

Using Sign Language as a Communication Tool
in Infant/Toddler Group Care Settings

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Abstract

This study focuses on how and when sign language is used in infant/toddler group care settings. The sample includes infants and toddlers in two childcare centers in the Columbus, Ohio, area. One day per week in each center, for two hours per session, during a 20-week period of time, interactions involving sign language between teachers and children or between children and their peers were observed. Data was recorded regarding who initiated the sign-based conversation, the context in which the sign was used, and the method of response to the sign.

The data was analyzed and the signs which were used were classified into three categories: 1) task-oriented (to meet a need, to transition between activities, or to accomplish daily routines); 2) social/emotional (to express personal emotions, to show gratitude, or to ask for assistance); and 3) descriptive/conversational (to label objects, to acknowledge sounds, or to emphasize spoken words). In the majority of cases, the teacher initiated the use of sign language. In addition, task-oriented signs comprised the most frequent use of sign language in the classroom.

The findings of this study should influence childcare centers to implement sign language into their infant/toddler curriculum, and also encourage centers that already use sign language to seek additional purposes for which sign language can be used in furthering the development of relationships with children.

Introduction

Because children do not generally utter their first word until approximately 12 months of age, and do not use phrases until their second year of life, it can be very challenging for caregivers to understand the needs of young children. Although infants can comprehend meaning from speech (receptive language) as early as five to seven months of age, they simply lack the language skills to communicate their thoughts verbally (expressive language) (Dixon, Feldman & Bates, 1992).

However, by three to four months of age, children have discovered their hands and begin to learn how to use them to actively explore their environments. Children may express their thoughts through gestural communication. Reaching, pointing, showing, and giving are some ways in which young children attempt to share their ideas with their caregivers. Unfortunately, a majority of the time, adults still have to guess what the child is referring to or what the child is trying to communicate (Schickedanz, Schickendanz, Forsyth & Forsyth, 2001).

In order to eliminate this communication barrier, researchers such as Linda Acredolo, Susan Goodwyn, and Joseph Garcia have proposed the idea of teaching sign language to hearing infants and toddlers (Acredolo & Goodwyn, 2002; Garcia, 2000). Introducing hand gestures to young children allows them to use their already developed motor abilities in a standardized way so that adults can more easily understand what the child is communicating.

Communication is the key to building strong relationships. According to Dr. Mary Ainsworth, as an adult responds successfully to a child's needs, a trusting relationship is established (Honig, 2002). Studies have addressed comparative intellectual development in the later years of life of infants who were introduced to a

formal sign system, such as American Sign Language or a similar gestural system (Acredolo & Goodwyn, 2002). However, little research has been undertaken regarding the social and emotional impact of a caregiver and child interaction that is more effective and efficient. Additionally, most research that addresses signing between parent and child touches only briefly on its usage in childcare settings. “The relationships these children [those under the age of three] have with their caregivers and their daily emotional experiences within these programs [childcare centers] have been greatly neglected in research to date” (Leavitt, 1995, p. 3). Thus, this study sought to examine the communication between children and caregivers through the use of sign.

Literature Review

As adults respond to infants’ gestures, vocalizations and actions, “infants become partners in the give and take of human relationships” (Leavitt, 1995, p. 4). Snow and McGaha (2003) state that around nine months of age, infants use social referencing to guide their behavior as they look at the emotional indicators in the faces, voices, and gestures of the adults around them. As an infant performs procedural behaviors, such as vocalizing and banging, he/she realizes that such behaviors can cause an adult to respond. As an adult interprets a baby’s actions, the infant knows he/she has been acknowledged. This ongoing partnership continues as adults and infants “come to expect certain behaviors from each other in reaction to their own actions” (p.21) until the infant learns to direct his/her specific behaviors toward the adult. Through this “circle of emotional communication” (p. 21), infants co-construct intentional communication (Harding, Kromelow, Stilson & Touris, 1995).

According to Erikson’s first psychosocial stage of development, infants face an important developmental task during their first year of life: successfully resolving the trust vs. mistrust conflict. To develop trust in their caregivers, infants must sense their own physical comfort and an absence of fear (Santrock, 2002). Continuing

until age three, children are learning what to expect from the world and how the world responds to them. Therefore, it is both helpful and crucial for babies and toddlers to be able to communicate and to be understood during these first three years of life (Acredolo & Goodwyn, 2002).

According to Garcia (2000), infants have an instinctive need to communicate, just as adults have an instinctive need to understand babies. Social interaction is pivotal for healthy development. In fact, failing to respond to babies' attempts to communicate interrupts their learning process. "It is estimated that less than half of children in typical community childcare samples exhibit behaviors indicative of emotional security with caregivers" (Howes, Galinsky & Kontos, 1998, p. 25). Interactive caregiving may be the single most important factor in assessing the quality of childcare, requiring an investment of emotional involvement and personal commitment from both child and adult (Kovach & Da Ros, 1998). It is important to understand a baby's signals to promote action that will make the baby feel calm and safe. When an infant trusts that a caregiver will respond to a need, security develops in the relationship (Honig, 2003, *Helping babies feel secure*).

Howes, Hamilton, and Philipson (1998) discuss how important it is for children to have positive interactions and a secure relationship with their first teachers. Children form a cognitive representation of "teacher" as either positive or negative, and their behavior toward each new teacher is consistent with their working model. These internalized, generalized working models of relationships formed very early in childhood foreshadow the relationship quality that children will have with their future teachers.

Young children develop a more secure relationship with a caregiver who is "available and accessible to them and who is intensely and sensitively interacting with them throughout the day" (Ritchie & Howes, 2003, p. 514; Howes, Galinsky & Kontos, 1998). Ritchie and Howes (2003) also discuss the importance of looping. Secure relationships are more likely to develop when children remain in a classroom for at least two years so that

caregiving is stable and consistent.

