


2016

Using sign language in the infant room

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Abstract

Trying to figure out what an infant needs can be frustrating for the child's parents and caregivers. Around eight months of age, infants can start pointing at things they want and start to mimic hand motions from simple finger plays like Pat-a-Cake. In this study, Early Head Start teachers in one classroom went from using four sign language signs in the classroom to using 12 signs for five weeks. The teachers recorded how many times they used each of the 12 signs during interactions with the infants. They also recorded whether an infant repeated the sign when the teacher showed how to use the sign or if the infants used a sign independently. The teachers also talked to the families about whether they had seen any of the signs at home before and after the study. Between the 12- to 18-months old group and the 18- to 24-months old group there was an increase of signs used in the classroom. These groups showed an increase in both imitating teacher signing and using signs independently. There was also an increased use of signs at home reported by the parent and grandparents.

USING SIGN LANGUAGE IN THE INFANT ROOM

A Graduate Research Paper

Submitted to the

Division of Early Childhood Education

Department of Curriculum and Instruction

In Partial Fulfillment

Of the Requirements for the Degree

Master of Arts in Education

UNIVERSITY OF NORTHERN IOWA

By

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July 22, 2016

This Research Paper by: Sara Paar

Titled: Using Sign Language in the Infant Room

has been approved as meeting the research requirement for the Degree of Master of Arts in Education.

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Trying to figure out what an infant needs can be frustrating for the child's parents and caregivers. Around eight months of age, infants can start pointing at things they want and start to mimic hand motions from simple finger plays like Pat-a-Cake. In this study, Early Head Start teachers in one classroom went from using four sign language signs in the classroom to using 12 signs for five weeks. The teachers recorded how many times they used each of the 12 signs during interactions with the infants. They also recorded whether an infant repeated the sign when the teacher showed how to use the sign or if the infants used a sign independently. The teachers also talked to the families about whether they had seen any of the signs at home before and after the study. Between the 12- to 18-months old group and the 18- to 24-months old group there was an increase of signs used in the classroom. These groups showed an increase in both imitating teacher signing and using signs independently. There was also an increased use of signs at home reported by the parent and grandparents.

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Introduction

With a baby's first cries, the child is trying to communicate with the world around him or her. In the first month of life a baby uses crying as a way to communicate there is something wrong in its world and needs someone to take care of it. The caregiver, whether it is the parent of the child or someone paid to take care of the child, will think about what the child could need. Does s/he need a diaper change, or to be picked up, to be fed, or something else? Around the second month of life, children start using expressive language by cooing and gurgling in addition to crying. Caregivers will respond to the sounds the child makes, encouraging the child to repeat the sound and try new sounds. This give and take of sounds is a child's first conversation. The baby will tell a caregiver when s/he has had enough by simply looking away or falling asleep (Cook, 2012; Dodge, Rudick, & Berke, 2011)

I have worked in an Early Head Start infant room for the past eleven years. Early Head Start is a federally funded program that targets children from low-income families to provide services to help these families and their children in their development (Head Start, 1998). Several years ago, there was an infant who was not developing any verbal language skills. When a staff member from Area Education Agency 267 (AEA 267 is an agency that assists parents and teachers in the evaluation of children who might have delays in development and provides support services) came into my classroom, she suggested I start using sign language with him. We focused on using only four signs, -- *more*, *all done*, *eat* and *drink* -- with this student to try to get him to communicate his wants. He was starting to use the sign *more* by the time he transferred from my room. I have continued to use a limited number of signs in the classroom to help other children in my class try to communicate.

Children who are living in low socioeconomic status homes often grow up being exposed to less language than children from middle class or professional families. The language children from low socioeconomic status homes are exposed to tends to be also less descriptive. The children tend to hear more commands than families from the middle class or professional families (Hart & Risely, 2003). I wondered whether sign language could help children from families living in poverty to express themselves and expand their vocabulary.

The purpose of this study was to investigate the impact of baby sign language in an Early Head Start infant classroom. Will a simple infant sign language intervention increase the use of infant signs or gestures in the classroom? Will using a classroom infant sign language intervention increase the use of infant signs in the home?

Literature review

The questions for my study were: Will a simple infant sign language intervention increase the use of infant signs or gestures in the classroom? Will using a classroom infant sign language intervention increase the use of infant signs in the home? I searched the literature for studies about low-income infant language development and about sign language usage with infants with normal hearing. I discovered there are many studies about parents using sign language in their home with their hearing infants but I did not find many studies about using sign language in the classroom with infants who have normal hearing.

Language exposure in infants from low income families

Infants watch closely as their caregivers talk with them and often respond by trying to make new sounds. In their expressive language development, infants will start babbling around six months by adding consonant sounds to their early cooing (vowel sounds). Children from lower income families are exposed to fewer verbal interactions and less gesturing from their parents than children from other income groups (Hart & Risley, 2003; Vallotton, 2012).

