relatives	friends	other

5. Did you make up your own signs, or did you take a class or read a book about signs?

1	2	3	4
own	class	book	other

If other, please indicate_____

5. How long did you use baby signs with your child?

1	2	3	4	5
0-3 months	3-6 months	6-9 months	9-12 months	12-24 months

Child Use Questions:

1. If you did not use baby signs with all of your children, did you notice a difference in the early vocabulary of the child that was signed to?

1	2	3	4	5
0-10 words	10-20 words	20-30 words	30-40 words	40-50 words

2. Did you notice a difference in the frustration level of the child that was signed to?

1	2	3	4
more compliant	fewer tantrums	less irritable	no difference

3. Did the child produce signs imitatively or spontaneously?

1	2	3
imitative	spontaneously	first imitative, the developed some on own

4. Would you recommend that other mothers use baby signs with their child?
5. Would you give a baby signs book or video as a gift for a new mom?
6. How many signs does the child produce?_____
7. List the signs if possible:_____

VITA

Leah Catherine Legere grew up in Abbeville, Louisiana. Upon graduation from Vermilion Catholic High School in 2002, she enrolled in the University of Louisiana at Lafayette to pursue a Bachelor of Arts degree in speech pathology, awarded May 2006. While there, she competed for the university as a member of the Ragin' Cajuns track and cross-country teams.

After completing her first year of graduate school in communication disorders, Leah was intrigued by the many research opportunities available in her field of study. She then decided to complete a thesis research project in partial fulfillment of the requirements for her Masters of Arts degree in communication sciences and disorders, to be awarded May 2008. Upon graduation, Leah plans to complete her clinical fellowship year and work as a speech pathologist in one of the many fascinating areas of this field.