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Parental Perception On The Impact Of Continued Use Of Baby Sign On Stress And Parent-Child Interaction: Follow-Up Survey One Year Post Hoc Of A Baby Sign Workshop

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PARENTAL PERCEPTION ON THE IMPACT OF CONTINUED USE OF
BABY SIGN ON STRESS AND PARENT-CHILD INTERACTION: FOLLOW-
UP SURVEY ONE YEAR POST HOC OF A BABY SIGN WORKSHOP

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BABY SIGN ON STRESS AND PARENT-CHILD INTERACTION: FOLLOW-
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by

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THESIS

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Abstract

Introduction: Past research has indicated that teaching baby sign language to infants can be stressful for parents. Thus, a previous study to test this assertion was conducted. A baby sign workshop was conducted and consisted of teaching the parents approximately 200 signs and information on implementation. Results indicated that parents did not report stress as a result of using baby sign with their children. The current case study administered a modified version of the baby sign workshop survey one year post hoc. *Purpose:* To observe continued use of baby sign, as well as parental perception of the impact of baby sign on parental stress and/or parent-child interaction. *Methods:* Participants of a single group case study completed a qualitative follow-up survey and participated in a brief interview. *Results:* The results indicate that the majority of the families continued to use baby sign after the workshop until their children began using spoken communication to a greater extent. Parent-reported responses have remained consistent from the previous study, indicating parents did not report stress as a result of using baby sign with their children. Additionally, parents reported positive impacts of baby sign on child development and parent-child interaction. *Conclusions:* Continued use of baby sign with infants and young children does not produce stress in parents. Some limitations and a discussion for future research are presented.

Keywords: baby sign, parental stress, child development

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Chapter 1: Introduction

Studies over the years have observed the close-knit relationship between gesture and speech in the role of language development. From an evolutionary perspective, researchers have put forth the idea that gesture and vocal communication have co-existed throughout evolution (Capirci & Volterra, 2008). Some even like to refer to this co-relationship as having been present as early as the time of our primate ancestors. Kelly et al. (2002) believes the nonverbal behaviors (eye gaze, hand movements and gestures) used then by our primate ancestors, evolved into the formal language systems of today. It is also thought that if nonverbal behaviors played a foundational role in the onset of language over evolution, these actions still influence how children learn language today (Kelly et al., 2002). Lastly, it is also argued that nonverbal actions continue to play a role for adults in the moment-to-moment processing of language (Kelly et al., 2002). These theories lead to the conclusion that the body has a major influence over the development of language through nonverbal behaviors today as it has in the past and throughout time.

With communication holding such high standing in today's society, it is important that we understand how we can help assure each child acquires language optimally, in both qualitative and quantitative measures. To do so we must first identify those aspects of early language that play a significant role in its development. Past research has provided findings on how one aspect of language that serves as a precursor to language development, as well as an indicator of future language abilities, is the use of manual gestures by infants. Several researchers have discussed the benefits of gestural communication and its implications both for typically and non-typically developing children (LeBarton, Goldin-Meadow & Raudenbush, 2013; Capone & McGregor, 2004). Similarly, researchers have studied the effects of a more 'formal' style of gestures: baby sign language (Pizer et al., 2007; Kirk, Howlett, Pine & Fletcher, 2013; Mueller & Sepulveda, 2014). However, the two have yet to be discussed jointly, dismissing clear comparisons and distinctions between the two.

Despite some similarities between baby sign and gestures, the two are distinct from each other and should be recognized as such. Like baby sign, gestures are produced with a communicative intent.

However, unlike baby sign, gestures are a form of manual communication that emerge as part of a child's natural development and appear before the onset of spoken language (Iverson & Goldin-Meadow, 2005). Typically, gestures fall under three main classes (deictic, representational, recognitory), according to the form of the gesture produced and its underlying purpose. Unlike baby signs, gestures do not need to be taught by caregivers to their children. Furthermore, where baby sign might only be well understood by individuals with knowledge and understanding of this communicative system, gestures can more easily be recognized on a broader spectrum. However, there is only so much that gestures can communicate, limiting the communication opportunities of young infants and children to minimal exchanges with their caregivers. Hence, teaching baby sign to infants and young children may provide them with a greater tool for early language production.