Simply in words heard, the average child on welfare was having half as much experience per hour (616 words per hour) as the average working class child (1,251 words per hour) and less than one-third that of the average child in a professional family (2,153 words per hour) (Hart & Risley, 2003, p. 8).

Hart and Risely (2003) also noted the language or communication gap for the children living in poverty grows at a rapidly increasing rate. By the time the children living in poverty have entered kindergarten, their vocabulary development is far behind the vocabulary

development of their peers from families living in the working class or professional families. Out of the original group of children from the study, 69 percent of the children were involved in a follow-up study about their vocabulary development while the children were in the third grade. The rate of their vocabulary growth at three years of age was strongly associated with their scores at nine or ten years of age on two different language tests.

Hart and Risely (2003) also looked at the type of language these three economic groups of families used with their children. Not only do children living in poverty fall behind in their language exposure, the types of language they are exposed to is different. The average child living in poverty hears five encouraging statements and eleven discouraging statements an hour, while the average child living in a working class family hears 12 encouraging statements and seven discouraging statements an hour. The average child from a professional family hears the most encouraging statements an hour, namely, thirty-two encouraging statements to only five discouraging statements an hour.

Every Child Reads – Birth to 3, a class offered from the Iowa Department of Education (2013) is a program targeted for adults who take care of infants and toddlers. It offers several ways to increase talking with infants. The first strategy presented is *parentese*, when caregivers pitch their voices high and use a singsong repetitive conversation with the child. Another way to increase the language a child hears is to use *parallel talk*, where the caregiver talks about what the child is doing as they participate in an activity. Caregivers can also use *self-talk* where the caregiver talks about what the caregiver is doing as she is doing it. The last approach discussed in the class is the *CAR* method, which stands for *Comment, Ask, and Respond*. In the *CAR* method, the caregiver comments about what the child is doing, asks a question about what the child is doing and then responds to the child. The caregiver responds to the child whether the

child gestures or verbalizes. These approaches are likely to maximize how much language an infant gets to hear that reflects what the infant is actually doing. According to the Every Child Reads curriculum, it is important to get children to hear language associated with what they are doing.

Gesturing and pointing are ways older infants start communicating with caregivers about what they want. “A growing number of studies have demonstrated the benefits of communication via symbolic gestures – or signs – for children’s development, particularly in the areas of language and cognition” (Góngora & Farkas, 2009, p. 217). Preverbal children will often start imitating actions they see their parents or caregivers do months before they are able to verbalize. Reciting simple finger plays or nursery rhymes that have hand movements is an example of this. Children are able to participate by reproducing the actions to Pat-a-Cake, So Big, Wheels on the Bus or similar activities before being able to join in the singing or reciting of these simple finger plays.

Preverbal infants, infants from eight to eleven months, will start pointing at objects they want. For example, they point at the refrigerator when they want a drink or grab at their diaper when they need a diaper change. Caregivers become attuned to the gestures the child makes. “As representational behavior, a child’s gestures may exert a direct influence on his own development as they provide him with stimulus when he sees his own representations expressed visibly” (Valloton, 2012, p. 402). When infants are around eight months old, they begin to know what they want, require or feel. However, their expressive language skills are not developed enough to allow them to communicate these needs. Baby sign language can help close the communication gap that the infants have with their parents or caregivers (Cook, 2012).

The use of sign language in assessments

Many early childhood programs in Iowa use Teaching Strategies GOLD (TSG) (Dodge, Berke, Rudick, & Baker, 2015) to assess the children's development. Teaching Strategies GOLD is an ongoing authentic comprehensive assessment tool that evaluates a child from birth until third grade. The teachers write daily observations about the children in their classrooms and then TSG breaks the children's development into objectives structured into nine areas of development. In several of the areas of development, TSG has gesturing or signing as examples for reaching different levels of development. For instance, the Social Emotional domain uses the example of "asserts own needs by pointing, gesturing, or talking" for children from 12 months to 24 months of age. TSG also uses signing or gesturing to indicate *more* in the assessment of the language development to express thoughts and needs. Also the Iowa Early Learning Standards, Iowa Department of Education (2012), includes gestures as benchmarks for 4.1 language understanding and use. They use an example of using the sign of "more" when a child wants more food or drink at snack time.

Baby Sign and sign language studies

Baby Signs Inc. is a method parents and caregivers can use to communicate with their infants by using modified sign language (Acredolo & Goodwyn, 1996). Both Acredolo and Goodwyn were teaching college when they became interested in sign language to communicate with infants. Acredolo's 12-month-old infant started using gestures to communicate about the things in her world. By observing her daughter, Acredolo saw that her daughter had learned signs for *fish*, *flower* and *spider* from the activities the adults in her life were playing with her. "Baby Signs allow babies to temporarily bypass the sound system and get on with the important business of communicating" (Acredolo & Goodwyn, 1996, p. 21).

