How Does Gesturing Affect Early Language Acquisition?

Jessica Buzenski

Ohio Dominican University
Abstract

In the early stages of childhood development it is difficult to perceive the intelligence of children, this is due in part to their lack of verbal communication skills. Without an appropriate means to convey their thoughts, children’s complex nature of development can be greatly underestimated. Children comprehend language and communicate nonverbally long before they can express themselves verbally. One avenue for pre-verbal communication is introducing signs or gestures to children during this stage of development. The current study focuses on the possible benefits of incorporating signing in early language development using The MacArthur-Bates CDI (Fenson et al., 1992) and parent report methodology. Significant data was found supporting the benefit of such signing programs in early childhood development, especially in vocabulary acquisition.
How does Gesturing Affect Early Language Acquisition?

Early on in development, when children cannot yet communicate through speech, it can be easily assumed by new parents or the general public that there is little activity in their minds. Before children begin to speak there is no obvious way to mark their learning achievements. It seems as though the complex nature of their development is greatly overlooked at this stage. However, when given an appropriate avenue children are able to show their intelligence in a certain way and convey what is really going on in their minds. Research highlights the necessity for children to be given a means through which to communicate that fits their current stage of development (Berk, 2007; Brown, 1973; Capirci, Cattani, Rossini & Volterra, 1998).

The current study focuses on the possible benefits of incorporating signing programs in early language development as an avenue of communication. To assess the benefits of early sign programs, parent reports of children’s vocabulary and background information on the families were collected. Conducting research in this area proved to be a difficult task. Some reasons for this may include the complexity and speed of a child’s development. Growth occurs rapidly and relying on parental report for items like age at first word and phrase is difficult because records of these events are not always kept. Also many of the problems research finds with self-report such as dishonesty, delusion, denial, forgetfulness etc. could all also apply to the process of parental report.

The use of a signed language with infants before their vocal skills develop has become a highly popularized research topic in recent years (e.g., Acredolo & Goodwyn, 1998, 2002; Capirci, Cattani, Rossini & Volterra, 1998; Krentz & Corina, 2008; Santrock, 2004). Studies have shown that there are many advantages to be gained by the pre-verbal
infant and their family when a sign program is introduced during development (e.g., Daniels, 1994; Goodwyn & Acredolo, 1993). Signing has been shown to improve general communication, attention span, visual perception, spatial skills such as organization, as well as many other aspects of cognition and intelligence (Acredolo & Goodwyn, 2002). This type of early communication can also promote the adaptation of physical and social needs within the child’s environment (Daniels, 2003).

**Gesturing vs American Sign Language**

There are many ways in which parents go about teaching their infant to communicate through gestures. American Sign Language (ASL) is the official language of the deaf community (Acredolo & Goodwyn, 2002). While signs used in ASL are often a part of a child’s sign vocabulary it is not always entirely based on the official signs of the language. Certain signs in ASL can be too complicated for baby and family to use and since the purpose of these skills are mainly viewed as a bridge to speech, adjustments are typically made. It is more commonly found that a combination of ASL along with gestures created by the family are implemented (Acredolo & Goodwyn, 2002).

Whether implementing American Sign Language (ASL), or a more baby-friendly version of gesturing, there can be many benefits in infancy that continue to impact the child many years down the road (Daniels, 2004). These benefits may include a larger vocabulary, a better understanding of social relationships, greater awareness of surroundings, and faster language development overall (e.g., Thompson, Cotnoir-Bichelman, McKerchar, Tate & Dancho, 2007).

*Intellectual Development*
Jean Piaget was a psychologist who conducted extensive research in the area of childhood development and intelligence (Ginsburg & Opper, 1969). He was a pioneer in the area of intellectual development and as such the framework he created for his theory had a major impact on the fields of psychology and education (Ginsburg & Opper, 1969). Piaget identified four stages of mental growth in children: the sensorimotor stage, the preoperational stage, the concrete operational stage and the formal operational stage (Piaget, 1926). The current study is mainly concerned with the first two stages, but all are important in understanding the process of intellectual development.

