

WHAT ARE THE BENEFITS OF TEACHING SIGN LANGUAGE
TO BABIES WITH NORMAL HEARING?

By

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Abstract

Sign language instruction is often seen as an exclusive benefit for individuals with hearing loss. However, an examination of child development reveals there is a language gap of about three months between the age of acquisition of verbal language and sign language, with sign language presenting in earlier stages of development. The purpose of this study is to determine the extent to which (a) teaching sign language to babies with normal hearing produces a beneficial result, if any, on the child's communication and (b) teaching sign language to babies with normal hearing impacts parent-child bonding, if any. The second purpose of the study is to compare claims from various parenting websites about the alleged benefit of teaching sign language to babies with normal hearing to results from my data. Results indicate that sign language transforms meal time experiences with infants and their caregivers by providing meaningful gestures to infants before they can communicate verbally. Additionally, biases related to sign language shifted to reflect more positive opinions over the two months of the study when sign language was exposed to the infant and their caregivers.

Introduction

Previous research has proven that children with normal hearing produce their first words around 10-12 months. Prior to this stage, infants progress through various stages of language development from reflexive sounds, to cooing and gooing, to expansion, babbling, leading up to first words at 10-12 months. While this timeline relates to language acquisition and development for spoken language, the developmental timelines for acquisition and development of sign language are not as clearly defined. Thompson, Cotnoir-Bichelman, McKerchar, Tate, and Dancho (2007) argue that children can learn signs as early as 6 months, however the language acquisition period ranges from 1-2 months from instruction to independent production of signs.

Thompson, McKerchar, and Dancho (2004) examined 3 infants (6 to 13 months) and their ability to acquire sign language and concluded they had effectively learned signs after less than 4 hours of training. Thompson et al., (2007) claim that sign language instruction may assist in preventing behavior problems for young children, as signs have the potential to reduce communication frustration and lead to more effective communication than crying. This study further claimed that sign language instruction, when given to children with normal hearing, can provide an effective means of communication several months earlier than children receiving one language input (verbal language).

Research supports the idea that sign language may facilitate early language development and increase IQ scores (Acredolo and Goodwyn, 2000). The previous study furthered that visual language allows infants to recognize their ability to connect with others. Barnes (2010) noted that although infant sign language instruction and the rate of vocabulary development have a correlation, a statement of definite causation cannot be made. Additionally, Barnes (2010) suggested multiple factors such as: increased amounts of time spent in communication together

by the parent and infant and motivation of such parents could lead to more effective communication outcomes. Barnes (2010) introduced baby sign language instruction strengthens bonds between caregivers and children by empowering children to control communication and extending the time that parents and their children spend together focused on a shared interest. Additional research points to the power that gestures hold as a facilitator of parent-child interaction and early communication development.

Based on previous research, I hypothesize that babies with normal hearing, when taught sign language by their primary caregiver, will communicate more effectively than their previous method of communication through visual language and have positive parent-child bonding through the shared introduction of a foreign language. Further, I hypothesize that this gap between spoken language development and the development of visual language can be narrowed by incorporating Total Communication (a combination of sign language and spoken language) into the lives of babies with normal hearing.

Methods

Participants

This study included data collected from caregivers of infants under the age of 18 months. The inclusionary criteria were that infants hearing will remain in normal age and participants acknowledged they have never been concerned about their child's hearing ability. Exclusionary criteria were that caregivers and their infants would not have health conditions that do not allow independent motor movements. Additionally, infants would not have any form of genetic disorder, including Down Syndrome or other conditions where verbal language delays may be common.

Instrumentation

The primary investigators taught the signs found in the book, *ABC Baby Signs*, to the participants. The participants used Total Communication by reading and signing the book simultaneously to their infants a minimum of three times per week. The participants tracked their infants' production of signs at the level of imitation and independence with the *ABC Baby Signs* Checklist. The Checklist contained the following signs: all done, blanket, cereal, diaper, eat, friend, go, help, I love you, juice, kiss, listen, more, no, outside, please, quiet, read, sleep, thank you, up, vegetable, water, excuse me, yes, and zoo. The Checklist contained blank spaces to allow participants to add additional signs that were relevant to their infants' lives, community, and culture.