There are several studies in which parents have added the use of sign language to their interactions with their hearing child. Often these studies observed mother-infant dyads to see whether using infant sign could help the mother-infant interactions (Góngora & Farkas, 2009; Kirk, Howlett, Pine, & Fletcher, 2013; Vallotton 2012). One set of the dyads employed signs used in daily activities like eat, drink, food, more and some object words like, hat, flower and duck. The control groups did not use any signs. The dyads were videotaped and then the tapes were watched, looking for the interactions between the infants and mothers and the signs that were used. Góngora and Farkas (2009) did not find a significant difference between the groups. The mothers (Kirk et al., 2013; Vallotton, 2012) that were in the sign group were able to pick up on subtle cues about their child's needs.

Johnston, Durieux-Smith, and Bloom (2005) investigated the question, "Do baby signing programs work?" They looked at over 1208 articles but narrowed down their review to only 17 articles. The majority of articles were discarded because they were opinion articles or case studies which lacked research. The criteria for inclusion in their review was to have the methods and the outcome measures be part of the article. They had several questions about the methods used in the studies and the way the parents under- or over-reported sign usage in the studies. Some of the studies only reported the signs used in the experimental group and not the signs or gestures the control group used. One of the concerns they brought to the surface was the fact that parents were diverting the infant's attention when trying to teach their infant a sign instead of adding the sign as a natural part of a conversation. They suggested, "Parents should choose to undertake signing programmes with their infants for the pleasure they derive from them and not for any proven benefit in child development" (Johnston et al., 2005, p. 245).

Nelson, White, and Grewe (2012) studied 33 web sites that claimed the use of sign language benefits infants and toddlers with normal hearing. In addition to looking at the actual claims the web site made about the benefits of teaching sign language to hearing infants, they examined whether the web sites used research to support the claims and they evaluated the “methodological quality of the empirical research listed on websites” (Nelson et al., 2012, p. 476). Ninety percent of the articles used on the website were opinion articles and had no research to back their claims. In fact, only eight of the 33 websites had used empirical research studies to evaluate the benefits the infants would gain by learning sign language.

I have not found many studies on the use of sign language in the early childhood classrooms, and only one research project which took place in two centers that used sign language as part of their daily curriculum (Francik, 2005). The author questioned whether using sign language with infants and toddlers would help alleviate frustrations between the caregivers and the children. The two classrooms used sign language prior to the project. The researcher observed the two classrooms for two hours in the morning for 20 weeks. She positioned herself in the classroom so she would not interfere with the normal running of the classroom. The signs used in the classroom were put into three different categories on how the child or teacher used the sign. The categories were social/emotional, task-oriented, and descriptive/conversational signs. Francik found during her time in the classrooms that a majority of the signs were task oriented and teacher initiated. She concluded the use of signs “aid in meeting children’s basic needs as well as help with smooth transitions through routines” (p. 19).

Most of the research papers I have found were completed in homes where parents added signing to their communications with their children. One longitudinal study used families from Early Head Start’s home-based program and focused on incorporating sign language at home

(Vallotton, 2012). The sign language intervention consisted of three separate visits. At the first visit a brief explanation was given to both the child and parent and the home visitor demonstrated the use of the signs. Parents received laminated papers that gave tips for how to use infant signing and 10 refrigerator magnets which had the infant signs on them. After several months the parents were visited again and videotaped for about a 15-minute period of time that included free-play, clean up and a puzzle activity. Parents were also given 12 more sign magnets and a book with the first ten signs and seven new signs. At the last visit, several months after the second visit, the families were again videotaped with the same type of schedule. Families were also asked questions about their infant. The videotapes were analyzed for several factors in the parent-child interactions and the use of sign during the interactions. This study concluded, "The use of infant sign language may be an effective way to promote responsive parent-child relationships in low-income families" (Vallotton, 2012, p. 413).

Methodology

This research project took place in my Early Head Start infant classroom. All the children in the classroom were from low-income families. Although the classroom can have eight infants, during the study there were seven infants with ages ranging from 11 months to 22 months. Four of the children came from bilingual families where both English and Spanish are spoken in the home. The other three families were English only households. All of the children scored within the normal range on their age appropriate Ages and Stages Questionnaires (Squires, Twombly, Bricker, & Potter, 2009), ASQ-3 in all areas of development. ASQ-3 assessments are a series of 21 questionnaires given to parents or caregivers to evaluate their child's development in the areas of communication, large motor, fine motor, problem solving

and personal-social. In the infant room we screen the infants at two, four, six, eight, ten, twelve, eighteen and twenty-four months.