Baby sign uses American Sign Language (ASL) signs in the form of key word signing (Doherty-Sneddon, 2008). In this way, established key word signs are taught to infants and young children to apply these signs to new and appropriate contexts for effective communication. Although baby sign uses ASL signs, it differs from ASL in that it does not include the syntactic and linguistic components of ASL (Doherty-Sneddon, 2008). Thus, eliminating the encumbrance of learning an entire new language and the rules that govern it. Rather, adults and caregivers may develop a list of words that are essential to their child's daily communication needs and teach only those selected. Additionally, the definition of baby sign will be broadened to include 'symbolic gestures', as these also may be described as key word signs. While symbolic gestures include invented gestures developed by adults rather than key word signs borrowed from a formal signed language to function as signs, they also must be explicitly taught to infants and young children for implementation..

Pizer, Walters, and Meier (2007) explained that the topic of baby sign is fairly new and has been in the public eye only within the last 10 years. More recently there have been articles in magazines, newspapers, as well as the internet and television media, to name a few, that have given rise to baby sign within the public radar (Pizer, Walters, & Meier, 2007). According to Pizer et al. (2007), signing has now become a new, popular trend that many people are beginning to take interest in, as it has been promoted to yield numerous benefits in the development and language of infants and young children.

1.1 Promoted Advantages of Baby Sign

Baby sign is being promoted as capable of reducing stress, crying, and frustrations, as well as yielding satisfaction in parents (Nelson, White, & Grewe, 2012). According to Nelson et al. (2012), some of the benefits children reaped by using baby sign language included increased development of speech and language, improved literacy skills, minimization of undesirable behaviors such as tantrums and emotional outbursts, and a greater self esteem, as well as a greater sense of satisfaction and accomplishment. Similarly, parents who implemented baby sign with their children not only expressed a sense of satisfaction but also perceived an improvement in the communication with their infants.

In studies by Acredolo and colleagues (Acredolodo & Goodwyn, 1988; Goodwyn, Acredolo, & Brown, 2000), symbolic gesturing in normally hearing infants was observed. The results demonstrated superior language performance in the groups of children taught symbolic gestures (Goodwyn et al., 2000). Initially, the observed difference of scores between the groups was significant, but a reduction in the difference occurred as time progressed to 30 and 36 months of age. In a follow-up study, children whose parents promoted symbolic gesturing during infancy outperformed those whose parents did not receive any instruction on the promotion of symbolic gesturing during infancy on tests of IQ at age eight (Acredolo & Goodwyn, 2000). Goodwyn et al. (2000) described topic selection by infants as a possible contributing factor to facilitated language acquisition. For instance, adults may often guess what infants are gazing at, leading to explanations and expansions of a different object than that which the child is inferring about. Symbolic gestures can help adults and caregivers recognize an infant's thoughts and objects of interest, aiding in the comprehension and acquisition of language through joint attention (Goodwyn et al., 2000). Other researchers have also found positive effects of using baby sign with normal hearing infants (Pizer, et al., 2007; Thompson, et al., 2007; Vallotton, 2008a; Vallotton, 2008b).

Furthermore, Doherty-Sneddon (2008) highlighted the evidence that had been compiled to support the belief that baby sign could be beneficial to infants for their language development by enabling them to communicate different needs before they are able to articulate spoken words (Doherty-

Sneddon, 2008). She placed emphasis on the positive effect baby sign has on the development and coordination of motor movements as well. Doherty-Sneddon (2008) also discussed the importance of parents setting appropriate expectations for their infants when implementing baby sign, as some parents may expect their child to produce ASL (formal sign), rather than simple and age-appropriate baby sign forms. This matter takes us into our leading course of discussion: parental perception of baby sign.

Most recently however, research indicating no effect of the use of baby sign has been suggested by Kirk, Howlett, Pine, and Fletcher (2013). In their study, although subtle differences in the mother/infant interactions were noted, there was not a statistically significant effect of baby sign on the infants' receptive and expressive language as compared to those in a control group. The study may have been limited in terms of the intensity of the treatment and compliance of the parents (see Mueller, Sepulveda and Rodriguez, 2014 for a complete discussion).