Child development experts and those who work with young children have known for quite some time that infants have many thoughts and ideas in their heads, but do not have the capacity for expressing these thoughts verbally. “Ninety percent of the information we absorb is received through our vision” (Garcia, 2000, p. 17). Infants are naturally attracted to motion and their visual development is rapid. Muscular development as well as a child’s ability to control and be purposeful with movement also evolves much faster than the vocal cords, leading to a logical conclusion that sign language, which incorporates vision and muscular movement, is a great communication tool for infants before they can speak.

According to Snow and McGaha (2003), infants typically utter their first word at approximately 12 months of age and speak in two-word utterances at approximately 18 months of age, but it is not until approximately 24 months of age that infants can speak in simple sentences and phrases. For some children, it takes up to three years for them to master the art of synchronizing their vocal cords, lips, tongue, and breathing in order to correctly utter the words they want to say. Instead of losing valuable months simply waiting while babies practice putting sounds together to form words verbally, sign language provides a nonverbal means of communication for children beginning as young as eight months of age (Acredolo & Goodwyn, 2002).

The goal is not to teach youngsters a second language, but to teach them a way of expressing their needs, wants, thoughts, and feelings until they have words. The objective of teaching sign language to hearing infants and toddlers is to “provide a bridge that helps the transition from no language to spoken language” (Acredolo & Goodwyn, 2002, p. 14). Caregivers should naturally incorporate the signs into the children’s daily routines. Adults can say the word aloud as they perform the sign in order for the children to learn the sign and associate it with the verbal word (NAEYC, 2003). Children become empowered communicators when they are able to

express needs and wants long before they are developmentally able to articulate words (Garcia, 2000). The reciprocal communication achieved through signing with infants and toddlers opens the world to the baby and opens the baby's world to the caregiver. Acredolo and Goodwyn (2002) believe that all that is needed to teach sign language to young children is "showing them how to do it, a bit of patience, and lots of smiles" (p. 21). Through signs, children can communicate their needs and teachers can understand those needs without having to guess the meaning behind tears or frustration (Riley, Merrill & O'Brien, 2000).

The use of sign language allows caregivers to see how capable babies are. Babies are born with about 80 billion neurons that are in need of being connected with each other (Snow & McGaha, 2003). As synaptic relationships are established, babies are not simply satisfied with noticing their environment and feelings, but they want to tell someone about them. Now, through signing, they can.

When infants use signs, they are beginning to understand the complexity of language and cognition. They already understand the essence of symbols: a sign can stand for another thing (Acredolo & Goodwyn, 2002). When infants use a gesture, they have already done much of the underlying work of learning a word; "they obviously understand the concept that the gesture stands for, they obviously recognize the string of sounds (when voiced by parent) as an equivalent to their gesture, and they obviously have figured out the symbolic function as it applies to language" (Acredolo, Goodwyn & Brown, 2000, p. 101). Namy and Waxman (1998) also examined infants' abilities to use symbols early in language development. "Infants' initial symbolic capacities are flexible enough to accommodate both words and gestures and they learn both symbolic forms quite readily" (p. 301), but following the onset of combinatorial speech, these symbolic forms will diverge.

The use of sign language also helps infants to speak sooner. While a popular myth is that teaching babies to use silent signs will hinder language development, Acredolo, Goodwyn and Brown (2002) found the opposite

to be true. Not only did symbolic gesturing foster the development of language comprehension skills, it also stimulated expressive language development (p. 94, 96). The more an infant initiates communication, the more verbal language he/she will hear in response from the caregiver. Also, signs give the infant the ability to present a topic for a caregiver's verbal response. This shared focus is more likely to result in the additional information making a lasting impression on the child. Finally, encouraging gestures teaches infants how useful language is, and in turn, motivates them to explore language further.

Bates, Benigni, Bretherton, Camaioni, and Volterra (1979) studied the relationship between language and gestural development. More specifically, they questioned whether language replaces gestural communication, or whether the two types of communication correlate throughout the nine-to-13-month range. They found that "the correlations between the two domains actually increase over time" (p. 112). Since the gestures are productions, they also studied whether gestures correlated with language production as opposed to language comprehension. Their data showed that expressive language and level of comprehension correlated at about the same level.

Usually babies' first words are the words they can sign. As they become more able to verbally communicate, the gestures disappear from the child's communication repertoire (NAEYC, 2003). Signs are a temporary bridge to be used for communicating with adults, and the transition to spoken words and phasing out of sign usage occurs readily when a child's vocal structures are mature enough to be used. The more a child is exposed to signed and verbal words, the quicker he or she will learn to talk. When adults say the word as they sign it, children hear many words and sentences directly related to the sign. The circuitry in the brain becomes more refined every time a baby or toddler successfully uses a sign to communicate. The circuitry is then one step closer to fully developed verbal language (Acredolo & Goodwyn, 2002).

Teaching sign language to infants and toddlers also has long-term benefits for the child's development. In

a study done by the National Institutes of Health, the results of the WISC-II, a traditional IQ test, were compared between two groups of eight-year-olds. One group was composed of former baby signers and the other group had no such background experience. The baby signers scored an average of 12 points higher than their non-signing counterparts. Learning signs at an early age, children can then understand things more fully, ask better questions, and label things well (Acredolo & Goodwyn, 2002).