Procedures

Participants completed three visits each for the study. Visits took place at the Miller Speech and Hearing Clinic on Saturday mornings. When parking was limited and schedules conflicted with pre-arranged meeting times, 'virtual meetings' were held. Participants emailed documents to the primary investigator, under a password protected email. Full participation in the study is defined by participation in all three visits, spaced out by one month each.

At the first meeting, the primary investigator taught the signs included in the book, *ABC Baby Signs*, to the participants. Additionally, the participants completed the Parent Child Bonding Questionnaire (PCBQ), which reflects observations regarding their child's communication and behaviors and the Sign Language Perception Scale, which compares alleged benefits of sign language to participant beliefs. Participants were instructed to utilize sign

language at home by reading and signing *ABC Baby Signs* at least three times per week with their child over the course of one month. The intervention plan involves the infant, their parents, and other potential caregivers who have learned the signs in the book and are equipped to consistently read and sign with the book and in contexts beyond times devoting to book reading.

After one month of sign language use in the home, a second meeting was held. At the second meeting, participants submitted four forms: the *ABC Baby Signs* Checklist, Visual Communication Sign Language (VCSL) Checklist, the Parent-Child Bonding Questionnaire, and the Sign Language Perception Scale.

After two months of sign language use in the home, a final meeting was held. At the final meeting, participants submitted four forms: the *ABC Baby Signs* Checklist, Visual Communication Sign Language (VCSL) Checklist, the Parent-Child Bonding Questionnaire, and the Sign Language Perception Scale. In addition to participating in data collection, the primary investigator revealed the results thus far in the study related to sign language acquisition. As the meeting was held in a group setting, participants had an opportunity to share stories of the success (or lack thereof) their infant had in communicating.

Measurements

Measurements directed towards assessing communication included the Visual Communication Sign Language (VCSL) Checklist and the *ABC Baby Signs* Checklist. The VCSL Checklist was administered at the second and third meeting to track the development of expressive and expressive visual communication skills of the infants over the course of the study. Some of these milestones include following the eye gaze of the signer and participating in communicative play (such as peek-a-boo). These milestones are foundational for developing the

pragmatic communication skills in both sign language and verbal language. The *ABC Baby Signs Checklist* is an inventory containing each sign in the book along with the level of mastery the child has achieved. This Checklist contains a space for the date the sign was introduced, produced in imitation, and produced independently. Another section provides an opportunity for participants to note if the sign has not yet been mastered. Additionally, the parent may fill in the blank rows of the Checklist with signs they have chosen to introduce to their infant that are not in the *ABC Baby Signs Checklist*.

Measurements directed towards assessing parent-child bonding included the Parent-Child Bonding Questionnaire (PCBQ). The PCBQ allowed participants to elaborate on how their child reacts to negative experiences and how they communicate their wants and needs. An additional measurement, the Sign Language Perception Scale, was used to compare claims from existing research and parenting websites with our participants' opinions.

Results

Of the original nine potential participants, three fulfilled full participation in the study. Participants will be referred to as Participant 1, Participant 2, and Participant 3 to provide clear and consistent context for analyzing results. When parents taught sign language to their infants, there was an evident growth in effective communication, as crying was partially replaced with signing to express interests. In assessing the level of effective communication achieved through sign language instruction, the results varied. Some participants' infants were able to quickly acquire sign language, while others required more time. Regarding parent-child bonding, all participants remarked that sign language had a positive impact on their child, yet there was not a tangible definition for positive parent-child bonding.