One of the factors often overlooked by researchers is the stress and maternal anxiety of parents that may be linked with baby sign training. This may be as a result of parents' expectations for their infants set beyond what is ideal. At least, this was a suggestion posed by Howlett, Kirk, and Pine (2011). In their study, mothers who attended a baby sign training course demonstrated higher stress levels than mothers who did not. Possible explanations for this difference in stress levels between the two groups of mothers were provided. For instance, the advertised claims and benefits of baby sign on the parent-child interactions and child development may have produced raised expectations in mothers (Howlett, Kirk, & Pine, 2011). Consequently, this may have induced anxiety in these mothers if their expectations were not realized. On the contrary to what other researchers have claimed, such as reduction of stress and frustrations with the implementation of baby sign, Howlett et al. (2011) suggests that the effects may instead 'be detrimental'. Thus, Mueller and Sepulveda (2013) conducted a study to examine the impact of baby sign training and use on parental perception in terms of stress and parent-child interactions.

The study was conducted in a predominantly Hispanic, low socioeconomic status community (Mueller & Sepulveda, 2013). Nine families, two with more than one child, participated in the study. There were a total of eleven children ranging in age from 0;6 to 2;5 (years; months). The nine families

attended a baby sign workshop that lasted across the span of five weeks. The sessions were held once a week at a university Speech-Language and Hearing Clinic for the duration of one-and-a-half to two hours. The classroom setup underwent a few changes to facilitate and increase communication exchanges between the families and researchers. The setup that best promoted facilitation of interaction among the groups incorporated a large open space with chairs arranged in circular formation and a large rug at the center. The chairs were used to sit in during the presentation and instruction of signs, and the rug area was used for the interactive activities that followed (e.g., playing with toys, book sharing). Each week, while the researchers presented the daily material (e.g., signs of the day) to the parents of the children, research assistants watched over the children in the clinic's daycare area. The children remained in the daycare area for approximately 30-45 minutes, during which they engaged in play and other activities (e.g., book-reading, movie playing) with the assistant researchers. After the 30-45 minutes of instruction, the parents picked up their children from the daycare area and returned to the classroom for the implementation of baby sign with their infants.

Each week a different set of signs was presented to the parents. The first week included signs for family members and greetings. Week 2 included food items and related words (e.g., DRINK, HUNGRY, ALL DONE). On the third week, toys and animals were introduced. Week 4 included the instruction of signs for emotions and routines (e.g., BATH, TOILET, AFRAID). The fifth and final week consisted of miscellaneous signs that had been requested by the parents. These included the alphabet and numbers. Handouts of all the signs were given to the parents upon completion of each session, beginning with week 1. Parents kept their collection of handouts in a three-ring binder that was provided to them. On the final week, along with the handouts for the miscellaneous signs covered, a take-home DVD with the signs covered across the span of the workshop was provided for them to keep. Finally, the baby sign workshop survey was given to the parents for completion and was collected by the researchers prior to dismissal.

Results from the responses provided in the survey indicated the workshop was not stress inducing for the parents, despite the arguments presented by Howlett et al. (2011). This was consistent across the nine families, with 100% of parents answering 'Not at all stressful' for 'How stressful was the

workshop?’ on a four-point Likert scale. Also on a four-point Likert scale, only one of the nine families reported using sign with their child to be ‘Slightly stressful’. In terms of parent-child interaction and communication, increases in the following were reported: eye contact, focus and attention to hands, vocalization and use of sign (Mueller and Sepulveda, 2013). Additionally, from the comments reported on the survey, it was found that MORE, THANK YOU, EAT and STARS were among the most common signs the children produced. Moreover, when parents were asked to answer whether they thought they would continue to use baby sign with their children, all parents responded ‘Yes’. The primary reasons reported across parents for their intentions to continue using baby sign with their children were for ‘reduced frustration and increased communication’ (Mueller and Sepulveda, 2013). Overall results demonstrated baby sign training and use to not be stressful for parents and with an increase in certain aspects of parent-child interaction and communication reported.

1.2 Purpose of Study

As an extension of this research, the present study aims to examine the parental perception of the families that participated in this previous analysis, by administering a follow-up survey one year post hoc (see Appendix A). The questions presented in the follow-up survey represent those asked on the initial survey, with a few modifications and omission of some questions that were not pertinent one year post hoc. It is hypothesized that all families continued the implementation of baby sign with their children, as responses reported on the previous survey reflected that they would. The questions the present study aims to answer are (1) Does continued use of baby sign with infants result in reported stress by parents? (2) What impact does the continued use of baby sign with infants have on child development and on parent-child interactions?