Socially speaking, knowing how to express emotions and thoughts from a young age encourages young children to express their feelings in a constructive manner as they grow. Emotionally, effective communication allows a young child to feel as though he or she is an important part of the household as he or she can participate in conversations and share feelings. Being heard and understood enhances a child's pride and self-esteem. Babies are proud of themselves when they can successfully communicate with their caregivers (Acredolo & Goodwyn, 2002). The use of sign language also promotes a strong bond between caregiver and baby. Reducing the stress of not being able to communicate allows for intimacy as caregivers and babies can better understand each other (Garcia, 2000).

Reciprocal socialization, that is, socialization that is bi-directional, is discussed in Santrock (2002). It is suggested that Vygotsky's idea of scaffolding be used during conversations with infants and toddlers to teach early communication skills. Scaffolding is defined as "parental behavior that supports children's efforts, allowing them to be more skillful than they would be if they relied only on their own abilities" (p. 192). Parents should time their interactions to teach young ones the importance of turn-taking. This can be accomplished through games such as "peek-a-boo", "pat-a-cake", and "so big". In doing so, a reciprocal framework is established and children are exposed to conversational skills during this direct interaction.

Zeece and Wolda (1995) recommend introducing this new form of communication during group time in

childcare settings. Sign language helps in the management of large groups of children, providing them with an easy way to participate in group activities, and focusing their attention on the various activities. Sign is also effective in childcare centers for transitioning between activities or for indicating the pace or nature of an activity. Signs such as “all done” help children to visualize and internalize that an activity is coming to an end. Benefits that come from signing in childcare include reducing noise levels, minimizing stress and frustration, and reducing problems with biting (Garcia, 2003). When children realize someone understands them and responds to them, they become more active participants in their environment (Riley, Merrill & O’Brien, 2000). Additionally, sign language might possibly aid children in recognizing the socio-cultural contexts of the classroom (Santrock, 2002). As they learn what words are important to the community, they learn how to properly function in the classroom. In other words, sign language might help socialize children to the culture of the community, giving them a greater sense of belonging. Acredolo and Goodwyn (2003, Baby signs for caregivers) report additional benefits, such as baby signs motivate caregivers to watch babies more closely, promote active learning, and provide a focus for parent-staff teamwork.

In conclusion, infants and toddlers may have much to say but not much capacity to find and use the words they want to say. By teaching them sign language, they can non-verbally communicate and become an active part of their environment. Teaching children to use signs should be informal and fun. Parents and childcare teachers continue to be amazed at infants’ and toddlers’ abilities and intelligence as they express themselves through signing. The early addition of the use of sign language to young children’s array of communication abilities allows them to express themselves more clearly, to acquire knowledge of and confidence in a unique skill, to participate more fully in their immediate surroundings, and most of all, to strengthen the relational bond with their caregivers who take the time to provide them with a useful, fun, and easy-to-learn method of communication.

Purpose

This study will look at the benefits of using sign language with hearing infants and toddlers. My preliminary purpose was to investigate whether or not frustration is alleviated as caregivers and infant/toddlers use sign language as a communication tool. However, after a period of observation, I noticed that in the instances in which a caregiver appeared to be frustrated, sign language was either not used at all or was used as a secondary tool for communication. I was then intrigued as to when sign language would be used. The literature review still led me to feel that this topic was worthwhile to pursue, so I decided to refine my purpose. I wanted to obtain a better vision of the comprehensive use of sign language. I set out to discover how, when, and why sign language was being used as a communication tool in infant/toddler group settings. I hoped to find a sound basis of support for using sign language with hearing infants and toddlers in the childcare setting, with the hope of encouraging caregivers to use this communication tool in their developing relationships with children.

Methods

Study participants

The sample for this study consisted of children in a mixed-age infant/toddler classroom in two different childcare centers in the Columbus, Ohio, area. Both centers used sign language as part of their curriculum. One center had 12 children and three caregivers. The other center had six children and two caregivers. All children were under three years of age and were predominantly Caucasian. There was a nearly equal representation of

males and females. All five caregivers were Caucasian females.

Procedure

The researcher sent a written letter to the directors of both childcare centers in order to obtain permission to observe in their facilities. Upon receipt of this permission, the researcher provided a letter for the director to send home to parents in order to obtain parents' written permission for their children to be observed as part of a research study. The letter stated the purpose of the study and its significance to the field of child development. It also informed the director and the parents that the children's communication with caregivers would simply be observed and documented by the researcher.

Data Collection

The researcher divided observation time equally between the two classrooms. Observation occurred in the mornings, one day per week, for a two-hour period, over the 20-week observation period. The researcher was located in an area of the classroom where the researcher would not interfere with the dynamics of the classroom.

The researcher documented sign language communication episodes that occurred among children and caregivers. Communication episodes are defined as interactions between child and caregiver or child and child that begin with one's attempt to communicate with the other followed by the response that occurs. The researcher recorded who participated in the episode and who initiated the communication; that is, if the sign was initiated teacher to child, child to teacher, or child to child. The sign(s) used and the context in which the sign language was used were also recorded. For example, if the child signed "help" to a teacher, the researcher also recorded why the child needed help according to what was occurring in the classroom.

Finally, the researcher described the interaction, if any, that took place between the communication participants immediately following the communication episode. Specifically, the receiving participant's response to the sign language communication was documented. Close observation was made as to whether the response was verbal, non-verbal, or even existed at all, and/or whether communication continued regarding the same message, communication continued but with regard to another message, or if communication ceased.

The collected data was then analyzed to determine the purposes for which sign language was used in communication among young children and their caregivers.

Data Analysis

Data obtained was analyzed qualitatively by initially examining the context of observed communication episodes in the classrooms. It was determined that the communication episodes could be coded into three separate groups: task-oriented, social/emotional, or descriptive/conversational.