This was the second year in this classroom for two of the children and they were exposed to four signs last year. These signs were: *more*, *all done*, *eat* and *drink*. One of the mothers reported she had been actively working with her child using the four signs they were introduced to last year. The other parent reported she had not worked with her child in using signs at home.

There were three main caregivers in the infant room, two lead teachers and an assistant teacher. The two lead teachers have had limited experiences in using sign language. I have used some sign language in the classroom. The other lead teacher used some sign language in her practicum during her college education. The assistant teacher did not have any previous experience using sign language. One of the lead teachers and the assistant teacher had recently been hired to work in the infant room and were new to working with infants and toddlers. They had been in the infant room for only six months prior to the study.

I decided to concentrate on self-help signs for my project based on the signs Francik (2005) had seen used in the classrooms she observed during her study. The 12 signs I selected for the project were: *more*, *help*, *eat*, *drink*, *all done*, *please*, *up*, *stop*, *brush teeth*, *thank you*, *diaper*, and *mine*. As part of an in-service day, the teachers spent a half an hour going over the signs and what they meant. We discussed what to consider as a replication of the sign. For instance, if a student brought his two fists together, instead of his fingertips, for the sign for *more*, they would get credit for making the *more* sign. The teacher would verbally say the word in conjunction with doing the sign. Two posters with pictures of the signs labeled in both English and Spanish were placed in the classroom for the teachers' easy reference (See figure 1).

Before the study began, I met with each of the parents or grandparents to explain the project. The families were given a handout of the 12 signs the children would be exposed to in the classroom. The handouts were in English and Spanish so that the bilingual families with members that only spoke Spanish could understand the signs their children might use at home. During this meeting the family was asked if they had seen their child use any of the signs at home. The teacher went over how to make each sign and what the sign meant. The parent or grandparent was asked to indicate if they had seen their child use any of the signs at home by circling that sign. Each family was given another copy of the sign poster to take home so that if their children started doing a new sign they would be able to understand what the child was telling them. I also informed the families I did not expect them to work on teaching the children the signs at home. I had one family ask for two copies so that the noncustodial parent could have a copy at home too.

Another teacher at the center gave the parents the consent forms and an envelope to return the consent forms. By doing this I minimized my influence on having parents or grandparents agree to have their infant participate in the study. I did not look at these forms until after the intervention was completed so we would use the signs with all the children in the room and not just the ones who were going to have their data used in the study. The parents did have the option to not have their child's results in the study, although the children would still be exposed to the signs used in the classroom. I had one family decline to have their child's data included in the study.

A pre-research evaluation was done in the classroom to see if any of the children used any of the signs. The children were shown the 12 signs at the start of the research study. The teacher circled the signs the children repeated. Although we had used four signs in the classroom in

previous years, we had not been consistent this year due to the fact two of the teachers had only been in the classroom for six months.

In order to keep track of the data for each day a spread sheet containing all the signs was posted in the classroom so that the teachers could record the data as they used the signs. Each teacher was responsible for recording her own use of sign during interactions with the children. These interactions happened throughout the day during the regular classroom activities and routines. The signs were not taught as part of a game or drilled to the children. The teacher kept track of the signs the infants used and the number of times the infant signed it. There was a coding system to mark if the infant repeated the sign after the teacher used it or if the infant used the sign independently. Each time a child demonstrated a sign, the teacher wrote her own initials and the initials of the child on the data sheet. If the child had independently used the sign, the teacher would circle the child's initials. The student got credit for making a sign if s/he had a consistent way to make the sign. For instance, one child patted the side of his diaper for his diaper sign. The teachers tried to make a mark each time they or the children used a sign.

At the end of the study, I took the raw data and entered it into several spreadsheets. I divided the data in several different ways. I looked at the number of times each infant independently used a sign to make a request and the number of times an infant repeated the sign after a teacher used a sign. I also did a post-test with each of the infants to see if they would repeat any of the 12 signs. Finally, the parents or grandparents filled out a post-test and were asked if they had seen their child use any of the signs at home. Once again, they were instructed to circle the signs they had seen their child use at home.