The sensorimotor stage spans from birth to age two years. At this stage learning about physical objects as well as gaining motor control dominate the child’s attention. The motor portion of this stage involves interacting with objects and the sensory aspect deals with the observing the results of those actions (Piaget, 1926). Sign works well at this stage because the use of gesture to communicate fits in with how the child’s brain is functioning. Signing lends to faster and more in-depth learning by catering to how the child processes information in the sensorimotor stage. The learning process at the beginning of this stage consists mainly of observation and evolves into interaction with the immediate environment such as playing with toys and interacting with people (Brown, 1973).

When a sign program is introduced to a child at this stage, the process of language acquisition becomes much more fluid. Rather than waiting until verbal abilities develop, the child can use their existing motor skills to label objects as soon as they are able to conquer the tasks of recognition and permanence (Capirci, Cattani, Rossini & Volterra, 1998). This allows the child to make more connections in the world they are discovering and later may speed the vocabulary building process.
The next stage, the preoperational stage, ranges from age two until age seven years. Now the child is beginning to name certain objects and employ emerging reasoning abilities. In addition, the child is busy forming and adopting verbal skills. At this point in development, experience with a sign program would enable a child to more easily assign an object with a spoken word. Many objects in the child’s environment could already be labeled with a sign or gesture so the next step of assigning a spoken word is less of a jump in the process. There could be a move from the signed name of something to the spoken name of it, which has proven to be a smooth transition (Daniels 1994).

However, at the preoperational stage the child is still unable to think something through without acting the process out. Thoughts are usually not well organized and are often flawed (Santrock, 2004). A child in this stage still has much work to do before completely acquiring language.

After working through language acquisition the child moves through the concrete operational stage from ages seven to twelve. Here the child begins to process more abstract thoughts and ideas like word relationships and numbers. Reasoning becomes more rational and organized (Berk, 2007). The final stage, the formal operational stage, occurs from age twelve to age fifteen and deals with more systematic thought and logical reasoning. Thinking becomes more complex and develops into an abstract reasoning system (Piaget, 1926).

*Neurological Development*

The way the brain develops and functions through infancy determines the typical milestones including facial recognition, attention to sound and eventually speech (Santrock, 2004). Axons in the brain go through a process called myelination in which they become
wrapped in a layer of fat cells, aiding in insulation and transmission of nerve impulses. For the parts of the brain connected to visual abilities, this process is completed in the first six months of a child’s life. For the parts of the brain associated with speech capabilities and the auditory system this process is not complete until after the child’s fourth year (Santrock, 2004). It is not surprising then that language acquisition is a process that lasts as long as it does, considering the brain is continuing to prepare itself for processing and storage of this information.

This information highlights more of the reasoning behind the use of sign before a child has the ability to speak, because children can comprehend language and communicate nonverbally long before they can express themselves verbally (Santrock, 2004). Since the motor control and visual cortex areas of the brain develop sooner than the child’s vocal abilities and auditory cortex, signing is easier for a child early on in their development (Daniels, 2004). They can use their hands and eyes sooner, and more effectively than they can implement speech. Consequently infants are able to process a gesture and respond in like manner well before they can do so with speech (Daniels, 2004).

Research conducted by Pzier, Walters and Meier (2007) gives many examples of children using sign to communicate before they can do so verbally. One instance was when a boy was asking his mother for more grapes. He pointed and signed “more” while looking at his mother. She asked her son if he wanted more grapes and he said “No” as he got up to walk to the kitchen while continuing to perform the sign for “more.” His mother repeated the question and said yes or no? The boy laughed and walked into the kitchen continuing to sign “more.” They boy’s speech in this occurrence contradicted what he actually wanted.
However, with the use of his sign he was able to convey what he actually desired because his sign was more accurate than his speech (Pzier, Walters & Meier, 2007).