Chapter 2: Methods

2.1 Participants

Six families and their children, of the initial nine families, completed the follow-up survey. The families were contacted by the researchers via email and/or phone one year post hoc of the baby sign workshop. The three families from the previous study who did not participate for the follow-up assessment either decided they would not proceed with the study or never responded. The age and gender of the children are displayed in Table 1.

Table 1. Child Participants

Participant #	Sex	Age in years and months
C1	Male	1;10
C2	Male	2;0
C3	Male	2;4
C4	Male	2;6
C5	Female	2;8
C6	Female	2;9

2.2 Setting

The follow-up survey was administered during a home-visit to each of the families' homes. The home settings ranged from the living room area to the child's play area, and sometimes shifting from one area of the home to another (e.g., living space to outdoor play area). A common element across settings was the 'naturalistic' environment afforded by the circumstance of the visits occurring in the families' homes.

2.3 Materials

The materials used to collect data during the home-visits included a tripod stand with a video camera and a digital voice recorder. Additional materials consisted of the parent survey questionnaire which can be found in the Appendix A.

2.4 Procedure

Permission was sought from the university's Institutional Research Bureau to extend the study prior to making contact with the families. Contact information had been provided previously, and this information was used for recruiting the families for the follow-up assessment. Initially eight of the nine parents had agreed to make arrangements to meet. However, two did not respond after initial contact or chose not to participate further. One of the participants was never reached. At the time of contact, the parents were informed of the purpose of the follow-up meeting. They were given the option to meet at the university Speech-Language and Hearing Clinic, or have the researcher visit them at their homes for the convenience of the participants. All six families preferred to have the researcher conduct home-visits for the survey completion.

Each session lasted approximately 45 minutes to an hour. Upon arrival to the participants' homes, the researcher presented the parents with the survey form. In addition to completion of the survey, the researcher conducted a brief interview process in which the parents were asked questions similar to those presented in the survey. This was performed to allow for greater elaboration and explanation to some of the questions. All parent responses were recorded using a digital voice recorder, and used for reviewing as necessary. The voice recorder was set to record as soon as the interview process with the families began and was left running until the interview process was completed.

Chapter 3: Results

Responses to the baby sign workshop follow-up survey are available in Appendix B. The aims of this study were to determine whether parents who continued using baby sign with their children experienced stress as a result, and to examine impacts on child development and parent-child interaction as a result of continued implementation of baby sign.

3.1 Continued use of Baby Sign

As 100% of parents had reported they would continue to use baby sign with their children on the previous survey, the first question on the follow-up form asked, 'Have you continued using baby sign with your child?' followed by a request for additional information as to why or why not. Of the six respondents, 66.67% (4 out of 6) reported that they indeed had continued to use baby sign with their child. The rest indicated that they had not. All parents who reported continued use of baby sign with their children provided elaboration. One common element across all comments provided was the emphasis on the significance of 'understanding' their child. The two respondents who reported to have discontinued using baby sign with their child did not comment further. However, in the interview process, both respondents claimed to have stopped using baby sign with their child as soon as their child's speech flourished, eliminating a need for its use.

Participants who reported not having continued using baby sign with their child were asked to move on to question 6 (out of seven questions presented), as the proceeding questions were only pertinent to the parents who reported continued use of baby sign. Despite two respondents having reported not using baby sign with their child, 100% of parents provided a list of signs their child continued to use (see Appendix B). Of all the signs respondents reported as present in their child's repertoire, PLEASE, THANK YOU, MORE, and JUICE were the most prevalent.

When asked how confident the parents felt in their ability to use sign with their child, 50% of the parents who continued using baby sign with their children (2 out of 4) said they felt 'Somewhat confident' and the other 50% reported they felt 'Very confident'. The parents who reported feeling 'Somewhat confident' elaborated on their answers during the interview process. One parent shared with

the researcher that she was uncertain about how to produce some signs, and had to refer to the binder that had been given to her in the baby sign workshop for clarification. She also stated having learned after continued implementation of a sign, that she had been producing it incorrectly. The second participant stated although she continued to implement baby sign with her child, the frequency was minimal and inconsistent, as the child's speech production was beginning to have dominance over the use of sign.