Figure 1

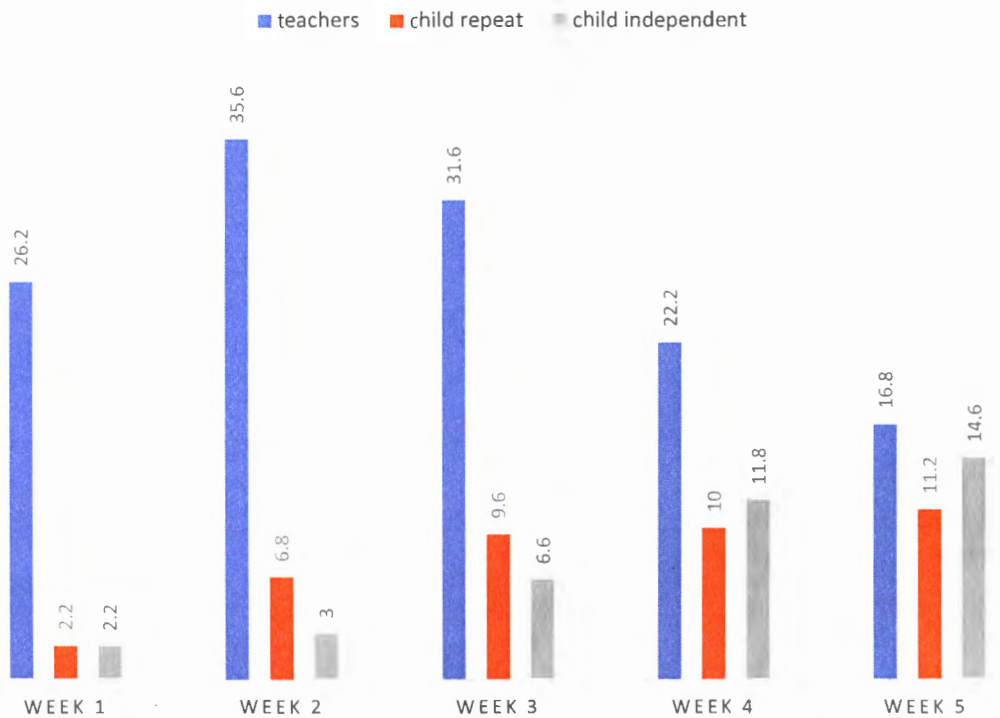
Handout used as a Pre-test, Post-test and Poster for Home and Classroom

<p>More- más</p> 	 <p>Drink- vasa</p>	 <p>Brush teeth- cepillarse los dientes</p>
 <p>Please- por favor</p>	 <p>Up- arriba</p>	<p>Help-ayuda</p> 
 <p>Thank you- gracias</p>	 <p>Stop- basta</p>	<p>Diaper - pañal</p> 
 <p>All done - termine</p>	 <p>Eat-comer</p>	 <p>Mine-mio</p>

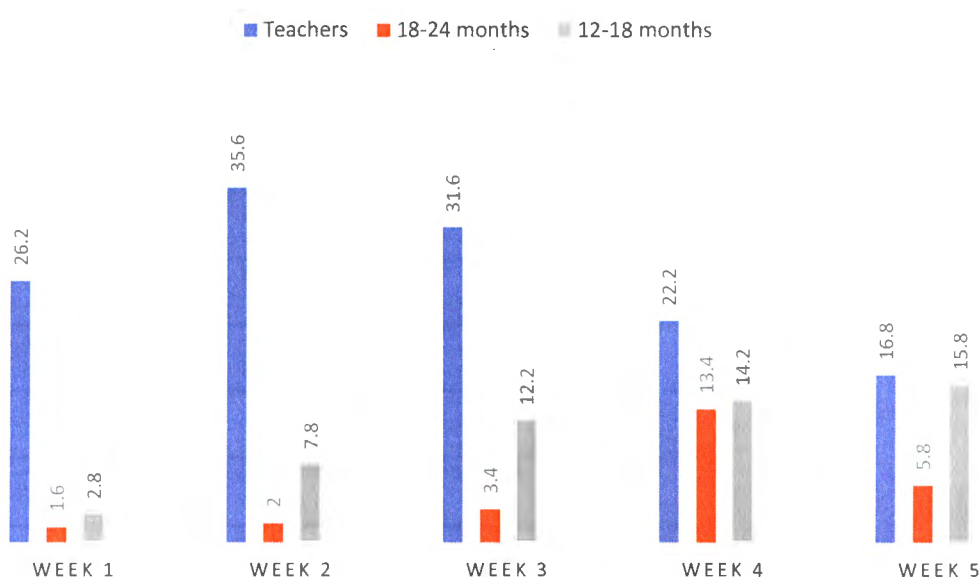
Results

Figure 2

Weekly Average of Signs Used in the Classroom



During the study, there was an increase in the number of times the infants repeated the sign the teacher had shown them, growing from an average of 2.2 the first week to 11.2 the last week of the study. The number of times the infants independently used the signs in the classroom also increased from 2.2 the first week to 14.6 the last week of the study. The reason the number of signs the teachers used increased early in the study but then decreased; this could be due to the fact that the assistant teacher working in the classroom left employment at the center.