Language Development

Krentz and Corina (2008) explored the possibilities of speech specific biases in infants. Long before babies are able to speak or even comprehend speech, they are still attentive to the sounds of communication occurring around them. They begin to recognize voices and sounds, even labeling them and making connections within their environment. Their data indicates that children’s interest lies not strictly in the spoken words they hear, but in the human language and overall communicative abilities. This information is important because it emphasizes the child’s desire to communicate and not just to speak. More significant than the recognition of the sounds of words in their environment is the recognition of the fact that they can express themselves through gesturing before they can produce these sounds (Krentz & Korina, 2008).

Learning a second language has been found to improve vocabulary in the native language as well as improving general intelligence (Daniels, 2003). A second language can broaden a child’s scope of the world while at the same time enrich their intellectual development. It also supports the idea that children can benefit from whatever linguistic information is emphasized during their developmental period (Krentz & Corina, 2008). If there is a heightened focus on language during the time of the child’s language development it will speed up the process of acquisition as well as enhance the end result.

Capirci et al. (1998) determined that while learning a second language has major benefits regardless of what that language is, a signed language does have some unique advantages. The increased visual and spacial skills and awareness, adopted through the
process of learning a signed language, are distinct from those gained from learning a second spoken language (Capirci, Cattani, Rossini & Volterra, 1998). For example, in the process of learning a signed language children develop a better understanding of their bodies and how they work in and impact their environment. Greater attention is paid to their own movement, which enhances their motor control and coordination abilities. They are also more attentive to the actions and movements of others. Later in development, this aids in better social skills due to the greater awareness of the other people in their environment (Acredolo & Goodwyn, 2002). In addition, the research of Capirci et al. (1998) also maintains that signing improves a child’s attention and ability to focus as well as aiding in their visual discrimination. The researchers conducted tests of organization, construction and facial recognition in which signing children scored considerably ahead of non-signing children and were much more advanced than their age-group (Capirci, Cattani, Rossini & Volterra, 1998).

Around the same age a hearing child begins to babble or baby talk, deaf infants of deaf parents are known to babble with their fingers in much the same manner (Santrock, 2004). This seems to imply the presence of a similar mechanism underlying both the early speech and the motor skill sets. When considering this connection in terms of language these speech and motor skills indicate the presence of a fundamental capacity for acquiring language (Santrock, 2004). Senghas, Kita and Ozyurek (2004) observed that there are fundamental properties of language, such as sentence structure, and that do not need to be taught, but have shown to be naturally incorporated as new language develops.

It has been shown that gesturing lends itself to verbal acquisition and can function in much the same way words do at an older age (Acredolo & Goodwyn, 1998). If gestural
symbols are emphasized with children as much as a child’s first words usually are, they can
develop a rather large vocabulary of signs that can later aid in spoken language vocabulary.
Combining elements of sign or speech and sequencing them to convey a more complicated
message marks the transition from a gesture system to an actual language (Berk, 2007).

A major point of criticism is concerned that the transition from sign to spoken word
may not happen easily and that signing could inhibit or delay the production of speech.
However, studies have shown that children can transform gestures into spoken language
without complication and even in a relatively easy manner (Acredolo & Goodwyn, 1993).
More specifically, in the research of Senghas, Kita & Ozyurek (2004), we are shown three
children with significant sign vocabularies and their transition into spoken language. The
children progressed from performing a sign, to adding the spoken word to the sign and
producing them simultaneously, to eventually dropping the sign and using just their words
to communicate.