3.2 Parent-Reported Stress

In terms of stress in relation to the continued use of baby sign, 100% of the parents who continued to use baby sign with their child (4 out of 4) reported the experience as 'Not at all stressful' and provided comments for elaboration as requested on the survey form. Most of the parents reported that rather than being stressful, continued use of baby sign with their child resulted in better communication and understanding within parent-child interactions. One parent even commented on the effects baby sign had on levels of frustration, claiming it helped reduce frustration prior to the child's acquisition of verbal communication. During the interview process, two of the parents reported baby sign to be a 'supplemental' tool that aided their child's speech (e.g., for clarification and/or for expressing vocabulary not yet present through speech).

3.3 Child Development and Parent-Child Interaction

In relation to the child's development and parent-child interaction, parents reported observing increased 'communication attempts' and increases in speech production, along with reduced frustrations. One of the parents who reported 'More/less sign' clarified during the interview process that their child was producing more speech and less sign. 'Good eye contact' was also provided in one of the parent's comments. A complete listing of these responses can be found in Appendix B.

Chapter 4: Discussion

After analyzing and reviewing the responses, results present similarities with the data presented in the previous study. Findings by Mueller and Sepulveda (2013) reported that 88.89% of the parents who participated in the study (8 out of 9) felt that using sign with their child was ‘Not at all stressful’. In the current study, 100% of the participants (4 out of 4) who continued to use baby sign reported that it was ‘Not at all stressful’. Thus, answering the question regarding parental perception on stress as a result of using baby sign with their children. Results indicate the continued use of baby sign did not in fact produce stress for parents.

Additionally, some of the impacts continued use of baby sign was reported to have on child development and parent-child interaction included ‘less frustration’, ‘more speech’, ‘good eye contact’, increased ‘verbal output’, and better understanding of child’s needs. Some of the signs reported by the parents that their children used included mostly food items and common words of courtesy (e.g., THANK YOU, PLEASE).

In terms of the hypothesis presented in this study, only 66.67% of the participants (4 out of 6) reported having continued to use baby sign with their child, contrary to the hypothesized 100%. However, the parents who reported not to have continued with its implementation said they had initially continued after completion of the baby sign workshop, but discontinued its use when their child began to depend on and communicate primarily by speech. Also, as previously stated, the two respondents who reported to have discontinued its use, still reported use of some signs by their child. This illustrates a continued role of baby sign in the communication and language of these young children, despite their parents’ discontinued implementation.

4.1 Limitations

As the design used in this study was a single group case study, and the sample size included only 66.67% of the families from the original study (6 out of 9), the results presented hold some limitations. Other factors such as the method of data collection, also impact the validity of the results. The use of

self-reported data is difficult to assess in terms of 'truth' and validity. Additionally, it is difficult to determine whether the responses provided were truly descriptive and complete.

The changes observed in the children's language and communication also cannot readily be said to be as a result of the implementation of baby sign. Since a control group was not included in the study to eliminate maturation as a possible cause for the increases in speech production and other parent-reported changes in child development and communication, the effects cannot be attributed solely to the continued use of baby sign.

4.2 Future Research

Through rising knowledge and awareness, the number of parents adopting baby sign as a tool for providing their children with the means to communicate their needs and requests more effectively prior to spoken language is rapidly increasing. However, further research is still necessary to assert the effectiveness of baby sign on child development and parent-child interaction. As Johnston, Durieux-Smith, and Bloom (2005) suggest, there is a lack of validity on the positive effects of baby sign on children's language development. Hence, more research is necessary to investigate this matter of interest. Similarly, baby sign has been described as not being fully developed, and in need of deeper examination (Paling, 2007). A few suggestions for future research on the effects baby sign has on child language development include the use of a larger sample size, in order to be able to state with greater confidence that the study results are a representative sample. Inclusion of a control group is also suggested for clear attribution, or lack thereof, of experimental effects. Additionally, considerations for other means of measurement are suggested, that may include consistent and regular audio+video recordings of structured playtime between parent and child for more direct and repeated observation (i.e. inter-rater ratings) of effect differences between experimental and control groups.