Task-oriented signs are those that were used to meet basic needs, to indicate transitions, to provide for safety concerns, or to accomplish a daily routine. In other words, these signs were used to achieve the completion of a task. Examples included teachers letting children know about impending diaper changes, children telling teachers they want more to eat or drink, or teachers telling children to sit down on a chair. (See Appendix A.)

Social/emotional signs are those that were used to express feeling. These signs were used to express personal emotions, to show gratitude, or to ask for assistance when in need. Examples included saying thank you, asking for help, or feeling hurt. (See Appendix B.)

Descriptive/conversational signs are those that served no functional purpose other than to facilitate conversation and encourage interaction. These signs were used to label objects in the classroom, to recognize

sounds heard, or to simply emphasize words spoken. Examples included identifying an animal, pointing out flowers on a child's outfit, and signing words in songs. (See Appendix C.)

Three charts were formulated, one chart for each type of sign observed. Each chart included the sign or signs that were used in communication. Who initiated the communication was indicated. The context of the communication was explained. Finally, the response following the initiated communication was identified.

The three charts combined the data from both childcare centers; however, the data was marked so that it could be differentiated as to which communication episodes occurred in each center.

There were 15 signs that were used for social/emotional purposes. Five were used at one center and 10 were used at the other center. Nineteen signs were categorized as descriptive/conversational. All but one occurred at the same center. There were 69 signs that were used for task-oriented purposes. Thirty-three were used at one center and 36 were used at the other center.

Of the 103 total signs observed, only nine were child initiated. Seven of these signs were from child to teacher, one was child to child, and one was child to researcher!

Because only nine signs were child-initiated, the majority of the signs, 94 in all, were initiated by the teacher. Of the 94 teacher-initiated signs, 90 were directly teacher to child. However, four of the signs were teacher-initiated to assist one child in communicating a sign to another child. The teacher either verbally told the child to sign, verbally told the child to sign while signing herself, or manipulated the child's hands to sign to another child. In all four instances, the teacher was encouraging one child to tell another child to "stop".

Regarding the response, there were only 12 initiated communication episodes that were ignored, disregarded, or unnoticed by the responding party. In 20 instances, the signed initiation was responded to with another sign. The sign either imitated the sign of the initiator or served as an answer to the initiator's

communication. While the remaining 71 of the initiated communication episodes were not responded to with a sign, they were responded to in some way. Responses included extended eye contact, smiles, verbalized words, crying starting or ceasing, movement to obey, grunts, running away, nods, or patting a diaper indicating the initiator's message was conveyed successfully and understood by the responding party.

Discussion

The findings of this study were quite interesting. They clearly showed that sign language was used primarily for task-oriented purposes in these two centers.

The fact that the majority of the signs were teacher-initiated logically relates to the majority of the signs being classified as task-oriented. Throughout the day, teachers' jobs are to provide for the children's basic needs, follow routines, and transition the children through daily activities. It is expected that those are the signs teachers would use most often.

One of the concerns that I had as the researcher was whether the teachers were using sign language at a greater frequency when I was in the classroom, knowing that I was observing the use of sign language. However, the fact that some of the signs were child initiated indicated that sign language is used in the classroom on a regular basis.

I observed only one communication episode that took place between two children. This led me to believe that the use of sign language as tool for communication greatly revolves around the teacher as some sort of participant in the communication. This was also seen in the four instances where the teacher encouraged a child to tell another child to "stop". The teacher's role was still pivotal. A possible reason for this might be that the use of sign is new to young children and by the time they can master it, they are developmentally ready to start verbalizing their words instead because words are more efficient than signs. As the research indicates, the use of

sign language with hearing infants and toddlers is merely a bridge between no language and spoken language (Acredolo & Goodwyn, 2002).

I found it significant that with the exception of one sign, all of the signs in the descriptive/conversational category were communicated at just one center. These teachers signed as many spoken words as they could. Therefore, the children's attention was drawn not only to the teacher's voice, but also to the teacher's movement. I felt that the whole scenario introduced the children to basic conversation skills as they made eye contact with the teacher and were engaged in direct interaction, all of which likely stimulated further brain development and supported the children's language development. Also, because the teachers signed objects, the children learned the signs and could then ask for objects when they could not reach or could not find a particular toy.

The fact that descriptive/conversational sign was basically used only in one center intrigued me. Perhaps the teachers in the other center never thought of using sign for this purpose. While I am certain that the teachers in the second center made a conscious effort to implement sign for descriptive/conversational purposes, I couldn't help but wonder if the number of children in the classroom played a part. The center that signed for descriptive/conversational purposes had only six children enrolled in the classroom, while the center that omitted this type of sign had 12 children enrolled in the classroom. It might be possible that because of the lesser number of children, those teachers were not as busy. While meeting children's needs is a teacher's top priority, it takes less time to do that for six children than for 12. Thus, once the tasks were completed using task-oriented signs (which were the majority in both centers), the teachers with less children to care for then had more time to sit conversationally with the children and label objects in the room.

Before I started analyzing my data, I assumed that each sign would belong to only one category. For example, all of the times "all done" was signed, it would be considered a task-oriented sign, or all of the times

“help” was signed, it would be classified as a social/emotional sign. But after analyzing my data, I learned that the same sign could be put in different categories depending on its usage in conversation. I found it interesting that just as language is context bound, so is sign. To illustrate, a teacher signed and asked a child if she needed help when she was emotionally upset. This would be classified as a social/emotional sign. At another time, a teacher signed “help” to see if a child wanted assistance in moving his chair closer to the table, a task-oriented purpose for signing. The same sign was used in two different contexts.