ABC Baby Signs Checklist

All participants were successful in their infants signing “more” either in imitation or independently during the study. Participant 1 was able to sign “more” independently only 10 days after being introduced to the sign. Participant 1 had the highest success in acquiring signs, independently producing a total of 5 signs, and 1 in imitation. Participant 2 signed “more” in imitation one month after introduction. Participant 3 signed “more” in imitation one month after introduction and independently two months after introduction.

Although participants were instructed to introduce all signs from *ABC Baby Signs* to their infants, results revealed that participants were unable to fully apply every sign in the book to their home life routines. Participant 3 introduced all signs in *ABC Baby Signs* a few days after the initial meeting. However, Participant 1 introduced 12 of the 26 signs, adding 3 additional signs (mom, dad, and cat) and Participant 2 introduced 6 signs from the book.

VCSL Checklist

Participant	Second Meeting Percentage of Mastery	Final Meeting Percentage of Mastery	Percent Change
Participant 1	86%	86%	0%
Participant 2	76%	86%	+10%
Participant 3	76%	86%	+10%

In the VCSL Checklist, areas of deficits across participants included waving bye-bye and following the eye gaze of the signer. Although Participant 1 appears to remain stagnant over the

course of the study, certain areas that were not mastered such as attending to signed motherese (slow, exaggerated signing) transitioned from an emerging skill to a mastered skill, while a skill that was previously mastered “enjoys finger-plays and finger-games” regressed from mastered to inconsistent over the course of the study. Participant 2 and Participant 3 revealed increased mastery over the course of the study, each achieving a 10% increase in the amount of visual communication milestones mastered.

Parent-Child Bonding Questionnaire

Participant 1 initially noted that their infant babbles and points to communicate their wants and needs. By the second meeting, gestures were added as a form of communication. By the final meeting, Participant 1 mentioned their baby also uses formal signs from the study to communicate their wants and needs. Additionally, Participant 1 noted by the final meeting that sign language allowed them to reinforce good behaviors, created positive bonding, and transformed meal time by allowing their infant to signal when they were all done eating or wanted more food.

Participant 2’s responses remained consistent for all three meetings. Their infant communicates wants and needs by crying, reaching, and cooing. One response that emerged by the second and final meetings were that sign language has “improved the relationship.” However, this statement was not supported by specific examples.

Participant 3 reported at the initial meeting that their infant communicates by smiling, fussing, vocalizing, and using their facial expression. Additionally, they noted sign language would increase engagement, communication, and connectedness. Furthermore, they believed sign language could decrease frustration by accelerating understanding of their baby’s needs. At

the second meeting, Participant 3's responses remained consistent regarding their infant's method of communication. Additionally, they noted their infant did not yet respond with signs. By the final meeting, Participant 3 mentioned sign language became so central to their communication with their child and they potentially missed opportunities for their child to explore because teaching and repeating signs preoccupied the participant.

Sign Language Perception Scale

Participant 1 held to their belief that teaching their baby sign language would not delay speech over the course of the study. Additionally, they strongly agreed that sign language would lead to effective communication, reduce communication frustration, and positively impact bonding with their child over the course of the study. Participant 1 began the study by reflecting the response "not sure" for the following statement: "Teaching my baby sign language will lead to improved vocabulary development," but shifted to "agree" after one month and ending the study by claiming "strongly agree." Participant 1 also shifted from "agree" to "strongly agree" regarding continuing signing with their baby after completing the study and the degree to which they want their baby to be able to communicate with members of the Deaf community.

Participant 2 shifted their views from "not sure" to "strongly disagree" regarding the extent to which teaching sign language will delay their baby's speech. Participant 2 remained consistent with "strongly agree" that teaching their baby sign language will allow them to communicate more effectively, reduce communication frustration, lead to improved vocabulary development, positively impact parent-child bonding, and the extent to which they want their baby to communicate with members of the Deaf community. However, Participant 2 began the

study claiming they “strongly agree” they will continue singing with their baby following the completion of the study and ended the study with “agree” for this statement.