*Intellectual Benefits*

When considering the physical development of young children, many reasons can be
found as to why ASL can be beneficial to their cognitive development (Acredolo &
Goodwyn, 2002). Signing has been shown to improve general communication, attention
span, visual perception, spatial skills such as organization as well as many other aspects of
cognition and intelligence (Capirci, Cattani, Rossini, & Volterra, 1998). By providing a
means of communication for a child to use before speech develops, the child can be
encouraged to interact with people in their surroundings. Signing teaches children to be
more attentive to what is happening in their environment. Signing stimulates multiple
pathways in the brain by involving the cognitive process, motor skills, visual ability and
memory. Also, this emphasis on early communication promotes the adaptation of physical and social needs within the child’s environment (Pizer, G., Walters, K., & Meier, R. 2007).

**Social Communicative Benefits**

Introducing sign to infants who cannot otherwise convey their wants and needs, creates a new avenue of communication. The children now have a functional way to express themselves so that they can be helped or simply heard. As a result, a child no longer needs to cry or yell to receive attention or assistance. In this way, typical frustration of this age, often labled the terrible two’s, primarily caused by a desire to communicate yet inability to speak, is greatly decreased (Acredolo & Goodwyn, 2002).

The life of the family can be dramatically changed, allowing the infant’s needs to be met more effectively. Especially with new parents, there is a greater opportunity to recognize how intelligent their child really is without depending on the typical milestones of first words. Instead of waiting for about two years when the child is beginning to talk, signing enables parents to know what their child is thinking about and have a greater appreciation of them experiencing their new world (Acredolo & Goodwyn, 2002).

Just as signing with a preverbal child can have many benefits for their cognitive development, continuing or even beginning to use those signs throughout early childhood can be just as profitable (Acredolo & Goodwyn, 2002). Employing multiple modes of learning can profit young learners by giving them additional cognitive paths and increasing their capacity for knowledge. Words that are presented visually, kinesthetically and orally present multiple opportunities to process and store the information being studied (Daniels, 1994). Whether in reference to the initial acquisition of language or that of gaining...
knowledge in later stages, it remains true that learning mechanisms stimulating multiple pathways have a greater impact on development (Bates, Bretherton & Snyder, 1988).

*Emotional Benefits*

As previously described in detail, there are many potential benefits of introducing sign to an infant as an early means of communication. However, one aspect of profit not explored in its entirety is the emotional benefit for the child as well as the entire family (Acredolo & Goodwyn, 2002). As discussed earlier in reference to social benefits of sign, frustration may manifest due to lack of communication skill. In the absence of a sign program this desire to communicate could not be satisfied until the child’s development allows for speech production.

Furthermore, through the signing process infants are affirmed in knowing that their wants and needs are important and will be attended to. They begin to appreciate the importance of communication and the joy of learning. The process of implementing sign and using it to communicate with a pre-verbal infant can also be a very positive experience for the whole family. It provides an opportunity for everyone to work together towards a common goal and results in a positive and rewarding experience for all (Acredolo & Goodwyn, 2002).

*Measuring Intelligence*

Various tests measuring different facets of intelligence have been administered and provide statistical support for the benefits due to sign language within specific studies (e.g., Daniels, 1994). One test used is the Peabody Picture Vocabulary Test (Dunn & Dunn, 1997), which measures receptive vocabulary for an individual as well as estimating verbal or scholastic ability. Other tests are the Raven PM 47 test which is used to measure visual-
spatial skills and Corsi’s block-tapping test that measures spatial memory (Capirci, Cattani, Rossini & Volterra, 1998). The Mental Development Inventory (MDI) of the Bayley Scales of Infant Development has been used to measure verbal development (Acredolo & Goodwyn, 1988). The Marie M. Clay Reading Recovery Observation Study (RROS) is used to test the emergent reading level of students after completing implemented programs (Daniels, 2004).

Another method of measuring an infant’s intelligence is to observe the stimulation levels while teaching; examples of this could be measuring brain waves and pulse rates. While these are not traditional means of measuring intelligence it does help to show attention abilities and assumed levels of learning. These have been used in multiple research studies and have overall resulted in proving the benefits of sign among infants and children during and after sign education (e.g., Horne, Lowe & Harris, 2007). The MacArthur-Bates Communicative Developmental Inventories are yet another testing method commonly used in research (Fenson, Dale, Reznick, Thal, Bates, Hartung, Pethick, & Reilly, 1992). This form is a parent report measure of infants’ and toddlers’ word comprehension, typical responses, natural gesturing and vocabulary.