Figure 3*Weekly Average Signs Used in Classroom by Age*

The children in the 18- to 24-month old group were already talking and had many of these words in their vocabulary. In the first week of the study, this group only averaged 1.6 signs during the week but by the end of the fifth week they averaged 5.8 signs. The data in week four had a dramatic increase due to the attendance of a child in that age range who had not been there for a whole week during the study. She had only been averaging two days a week for the time of the study. The 12- to 18-month group increased their signing every week during the whole study. They started at 2.8 signs during the first week and ended with 15.8 signs for the fifth week of the study. Although there was only one student in the 12-month and below group, there was never any attempt to repeat a sign the teacher showed that child.

Table 1*Total signs used by the children in the classroom*

	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
more	X	X	X	X	X	
please	X	X	X	X	X	
Thank you		X	X	X		
All done		X	X	X	X	
Eat	X	X	X	X	X	
Drink	X	X	X	X	X	
Up		X	X	X	X	
Stop				X		
Brush teeth	X	X	X	X	X	
Diaper	X	X	X			
Mine		X	X	X		
Help		X	X	X		

This table shows the all signs each of the children used in the classroom over the five week study, both repeating from what the teacher showed them and the independent use of the signs.

The children are arranged from the oldest in the class to the youngest.

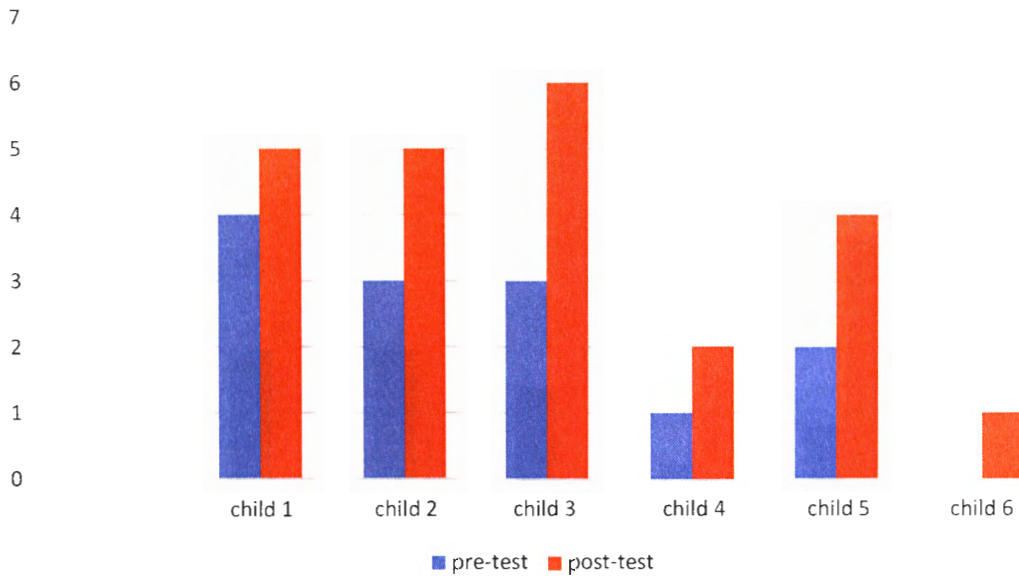
Table 2

Signs used independently by Children in the Classroom

	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
More	X	X	X	X	X	
Please	X	X	X	X	X	
Thank you						
All done			X			
Eat	X	X	X	X	X	
Drink		X				
Up					X	
Stop						
Brush teeth		X	X	X	X	
Diaper		X				
Mine		X	X			
Help			X			

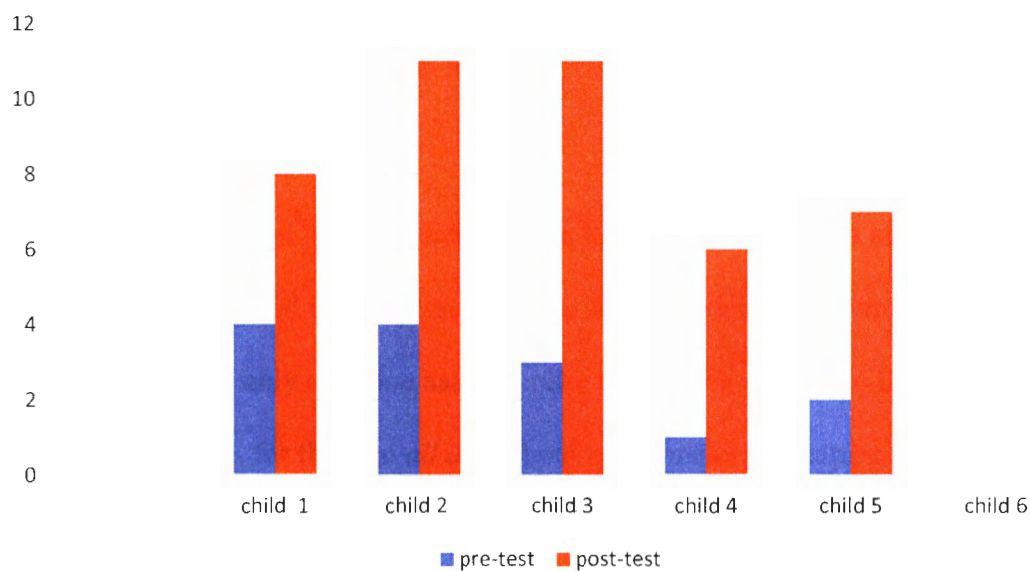
The signs *more*, *please*, *eat*, *drink*, and *brush teeth* were the signs most used by the children. These five signs were used during mealtimes in the classroom. The children ate breakfast, lunch and snack at the center. They sat around a table so all of the children in attendance would not only see the teacher signing but also were able to see their peers use the signs. It is the practice of the classroom to brush teeth twice a day, once after breakfast and once after lunch, so the children were exposed to this sign during their day at school. They not only used the sign *more* when they wanted more food but also when they wanted the teachers to sing a song again or to continue to do activities.