Participant 3 ended the study remaining at “not sure” for the following variables as it relates to the potential effects of sign language: effective communication, frustration reduction, improved vocabulary development, positively impact parent-child bonding, and continued signing following the completion of the study. Participant 3 shifted from “strongly disagree” to “disagree” with the statement “Teaching my baby sign language will delay speech.” Participant 3 consistently responded they “strongly agree” they want their baby to be able to communicate with members of the Deaf community throughout the study.

Discussion

The results in the study contain the information from a total of three participants. Based on the limited number of responses, it is difficult to determine a clinical significance. Additionally, the ages of participants’ infants were not equal in the beginning of the study, making an even comparison across results inequitable. Lastly, the study involved extensive, unmonitored implementation of at-home sign language instruction. The primary investigator was unable to determine whether participants read and signed *ABC Baby Signs* a minimum of three times per week. Additionally, the results reflect participants did not introduce all the signs included in the book, suggesting a potential increased focus on a smaller range of signs.

Regarding the VCSL Checklist, while results suggest an increase in mastery, assessments were administered one month apart, suggesting the time elapsed may be responsible for the development of visual communication skills rather than sign language introduction. While it is unclear what the direct cause for the mastery of certain skills, participants recognized their child

is meeting developmental milestones that may be difficult for babies who have impairments with social skills related to communication. Participants did not have a background in speech-language pathology, deaf education, and had no previous knowledge or experience with sign language before the study began. Due to this lack of background knowledge, some milestones on the VCSL Checklist may be difficult to determine whether the skill is emerging, inconsistent, or fully mastered. However, as a result of their involvement in the study, participants may have experienced an increased awareness in monitoring the skills related to visual communication to complete the VCSL Checklist with accuracy.

Results revealed that although participants claimed sign language had a positive impact on their relationship with their child, a statement of causation cannot be made regarding the relationship between parent-child bonding and sign language instruction. Additionally, there may have been a bias present, influencing participants to respond with what they thought the primary investigator wanted them to report, rather than reporting the truth regarding their child's behaviors.

Based on Participant 1's responses in the PCBQ, sign language evidently provided a means for their baby to communicate their wants and needs surrounding meal time. The two signs, "more" and "all done," allowed Participant 1 to easily understand her infant, meet their requests, and affirm that the infant is a communication partner who has power through expressing meaningful gestures. Additionally, while "effective communication" is not clearly defined, participants' infants were indisputably able to sign meaningful gestures that represented words before they were able to verbally communicate their wants and needs.

Participants voluntarily elected to participate in the study for the course of two months. While each participant entered the study hoping sign language could help them communicate

with their child at ease, the initial results reflect a mild hesitation in a potential harm of this intervention. Throughout the course of the study, participants were able to overcome the initial uncertainty that sign language would interfere with the verbal language development of their child; all participants shifted their initial views to eventually reflect they strongly disagreed sign language instruction would delay speech

During the discussion at the final meeting, participants expressed a desire for their infant to befriend and communicate with members of the Deaf community. The participants revealed they had not considered (prior to their involvement in the study) their infant could communicate in sign language with a classmate who may be sign-dependent. However, they noted that if sign language could provide a means for connection that someone would otherwise be deprived of, they would love for their child to be involved. Participant 2 involved a Spanish speaking member of the family in the study through at-home sign language instruction. In the initial meeting, Participant 2 remarked, "I am excited for my child to be trilingual." This confident claim suggested the participant believed in the potential benefit bilingualism or trilingualism could provide a developing individual.

The study yielded unexpected results, such as the community aspect the final meeting held, where participants shared their experiences with successes related to communicating through sign language. The two main areas of deficit in the study relate to the limited number of participants and the narrow length of time the participants were studied. Future directions of this study should include a more longitudinal approach, where participants' infants are provided an opportunity to continue sign language use and connect with members of the Deaf community through their classroom setting.

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