Twenty percent of the sign-initiated communication was responded to with another sign. Most of the time, a child would imitate the teacher’s sign. Sometimes a child’s sign for “thank you” would start from the cheek instead of from the mouth. A child’s sign for “more” would consist of clapping rather than the tips of his/her fingers coming together. Or a child’s sign for “stop” would entail hitting his/her wrists together instead of hitting one hand perpendicularly into the palm of the other. Just as when children learn to speak by imitating the sounds coming from an adult’s mouth, here, the children are repeating the sign as they slowly refine it to look more like that of the teacher.

On the whole, the fact that approximately 90% of the sign-initiated communication was responded to shows that the use of sign language, mostly for task-oriented purposes, is effective in communicating messages between members of the classroom community.

Conclusion

The findings of this study should influence childcare centers to implement sign language into their infant/toddler curriculum. The study shows that task-oriented signs are used most often, and aid in meeting children’s basic needs as well as help with smooth transitions through routines. Sign language is also used for social/emotional purposes to express feelings quickly and effectively. Finally, signs are used for

descriptive/conversational purposes to engage in conversations and identify and label objects not only with words but also with symbols. The response rate to sign-initiated communication is quite high, indicating successful message conveyance through sign for these three purposes.

There were several limitations that existed in this study. First, all of the observations were completed during the same two hours of the morning. Observations occurred during breakfast, snack, classroom play, and occasional outdoor play. The findings are not inclusive of an entire day's activities or routine. Because children tend to be fresher in the mornings and because activities may differ throughout the course of the day, signs might have been used in different frequencies or for different purposes during lunch, naptime, or afternoon activities. Also, observation was only completed one day per week in each center. More frequent observation would have also given a more comprehensive picture of how and when sign language is used in the infant/toddler classroom.

Secondly, observation took place in only two childcare centers. This study involved five teachers and 18 children. While the two centers did provide two different environments in which sign was used, it would be beneficial to observe the use of sign language in many more centers. Increasing the sample size would help to generalize the results to the infant/toddler childcare population as a whole. It would also provide information as to how different centers are using sign language so that other centers could adopt some of their signs for purposes that are proving to be effective in communicating with young children.

Finally, human memory and personal interpretation by the researcher could be an additional limitation. Using only pencil and paper, I had to quickly document the context in which any sign was taking place. During and after the communication episodes, I had to remember everything that was said, everything that was done, facial expressions, how the sign was performed, how the sign was responded to, and between whom the communication took place. It was at times overwhelming to write it all down in a short period of time. I am

certain there were occasions that I missed something that I would have liked to record that would have helped me to better interpret the appropriate category for a particular sign. I would have liked to see some of the interactions for a second time. Because this study looked at the usage of signs and one sign could fit into different categories depending on its specific context, I would recommend a video camera or multiple observers for future research so that the results could be more accurately interpreted.

After completing this study, there are research ideas that occurred to me as follow-up to this study.

Questions to be answered through further research include:

- 1) How does the use of sign language in the classroom contribute to a child's sense of autonomy and belonging? When children understand task-oriented signs and know what is occurring in their environment, they can assume more of a role in participating as a member of the classroom community. They become aware of transitions, aware of why things are changing, and they feel respected. It seems as though children would be more confident and feel more self-worth when they better understand others as well as have the ability to communicate their ideas and be understood by others.
- 2) How does the use of sign language in the classroom support the relationships with parents? Just as exciting as it is for teachers to share with parents developmental milestones that occurred in the classroom (e.g., taking first steps, saying words), sign language might help to create another bond between teachers and parents. Teachers can engage in more exciting conversation with parents as they share with parents a new sign that a child used or a new purpose for which a child used a sign.
- 3) Do the conclusions of this study regarding sign language correspond with the trends of early

spoken language? This study found that signs are used for task-oriented purposes and are teacher-initiated most of the time. It would be interesting to research whether sign language acquisition and use followed the same pattern of words being task-oriented at first and initiated primarily from teacher to child.

In conclusion, this study has shown that sign language in infant/toddler group care settings is primarily used by teachers for task-oriented purposes, but it is also used for social/emotional and descriptive/conversational purposes as well. My hope is that this research will encourage caregivers in infant/toddler group settings to use sign language as a communication tool for these three purposes, and additional purposes of their choice, in their developing relationships with children.

References:

- Acredolo, L. & Goodwyn, S. (2002). Baby signs for caregivers. Baby signs. Retrieved January 25, 2004, from http://www.babysigns.com/babysigns_child_care_professionals.shtml
- Acredolo, L. & Goodwyn, S. (2002). Baby signs: how to talk with your baby before your baby can talk. Chicago: Contemporary Books.
- Bates, E., Benigni, L., Bretherton, I., Camaioni, L., & Volterra, V. (1979). The emergence of symbols: Cognition and communication in infancy. New York: Academic Press.
- Bates, E., Thal, D., Fenson, L., Whitesell, K., & Oakes, L. (1989). Integrating language and gesture in infancy. Developmental Psychology, 25(6), 1004-1019.
- Berck, J. (2004). Before baby talk, signs and signals. New York Times. Retrieved January 7, 2004, from <http://nytimes.com/2004/01/06/health/06BABY.html>
- Capirci, O., Montanari, S., & Volterra, V. (1998). Gestures, signs, and words in early language development. New Directions for Child Development, 79, 45-60.
- Dixon, S., Feldman, H., & Bates, E. (1992). Encounters with children: Pediatric behavior and development (2nd edition). St. Louis: Mosby-Year Book.
- Garcia, J. (2000). Sign with your baby: How to communicate with infants before they can speak. Seattle: Northlight Communications.
- Garcia, J. (2003). Signing in childcare. Sign with your baby. Retrieved January 25, 2004, from <http://www.sign2me.com/daycare/main.htm>
- Goodwyn, S. & Acredolo, L. (1993). Symbolic gesture versus word: Is there a modality advantage for onset of symbol use? Child Development, 64, 688-701.
- Goodwyn, S. & Acredolo, L. (1998). Encouraging symbolic gestures: A new perspective on the relationship between gesture and speech. New Directions for Child Development, 79, 61-73.
- Goodwyn, S., Acredolo, L., & Brown, C. (2000). Impact of symbolic gesturing on early language development. Journal of Nonverbal Behavior, 24(2), 81-103.
- Harding, C., Kromelow, S., Stilson, S., & Touris, M. (1995). First partnerships: The co-construction of intentional communication. Early Child Development and Care, 111, 19-33.
- Heller, I., Manning, D., Pavur, D., & Wagner, K. (1998). Let's all sign! Enhancing language development in an