Chapter 5: Conclusion

In summary, previous research has suggested that classes providing instruction in baby sign, along with the parents' use of baby sign with their child, may raise stress levels in parents (Howlett et al., 2011). After organizing a workshop and providing instruction for parents on how to implement baby sign with their children, Mueller and Sepulveda (2013) conducted a survey to collect data of parental perception on the effects of a baby sign workshop and its implementation with their children. Results contrasted assertions made by Howlett et al., (2011). The aim of this study was to observe for any changes in parental perception one year post hoc. Thus, a survey similar to that presented in Mueller and Sepulveda (2013) was administered to 6 of the 9 families who had participated in the initial study, one year after the completion of the baby sign workshop. Findings from this study also suggest that parent implementation of baby sign with their children does not cause stress. Additionally, parents reported observing continued improvements in child development and parent-child interaction. Most significantly, the findings presented in this study provide supplemental support for the use of baby sign with infants.

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Appendix

Appendix A. Follow-up Baby Sign Workshop Survey.

Baby Sign Workshop Survey

As it has been one year since our workshop ended, we ask that you please take a few minutes to reflect on your experiences on the following questions. Your honest and thoughtful answers will help us improve this course in the future.

1. Have you continued using baby sign with your child? If you answered 'Yes', please explain why you have and continue with question 2. If you answered 'No', please indicate why not and move on to question 6.

2. How confident are you in your ability to use sign with your child?

1-very confident; 2-somewhat confident; 3-slightly confident; 4-not at all confident

3. How stressful is using sign with your child?

1 – very stressful; 2 – somewhat stressful; 3 – slightly stressful; 4 – not at all stressful

4. If you find using sign with your child to be stressful, please comment on what makes it stressful.

5. If you do **NOT** find using sign with your child to be stressful, please comment.

6. Have you seen any change in your child's language or communication since the workshop? (Example: more/less frustration, more/less sign or speech use, more/less eye contact)

7. Please list the signs **and** words or any sign-word combinations your child is using.

We thank you for taking the time to meet with us. We hope your interactions with your child continue to flourish.

Please let us know if we can help you in any way in the future.

Appendix B. Responses to a Follow-up Baby Sign Workshop Survey

1. Have you continued using baby sign with your child? Please explain why you have and continue with question 2.	2. How confident are you in your ability to use sign with your child?	3. How stressful is using sign with your child?	4. If you find using sign with your child to be stressful, please comment on what makes it stressful.	5. If you do NOT find using sign with your child to be stressful, please comment.	6. Have you seen any change in your child's language or communication since the workshop?	7. Please list the signs and words or any sign-word combinations your child is using.
Yes, it helps (child) express himself when we do not understand what he is saying.	Somewhat confident	Not at all stressful	(Blank)	It isn't stressful due to the fact we can communicate with each other better.	More/less sign	(sign=please, thank you, sorry, more juice, excuse me & sign word combinations).
Yes, encourage him to express feelings/needs when unable to say it.	Very confident	Not at all stressful	N/A	It actually reduced frustration when he was not verbal yet & would sign words/needs	More words, less frustration.	Please, thank you, brother/sister, crying, scared, please, cookie, cracker, brushing teeth, cereal, juice, water, eat, lion, airplane, elephant, help, mom, dad, monkey.
Yes, because it eases with communication breakdowns	Somewhat confident	Not at all stressful	(Blank)	It is not stressful as it supports language development and communication	Yes, less frustration, more sign and verbal output, more communication attempts and socialization.	More, please, thank you, cookie
Yes, to understand speech. (Ex Juice & shoes)	Very confident	Not at all stressful	(Blank)	It is an additional tool used to understand my daughter's communication skills.	She uses less signing because she talks more. Good eye contact.	Shoes, juice, milk, please, thank you

1. Have you continued using baby sign with your child? Please indicate why not and move on to question 6.	6. Have you seen any change in your child's language or communication since the workshop?	7. Please list the signs and words or any sign-word combinations your child is using.
No.	More speech use Less frustration as we understood his needs better	He still uses please
No.	Less frustration, increase use of speech	More, food, mom, dad

Curriculum Vita

Brenda G. Compean was born and raised in El Paso, Texas. She is the youngest of three daughters to Joe and Maria Garcia. In May of 2011 she graduated with her Associate of Applied Science with a concentration in Sign Language Interpreting. Two years later, in the spring of 2013, she received her Bachelor of Multidisciplinary Studies from The University of Texas at El Paso, graduating with honors. That fall, she began her master's studies for a degree in Speech-Language Pathology. As a second year student, she presented her thesis research at the American Speech-Language and Hearing Association's (ASHA) annual national convention in Orlando, Florida. Her profound enthusiasm for academics drives her aspiration to pursue a Ph.D. as an ultimate objective.

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