Summary

Beginning with Piaget’s theory of childhood intelligence and moving on to the numerous research experiments that follow, the driving motivation seems to be the desire to explore the complex mind of a child. All the theories and studies conducted have provided extensive information on child development and the benefit signing can have in this process. However with all that has been learned there is still much to be examined and discovered.

This current study addresses the possible benefit of signing programs on early
language development using a parent report methodology. By comparing infants and young children with sign experience to those without any sign experience we have been able to observe differences between their language and communication skills. This not only adds support to the many hypotheses of signing benefits but also provides further understanding of childhood development, especially in the area of language.

Methods

Participants

Parents of children ages 6 months to 3 years were invited to report on their child’s language development. They were asked to fill out a consent form (see Appendix A), a background questionnaire (see appendix B) as well as the MacArthur-Bates Communicative Development Inventories (see Appendix C). Although over 200 consent forms and testing packets were distributed at local preschools/day care centers, only seventeen completed packets were returned. The data was evaluated using different methods in order to consider the many factors that affect language development as well as the effect of signing programs on children. It has been very interesting to see what ways differences in development are shown and to what extent children, whether they infants or toddlers, male or female etc. are impacted by these differences.

Demographic data for the 17 children whose parents returned a packet are presented in Table 1. The seventeen completed packets provided the data pool for this study, which included eleven boys (age $M= 25$ months, range: 10, 37) and six girls (age $M= 17$ months, range: 10, 37). All of the parents had received a high school education and most continued their education through college. The group was predominately Caucasian, and included one African American and one Hispanic participant among the population.
Six boys and three girls had some experience with sign and gesturing and five boys and three girls did not have this experience. Among the signers, four learned sign through their daycare programs and then continued at home. The other three signers were taught sign predominately in their homes by parents with previous sign experience.

Table 1. Demographic Data of Participants

<table>
<thead>
<tr>
<th>Group</th>
<th>Female</th>
<th>Male</th>
<th>Age</th>
<th>Mom</th>
<th>Dad</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sign</td>
<td>3</td>
<td>6</td>
<td>2;3</td>
<td>16</td>
<td>15</td>
<td>3</td>
<td>6</td>
<td>0</td>
<td>5</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>No Sign</td>
<td>3</td>
<td>5</td>
<td>1;5</td>
<td>16</td>
<td>16</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 1 displays demographic measures for children in the sign and no sign groups. There was a basically even distribution of boys and girls in each group. The average age of the group of signers was almost a year older that that of the non-signers. However, the vocabulary inventories were specified and created for the selected age groups and therefore accounted for the differences between groups. The level of parental education was very similar for both groups with almost all parents graduating from college and a few with an educational level beyond a Bachelor’s degree. The group of signers was more likely to have only one or two siblings while the non-signers were more likely to be a part of a bigger family. The signers were also more likely to be the first or second born compared to the non-signers who were spread out more evenly across birth order.

**Materials**

A parent consent form and two questionnaires were given to parents willing to participate (see Appendix A, B & C). The first asked parents to report on topics such as sign
experience and their child’s language milestones (e.g., age at which they produced first word). The second is the *MacArthur-Bates Communicative Development Inventory* (Fenson et. al, 1992), which is a parent report measure of infants’ and toddlers’ word comprehension, typical responses, natural gesturing and vocabulary. An issue with parent report form is that parents are not always willing to provide information about their children whether or not it is given anonymously. Also, while the questionnaire only consisted of one page the MacArthur-Bates form for children 6 months old to 18 months old as well as the form for children age 19 months old to 30 months old are somewhat lengthy. Parents may not have found time to complete the information packet or could have viewed it as too much of a hassle. Whatever the reasons may be, there were many less forms returned than expected.