- inclusive preschool. Teaching Exceptional Children, 30(50), 3-7
- Honig, A. (2002). Signals that say "I want (or need) it!" Scholastic Early Childhood Today, 17(2), 26-28.
- Honig, A. (2003). Building language with babies. Scholastic Early Childhood Today, 18(2), 24-26.
- Honig, A. (2003). Helping babies feel secure. Scholastic Early Childhood Today, 18(1), 27-29.
- Howes, C., Galinsky, E., & Kontos, S. (1998). Child care caregiver sensitivity and attachment. Social Development, 7(1), 25-36.
- Howes, C., Hamilton, C., & Philipsen, L. (1998). Stability and continuity of child-caregiver and child-peer relationships. Child Development, 69(2), 418-426.
- Kovach, B. & Da Ros, D. (1998). Respectful, individual, responsive caregiving for infants in group settings. The Education Digest, 64(2), 45-49.
- Leavitt, R. (1995). The emotional culture of infant-toddler day care. In J. A. Hatch (Ed.), Qualitative research in early childhood settings (pp. 3-21). Westport, CT: Praeger.
- Namy, L. & Waxman, S. (1998). Words and gestures: Infants' interpretations of different forms of symbolic reference. Child Development, 69(2), 295-308.
- National Association for the Education of Young Children (2003, January). Infants use sign language to communicate at Ohio state school. Retrieved April 24, 2003, from the Newswise Web site: <http://www.newswise.com/articles/1999/1/SIGNLANG.OSU.html>
- Riley, C., Merrill, S., & O'Brien, E. (2000). Using sign language as a tool to communicate. Child Care Information Exchange, 131, 60-63.
- Ritchie, S. & Howes, C. (2003). Program practices, caregiver stability, and child-caregiver relationships. Applied Developmental Psychology, 24, 497-516.
- Santrock, J. (2002). Life Span Development (8th edition). Boston: McGraw Hill.
- Schickedanz, J., Schickedanz, D., Forsyth, P., & Forsyth, G. (2001). Understanding children and adolescents. Boston: Allyn and Bacon.
- Snow, C. W. & McGaha, C. G. (2003). Infant Development (3rd edition). Upper Saddle River: Prentice Hall.
- Zeece, P. & Wolda, M. (1995). Let me see what you say: Let me see what you feel! Teaching Exceptional Children, 27(2), 4-9.

APPENDICES

APPENDIX A

Task-Oriented Signs

Sign Used	Initiated By	Context Used	Response
Center A			
Sit down	Teacher	Teacher tells a child to sit down and then pats the mat next to her.	Child runs over to sit by the teacher.
Milk	Teacher	Teacher asks, "Do you want your milk?"	Child signs milk and teacher gives child a cup of milk.
Diaper	Teacher	Teacher asks, "Can I change your diaper?"	Child raises hands to be picked up.
Clean up	Teacher	Teacher says, "Time for clean up."	One child jumps up with a toy.
Sit down	Teacher	Child stands up while eating. Teacher says, "Sit down."	Child sits.
More	Child	Child claps hands together and whines while looking at a shelf. Teacher says, "I know you want more but more of what?". Teacher hands child a camera from the shelf.	Child smiles and runs off with the camera.
Diaper	Teacher	Teacher says, "Time to do your diaper."	No response from child. Teacher picks up child.
All done	Child	Teacher stops blowing bubbles and puts them away. Child signs all done.	Teacher responds, "Yes, we are all done with the bubbles."
Sit down	Teacher	Teacher says, "Sit down and wait your turn to wash your hands."	Child sits down for 3 seconds until the teacher stops looking at him, then child stands up again.
Stop	Teacher	Teacher says, "Stop throwing food."	Child stops and puts the food in his mouth.
Sit down	Teacher	Teacher says, "Sit down and eat your breakfast."	Teacher helps child turn her body around.
All done	Teacher	After time spent with the music teacher, classroom teacher says, "We're all done with the shakers. Go put them away."	Most children stand up and put the shakers in the bag.
All done	Teacher	Teacher says, "We're all done with the bells" before removing the bells from the children's hands.	Some children put down their bells. Some children willingly release the bells when the teacher takes them from their hands. Other children put up a fight and cling to the bells.
All done	Teacher	When the teacher is finished reading a story to a child, teacher signs all done.	Child takes book and walks away.
Stop	Teacher	Teacher says, "Stop throwing the balls over the fence."	Child stops and runs away. (Uncertain whether child saw the sign or just heard the words.)