Figure 4

Pre-test and post-test of signs seen at home

All the infants were reported to have increased the number of signs their parents or grandparents saw them utilize at home. The families did not keep data at their home; they were only asked to recall what they had seen their child use. Child 3 used the most independent signs at home. At school he used seven signs independently and at home they reported only seeing him using six out of the 12 signs.

Figure 5

Pre-test and post-test of signs seen at school

There also was an increase in the utilization of sign in the classroom. Child 6's parent reported she had seen him sign "eat" at home. However, the teachers did not see him repeat the sign or use the sign independently in the classroom. Nor did he repeat the sign during the post-test.

Discussion

The purpose of this study was to answer two questions. Will a simple infant sign language intervention in the Early Head Start increase infants' the use of signs or gestures in the classroom? Will using a classroom infant sign language intervention increase the use of infant signs in the home?

The simple sign language intervention in the infant room did increase the number of signs most of the infants used in the classroom. The signs in which the infant makes similar motions with both hands or only uses one hand to make the motion seemed to be easier for the infants to make. For instance, for the sign *all done*, both hands make a sweeping motion like cleaning off a table. However, in order to make the signs *help*, and *stop*, the children needed to use both hands doing different motions. There was only one child who copied these signs. Another child came up with her own interpretation for the sign *help*. She would also verbalize as she signed so the teachers knew that she was trying to sign *help*. The children were not given credit if they only verbalized instead of using the sign. The children in the 18-to-24 month group would often verbalize several of the words when a teacher would say and sign the word instead of signing it. *Up* and *mine* were two words that several children started to say during the study without signing them.

Like Vallotton (2012) saw in the study done in the homes of the Early Head Start children, our parents saw an increased use of signs at home. The parents and grandparents who reported at the end of the study had positive remarks about their infant's use of signs in the home. One parent liked the fact that they didn't have to "work" on the signs at home. The parents and grandparents of the 12-to-18 month old children all reported these children would make the signs to indicate they wanted to *eat*, *drink*, or have *more*.

I looked at several studies that used sign language at home to figure out what signs to use in the study. I decided to focus on words that they would use for their daily needs and self-help skills. I wish I had selected some item signs like ball, book, bubbles or blanket to add to the list. If I had added object words to the list of signs, the children might have been able to directly ask for these items instead of the teacher trying to figure out what they wanted.

There are several limitations in this study. The first limitation in this study is the sample size. This study took place in an infant room where the maximum number of children in the classroom is eight. A week before I started the study, one of the families moved out of town. Another infant was not selected for her replacement until after the study had started, which brought my classroom size down to seven. There was also one family that declined to have their child's data be part of the study, so I ended up with only six children's data for my study.

The length of the study was also another limitation. Because data needed to be collected by mid to late March, due to various university deadlines, the study lasted five weeks. I believe if the study had been longer, we would have seen the children continue to learn and use more signs. Also during the five weeks of the study the class's average attendance was only 82%. Several children missed more than three days in a row. I had one student who only attended one week during the five week study, when she was at school for all five days during a week.

Another limitation of this study was the way teachers documented the use of sign in the classroom. It was hard to remember all the instances in which a sign was being used during an interaction with a student or multiple children at a time. The teachers wrote down an interaction but did not always count every time a child would sign during a conversation. It was also hard to watch all the children for independent signing during activities.

Recommendations

In using sign language with infants, I would recommend adding some item words to the list of signs to be used. If I were doing another study, I would add signs for items in the classroom like book, ball, baby or bubbles. This way a child could ask for a specific item they wanted to play with. One of the children would go to the shelf where the bubble machine stays and sign *more*. We would ask him if he want the bubble machine on and he would again sign *more*. If we had added *bubbles* to the sign list, he might have been able to sign *bubbles* instead of us asking him.