*Procedure*

The process of recruiting parents began by distributing letters at pre-schools asking parents if they were interested in participating in the study. If they were, they were asked to sign a consent form (see Appendix A) and pick up the survey at the pre-school to fill it out. Additionally, they were asked to invite other parents they know who might be interested in participating. There was also a questionnaire about early language development that was used to determine to what extent a baby sign or similar program is used if any. The parents were then asked to fill out the MacArthur-Bates parent report, language development inventory. The forms and materials were collected separately at the pre-school.

There were also other families involved in the study who were not connected to a daycare facility. These participants were recruited through word of mouth and received the
materials separately. The same procedure was followed and the forms were returned separately from the identified consent forms. Each participant, whether connected to a day care or not, was given a packet with corresponding numbers to ensure correct information was kept together while the participant remained anonymous.

Scoring and Analysis

The questionnaires were reviewed and data recorded for group comparisons. Parts of the questionnaire were used for background information on the control and experimental groups such as gender of child and parents’ occupation etc. The MacArthur-Bates CDI was scored according to standard scoring procedure (Fenson, Dale, Reznick, Thal, Bates, Hartung, Pethick & Reilly, 1992). The main data portion used from the MacArthur-Bates test was the productive vocabulary inventory section.

Results and Discussion

First Words and Phrases

The average ages at which children produced first words and phrases are presented in Figure 1. There was not a significant difference with respect to when the first word was produced, $t (15) = .37, p > .05$. Children with early sign experience tended to produce their first phrases earlier than those without early sign, although this difference was not significant, $t (11) = 1.96, p < .10$. Although these tests were not proven statistically significant, the tendency of the signing group to speak their first word as well as construct their first phrase earlier than those who had no experience with sign is in the predicted direction.
Figure 1. Average age at which first words and phrases were produced as a function of sign experience.

Another interesting occurrence is the difference in time it took from when the first word was spoken to when the first phrase was put together. The signers on average made this transition two months earlier than the non-signers. The common misconception is that teaching a child sign language or another form of gesturing could possibly serve as a crutch and inhibit word production. This helps to show that signing actually lends to vocabulary production and in fact could increase the speed at which language is acquired.

Vocabulary Development

The three different age-appropriate forms of the Mac-Arthur Bates Communication Development Inventory given to the participants were analyzed according to standard scoring procedure (Fenson et al., 1992). The resulting scores were translated into percentile rankings in order to compare scores across the age groups. The average percentile scores are presented in Figure 2. There was nearly a 30-point difference
between the average scores of the singers and those of the non-signers, which was significantly different, \( t(15) = 2.48, p < .05 \). It is important to note that percentile scores were used for this analysis. The participants in the sign group were also 10 months older, but age does not explain the advantage for the sign group because percentile scores control for age. To be sure age was not a factor, data were reanalyzed using a one-way analysis of covariance with age entered as the covariate. The difference between the sign and no-sign group remained significant, \( F(1, 14) = 6.71, p < .05 \).

![Bar chart showing percentile score for productive vocabulary](chart.png)

**Figure 2.** Mean percentile score on MacArthur Bates CDI for productive vocabulary

**Expressive Vocabulary**

Because early sign has been hypothesized to foster early social interaction, vocabulary reports were assessed for words and phrases typical in such interactions (e.g., love, promise, need) rather than referential words used to name things. This subset of scores from overall vocabulary production is shown in Figure 3. The expressive vocabulary scores of the signing group were significantly higher than the expressive
vocabulary scores of the non-signing group, $t (15) = 2.17, p < .05$. While it is possible that sign and gesture aid referential vocabulary acquisition (eg., object naming) as well as children’s ability to express themselves and the social aspects of their world, these raw data do not allow a firm test because they are not age corrected. Recall that the participants in the sign group were 10 months older than the no sign group. A re-analysis of the data using a one-way analysis of covariance indicated that the difference between sign and no-sign groups was not significant, $F (1, 14) = .39, p < .05$.