Sign Used	Initiated By	Context Used	Response
All done	Teacher	Child sits in teacher's lap while teacher fixes her hair style. Teacher puts child down. Child turns around to face teacher. Teacher says and signs all done.	Child smiles and moves off to play.
Sit down	Teacher	Teacher says, "Sit down to sing the song."	Child sits down.
Sit down	Teacher	Teacher says, "Sit down and sing the song."	Child remains standing throughout the song.
Diaper	Teacher	Teacher non-verbally signs diaper.	Child comes running to the teacher.
Stop	Teacher	Children are practicing their hand motions to the song 'The Wheels on the Bus'. When practice time is over, teacher says, "Time to stop now."	Some children, even those who aren't practicing, sign stop immediately after the teacher does.
All done	Teacher	Child 1 steals a cracker from Child 2. Teacher tells Child 1, "You are all done." Teacher has frustration in her voice.	Child 1 screams in disagreement.
Sit down	Teacher	Music teacher signs sit down so she can begin her lesson.	Children remain standing. Classroom teachers help children to sit their bodies down.
Stop	Teacher	Child 1 puts his arms around Child 2. Teacher asks Child 2, "What do you want to tell {Child 1}?" Teacher helps Child 2's hands to sign stop.	Child 2 starts to cry, thinking that he is being told to stop, that he did something wrong. Children around the room start yelling "stop." Child 1 also says and signs stop.
Potty	Teacher	Teacher tells a child, "Let's go potty."	Child runs to teacher. (Uncertain whether child saw the sign or just heard the words.)
Stop	Teacher	Child 1 pushes Child 2. Teacher tells Child 2 to tell Child 1 to stop. Teacher did not sign.	Child 2 signs stop by hitting wrists together.
Diaper	Teacher	Teacher tells child, "Diaper time."	Child runs away from teacher.
Sit down	Teacher	Teacher says, "Sit down and eat your breakfast."	Child sits down.
Diaper	Teacher	Teacher says, "Let's change your diaper."	Child lifts up her arms and teacher picks her up to take her to the changing table.
All done	Teacher	After time spent with the music teacher, classroom teacher says, "We're all done with the shakers."	Children put their shakers in the bucket.
Sit down	Teacher	Teacher says, "Sit down to hear the story."	Child sits down.
All done	Teacher	Children are crying during story time. Teacher asks, "Are we all done?"	One child said "no."

Sign Used	Initiated By	Context Used	Response
Sit down	Teacher	After signing a song, teacher tells children to sit down.	Children sit down.
Stop	Teacher	Teacher moves one child's body away from another child. Teacher says, "Look at me. You need to stop hitting."	Child stares at teacher until she is done talking and then moves off to play again.
Stop	Teacher	Teacher says, "Do not hit." She uses her hand to prevent the child from hitting. Then she signs stop.	Child cries.
Sit down	Teacher	Teacher says, "Sit down with your snack."	Child drops snack and walks away to play.
Eat	Teacher	Teacher asks, "Do you want to eat?"	Child runs over to the toys.
Center B			
Walk	Teacher	Teacher flips the lights off. Teacher asks, "Who wants to go on a walk?"	Many children sign walk. One child raises her arms to be picked up.
Sit down	Teacher	Child is turning around backward in her chair at the table. Teacher says, "Sit down."	Teacher helps child turn her body around.
Ball	Teacher	Teacher asks, "Should we clean up the balls?"	Child walks over to help put the balls in the tube.
More/all done	Teacher	Child finishes his food at the table. Teacher asks, "Do you want more or are you all done?"	Child dives into teacher's arms.
Stop/Pulling	Teacher	Child pulls another child over. Teacher stands child up and says, "Tell him to stop pulling."	Child just stares blankly at the teacher.
Help	Teacher	Teachers asks, "Can you scoot your chair up to the table or do you need help?"	Child signs help.
Read	Teacher	Teacher asks, "Do you want to read?"	Child signs read. Teacher hands child a book.
More	Teacher	Child keeps standing up and sitting down at the table. Child signs more.	Teacher helps child scoot her chair up to the table and then gives her more food.
Eat	Child	Guinea pig is making noises. Teacher tells child to go ask the guinea pig if he wants to eat.	Child walks over and signs eat to the guinea pig. Teacher gives food to the child to feed him.
Stop	Teacher	Teacher says, "Stop stepping on the book."	Child stops but he probably did not see the sign, just heard the words.
More	Child	At breakfast table, child signs more.	Teacher gives child more cereal.
More	Child	At breakfast table, child signs more.	Teacher gives child more juice.
Read	Teacher	Child walks up to researcher, drops a book in her lap, and signs read.	Researcher reads book to child (because she just couldn't resist!)
Sit down	Teacher	Teacher says, "Sit down in your chair."	Child reaches for chair, but doesn't sit down.

Help/Sit	Teacher	Teacher asks, "Do you need help to sit at the table?"	Teacher takes child's hands to help her sign help and then helps child to sit.
Eat/Later	Teacher	Child grunting at the table. Teacher asks, "Do you want to eat? We will eat later."	Child moves off to play.
All done	Teacher	Teacher asks, "Are you all done eating?"	Child signs all done.
Stop	Teacher	Child 1 hugs Child 2 and falls on top of Child 2. Teacher says to Child 2, "Tell him to stop."	Child 2 was looking away. Teacher takes Child 2's hands and helps him to sign stop.
Clean up	Teacher	Teacher says, "Come back and clean up your dolls."	Child comes back and picks up the dolls.
Change/Diaper	Teacher	Teacher says, "We need to change your diaper."	Child pats her diaper.
All done	Teacher	Teacher asks, "Are you all done with your juice?"	Child hands juice cup to the teacher.
Eat	Teacher	Teacher asks, "Do you want to eat?" Teacher is holding baby food.	Initially no response as child continues to play. A few minutes later, child walks over to teacher, reaches for food, and signs eat.
Help	Teacher	Teacher asks, "Do you need help moving your chair?"	Child signs help.
Water	Teacher	Teacher asks, "Do you want some water?"	Child opens her mouth.
Sit down	Teacher	Teacher says, "You need to sit down in your chair."	Teacher helps child turn her body around to sit down.
More/Music	Teacher	CD that is playing ends. Teacher asks, "Who wants more music?"	No response from any child.
All done	Teacher	Teacher asks, "Are you all done with your pop tart?"	Child throws the pop tart in the trash.