In recording the data, I would be interested in seeing if the children verbalized the words. I also believe increasing the time length of the study would increase the use of signs in both the classroom and at home. To get a more accurate documentation of the teacher's signing interactions with the children, a body camera could be used. The final recommendation would be to have a goal on how many times a sign should be used during the day. We would often forget to sign *down* when talking with the children about walking *down* the stairs to the loft or getting *down* from the rocking chair.

Summary

This simple sign language intervention took place in an Early Head Start classroom over a five-week period. The age range of the infants who participated was 12- to 23- months. In the classroom, the teachers went from using four signs occasionally to being intentional about using 12 signs. The teachers recorded when they used a sign with an infant. They also recorded if the infant repeated the sign back to them or if the infant used a sign independently. There was an increase in both the infants repeating the signs the teachers used and the infants using the signs independently. The teachers talked to the families before and after the intervention to see if the

infants were using signs they had been exposed to in the classroom at home. The families did report that all the infants had increased their use of signs at home.

References

- Acredolo, L., & Goodwyn, S. (1996). *Baby signs: How to talk with your baby before your baby can talk*. Chicago, IL: Contemporary Books.
- American Sign Language Dictionary*. (n.d.) from <http://www.lifeprint.com/dictionary.htm>
- Barnes, S. K. (2010). Sign language with babies: What difference does it make? *Dimensions of Early Childhood*, 38(1), 21-29.
- Cook, W. (2012). *Mayo Clinic: Guide to your baby's first year*. Intercourse, PA: Good Books.
- Dodge, D., Rudick, S., & Berke, K. (2011). *The Creative Curriculum for infants, toddlers & twos: Objectives for development & learning* (3rd ed.). Washington, DC: Teaching Strategies.
- Francik, A. (2005). Using sign language as a communication tool in infant/toddler group care settings. The Ohio State University Retrieved from:
kb.osu.edu/dspace/bitstream/handle/1811/500/Honors_Senior?sequence=1
- Góngora, X., & Farkas, C. (2009). Infant sign language program effects on synchronic mother–infant interactions. *Infant Behavior and Development*, 32(2), 16-225.
doi:10.1016/j.infbeh.2008.12.011
- Hart, B., & Risley, T. R. (2003). The early catastrophe. *Education Review*, 17(1), 110-118.
- Head Start. (1998). *Head Start program performance standards and other regulations*.
Retrieved from
<http://eclkc.ohs.acf.hhs.gov/hslc/standards/Head%20Start%20Requirements>

- Iowa Department of Education. (2013). *Every child reads-Birth to three*. Retrieved from:
<http://www.educateiowa.gov/pk-12/early-childhood/every-child-reads-birth-three>
- Iowa Department of Education. (2012). *Iowa Early Learning Standards*. Des Moines, IA: Author
- Johnston, J. C., Durieux-Smith, A., & Bloom, K. (2005). Teaching gestural signs to infants to advance child development: A review of the evidence. *First Language, 25*(2), 235- 251.
- Kirk, E., Howlett, N., Pine, K. J., & Fletcher, B. (2013). To sign or not to sign? The impact of encouraging infants to gesture on infant language and maternal mind-mindedness. *Child Development, 84*(2), 574-590. doi:10.1111/j.1467-8624.2012.01874.x
- Mueller, V., Sepulveda, A., & Rodriguez, S. (2014). The effects of baby sign training on child development, *Early Child Development and Care, 184*(8), 1178-1191, doi: 10.1080/03004430.2013.854780
- Nelson, L. H., White, K. R., & Grewe, J. (2012). Evidence for website claims about the benefits of teaching sign language to infants and toddlers with normal hearing. *Infant and Child Development, 21*(5), 474-502.
- Seal, B. C., & DePaolis, R. A. (2014). Manual activity and onset of first words in babies exposed and not exposed to baby signing. *Sign Language Studies, 14*(4), 444-465.
- Squires, J., Twombly, E., Bricker, D., & Potter, L. (2009). *Ages & Stages Questionnaires User's Guide*. Baltimore, MD: Paul H. Brookes.
- Vallotton, C. D. (2012). Infant signs as intervention? Promoting symbolic gestures for preverbal children in low-income families supports responsive parent-child relationships. *Early Childhood Research Quarterly, 27*, 401-415. doi:10.1016/j.ecresq.2012.01.003

Vallotton, C. D., & Ayoub, C. C. (2010). Symbols build communication and thought: The role of gestures and words in the development of engagement skills and social-emotional concepts during toddlerhood. *Social Development, 19*, 601–626. doi: 10.1111/j.1467-9507.2009.00549.x