![Expressive vocab diagram]

*Figure 3. Mean raw score on MacArthur Bates CDI for expressive vocabulary*

*Words and Gestures Sub-scores*

Another subset of scores was taken for participants from ages six to eighteen months old and is shown in Table 2. The table includes combined scores in each section for all the signers and non-signers respectively. These numbers are raw scores from the Words and Gestures CDI created for this specific age group. These children all had the same version of parent report forms, The MacArthur-Bates CDI: Words and Gestures (Fenson et al., 1992). This subset allowed for further analysis of the information provided
for the two girls and one boy who were signers (age M= 13.3 months, range: 12, 15) and the three girls and three boys who were not signers (age M= 12.8 months, range: 12, 17) within the particular age group.

*Table 2.* MacArthur-Bates Language sub-scores for 6-18 month olds as a function of early sign experience.

<table>
<thead>
<tr>
<th>Group</th>
<th>Phrases Understood</th>
<th>Words Understood</th>
<th>Words Produced</th>
<th>Total Gestures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sign</td>
<td>19</td>
<td>133</td>
<td>43</td>
<td>34</td>
</tr>
<tr>
<td>No Sign</td>
<td>8.5</td>
<td>68</td>
<td>9.5</td>
<td>21.5</td>
</tr>
</tbody>
</table>

It has already been determined that demographic differences have not played a significant role scoring differences among participants. The average age for this subset was close to 13 months for both the sign and non-sign groups. In each category the sign group scored well ahead of the non-sign group. It can be assumed that the differences in scores between the groups can be credited to the use of sign. The signers’ overall comprehension is near double that of the non-signing group. This comprehension is further demonstrated by the amount of words the signers are producing compared to the non-signers.
Developmental Correlations

Data for demographic predictors and their correlation with sign in the areas of age at first word, phrase and overall vocabulary score is shown in Table 3. The analysis showed a significant positive correlation at the $p < .01$ level between Mother’s level of education and the overall vocabulary score for the signing group. This could mean that as a function of Mother’s education children could be more likely to sign and therefore tend to have a higher vocabulary score. It may also mean that Mother’s with a higher education level have a different way of teaching their child through other means of instruction than mothers with less education.
Table 3. Correlation coefficients between demographic measures and children’s language development.

<table>
<thead>
<tr>
<th>Group</th>
<th>Demographic Predictors</th>
<th>Age At First Word</th>
<th>Age At First Phrase</th>
<th>Vocab Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sign</td>
<td>Age</td>
<td>.15</td>
<td>-.57</td>
<td>-.45</td>
</tr>
<tr>
<td></td>
<td>Birth Order</td>
<td>-.31</td>
<td>-.08</td>
<td>.46</td>
</tr>
<tr>
<td></td>
<td># of Sibs</td>
<td>-.32</td>
<td>-.43</td>
<td>.30</td>
</tr>
<tr>
<td></td>
<td>Mom Educ</td>
<td>-.25</td>
<td>-.10</td>
<td>.79*</td>
</tr>
<tr>
<td></td>
<td>Dad Educ</td>
<td>.26</td>
<td>-.52</td>
<td>.64</td>
</tr>
<tr>
<td>No Sign</td>
<td>Age</td>
<td>.84**</td>
<td>.68</td>
<td>-.04</td>
</tr>
<tr>
<td></td>
<td>Birth Order</td>
<td>.29</td>
<td>.26</td>
<td>.22</td>
</tr>
<tr>
<td></td>
<td># of Sibs</td>
<td>.18</td>
<td>-.04</td>
<td>.28</td>
</tr>
<tr>
<td></td>
<td>Mom Educ</td>
<td>.30</td>
<td>.81</td>
<td>-.28</td>
</tr>
<tr>
<td></td>
<td>Dad Educ</td>
<td>.63</td>
<td>.56</td>
<td>.01</td>
</tr>
</tbody>
</table>

* p < .01. ** p < .001.