Total Signs Observed at Center A: 36

Total Signs Observed at Center B: 33

Total Task-Oriented Signs Observed: 69

APPENDIX B

Social/Emotional Signs

Sign Used	Initiated By	Context Used	Response
Center A			
Thank You	Teacher	Teacher gives camera to child and says, "Say thank you."	Child takes camera and walks away.
Thank you	Teacher	Teacher asks child to bring a puzzle piece to her. When child does, teacher signs thank you.	Child imitates teacher and signs thank you from his cheek.
Thank you	Teacher	Teacher tells children to wave goodbye after time spent with music teacher.	One child signed thank you.
All gone	Teacher	Child is throwing playground balls over the fence. Teacher asks child what he is doing.	Child looks at the balls on the other side of the fence and signs all gone. Child looks sad.
Thank you	Teacher	Teacher says, "We're all done with music. Can we tell the music teacher thank you?"	Many children sign thank you.
Center B			
Help	Teacher	Child is stuck lying on his back. Teacher asks, "Do you want help?"	No response from child. Teacher sits child up.
Mine	Child	Child 1 has a toy that Child 2 wants. Child 2 continually signs mine.	Child 1 turns his back on Child 2 and clings to the toy.
Scared	Teacher	Teacher says, "Your screaming scared Percy!" [the guinea pig].	Child puts his hand on his mouth.
Loud	Teacher	Child screams. Teacher says, "Oh, that's too loud!"	Child maintains eye contact with the teacher for a few seconds before running off to play.
Hurt	Teacher	Child knocks his head into the wall. Teacher asks, "Did that hurt?"	Child rubs his head.
Help	Teacher	Child is trying to put her shoe on. Teacher asks, "Do you need help?"	Child looks up at teacher briefly and then continues to work on putting her shoe back on.
Scared	Teacher	Teacher says, "You rolled over. Did that scare you?"	Child cries.
Hurt	Teacher	Child crying. Teacher says, "Your body rolled over. Are you hurt?"	Child continues to cry.
Help	Teacher	Child has fallen over and is leaning against the bookshelf, stuck on her back. Teacher asks, "Do you want help?"	Child signs help with her one free hand. Teacher moves the child's body into an upright position.
I love you	Teacher	Teacher tells child to tell mom I love you as she is leaving.	Child signs I love you.

Total Signs Observed at Center A: 5

Total Signs Observed at Center B: 10

Total Social/Emotional Signs Observed: 15

APPENDIX C

Descriptive/Conversational Signs

Sign Used	Initiated By	Context Used	Response
Center A			
All gone	Teacher	Teacher retrieves balls that child threw over the fence. Teacher says, "If they get thrown over again, they are all gone."	Child throws a temper tantrum.
Center B			
Music	Teacher	Child rolls a musical toy on the floor. Teacher says, "You're making music."	Child stops to look and listen to teacher and then continues to roll toy across the floor.
Duck	Teacher	Child is holding a toy duck. Teacher says, "That's a duck."	Child says "quack quack."
Music	Teacher	Child is playing with a drum. Teacher asks, "Do you hear music?"	Child smiles and continues to bang on the drum.
Elephant	Child	Child looks at his toy elephant, signs elephant and makes an elephant animal noise.	Teacher smiles at child and says, "Yes, elephant!"
Red	Teacher	Teacher reads a story to a child about a red plane. She signs red when she reads the word in the text.	Child listens to the story.
Ball	Teacher	Teacher says, "You have the ball."	Child looks down at the ball in her hands, then looks at the teacher. Teacher signs ball again.
Apple	Child	Teacher and child look at a book with an apple in it. Child signs and says apple.	Teacher praises child with "Good job!" and signs apple too.
Music	Teacher	Child is pushing a toy that makes music when it rolls. Another child sitting in the teacher's lap looks up at the teacher. Teacher says, "She's making music."	Child watches the other child push the toy.
Poop	Teacher	Child is crouching down in a squatting position. Teacher asks, "Are you trying to poop?"	Child grunts.
Work	Teacher	Child is crying when mom leaves. Teacher says, "Mommy has to work."	Child continues to cry.
Flowers	Teacher	Two children are sitting on the floor playing. Teacher points to one child's outfit and says, "You have flowers on your shirt and pants."	Child continues to cry.
Help	Teacher	Teachers are singing a song. They sign help when that word is sung.	One child signs the word help along with the teachers when the word is sung.

Sign Used	Initiated By	Context Used	Response
Baby	Teacher	Child is rocking a baby doll. Teacher signs and sings the word baby over and over.	Child smiles and continues eye contact with teacher as the child continues to rock her baby; teacher continues singing and signing the word baby.
Happy	Teacher	Teachers are singing the song 'If You're Happy and You Know It'. They sign happy as they sing.	Children watch teachers sing and perform the motions.
Ball	Teacher	Teacher says, "You have the ball."	Child throws the ball.
Frog	Teacher	Teacher says, "That's a frog. What does the frog say?"	Child blankly stares at teacher.
Dog	Teacher	Teacher says, "You have a dog."	No response. Child doesn't even look up to see the sign.

Total Signs Observed at Center A: 1

Total Signs Observed at Center B: 18

Total Descriptive/Conversational Signs Observed: 19