Conclusion

In future studies it would be helpful include more participants. This could provide stronger support for the results and would allow the information gathered to be more generalized to the population. However, even with the small number of subjects in this study we can see some of the same trends apparent in other research concerning the benefit of implementing sign programs with pre-verbal children. The significant data in
the areas of vocabulary production as well as expressive vocabulary highlights specific areas in which signing participants benefited from their knowledge of gesturing and sign. The signers often scored higher than their non-signing counterparts as well as scoring ahead of the norm for their age groups. There was also a faster transition from when a child familiar with sign spoke their first word to when they constructed their first phrase. It seems that the connections made through the introduction of sign at an early age allow for faster spoken language acquisition as well as greater depth of comprehension and subsequent vocabulary production.
References


Appendix A

Consent Form

Dear Parents:

My name is Jessica Buzenski and I am a senior psychology major at Ohio Dominican University. I am conducting a research project under the supervision of Dr. John Marazita entitled, *The Role Of Gesture In Early Language Acquisition*. I want to explore young children’s use of nonverbal communication (e.g., spontaneous gesture and/or programs such as Baby Sign) and the potential impact this has on spoken language acquisition.

I am inviting parents of children ages 6 months to 3 years to participate in this project by completing two questionnaires. The first will ask you to report on topics such as sign experience and your child’s language milestones (e.g., first word). The second is the *MacArthur-Bates Communicative Development Inventory*, which is a parent report measure of infants’ and toddlers’ word comprehension, typical responses, natural gesturing and vocabulary.

If you are willing to participate, please sign below and return the bottom portion to the envelope we left with your child’s teacher. Next, please pick up a research packet and return the completed surveys to your child’s teacher at your earliest convenience. If you know of other parents who would be interested in participating, I would greatly appreciate it if you would give them a packet and return the completed forms along with yours.

Participation in the project is completely voluntary. Whether or not you participate will in no way impact your child’s placement in the preschool/daycare. Furthermore, all responses are anonymous and confidential – none of the surveys ask for identifying information and only group results will be reported. This project has been approved by the Institutional Review Board at Ohio Dominican University. Following the completion of the study, I will prepare a general report of findings and send it to you through the preschool.

If you have any questions at all please do not hesitate to contact me (614-746-3073, buzenski@ohiodominican.edu) or my advisor, Dr. Marazita (251-4687, marazitj@ohiodominican.edu). Thank you for your time and consideration.

Sincerely,

Jessica M. Buzenski

Please give your consent by signing below and returning the form to your child’s school. Retain the top half for your records.

I agree to fill out the questionnaire and the *MacArthur-Bates Communicative Development Inventory*, providing information about my child’s language. I understand that all responses are anonymous and that the data will be used to explore the role of gesture/signing in early language and communication.

<table>
<thead>
<tr>
<th>Parent’s Signature</th>
<th>Phone #</th>
<th>Today’s Date</th>
</tr>
</thead>
</table>

Name of Child’s Preschool/daycare
Appendix B

Early Communication Questionnaire

1. What is your child’s birth date? ________________

2. Have you used any of the following baby sign programs?
   _____ Baby Signs (include ref)
   _____ Baby Fingers
   _____ Sign With Your Baby
   _____ Baby Sign Language Basics
   _____ My First Baby Signs
   Other ________________________________

3. If you used a baby sign program, please answer the following.
   a. Did you implement the instructions exactly as you understood them? ______
   b. For how many months did you use the program? ________________
   c. Would you say the program was successful? ______
   d. What other thoughts/reactions do you have about the program? ________________

4. Are there any other languages spoken in the home? ________________
   c. How many hours per week? ______  d. Since what age? ______

5. How many months old was your child when they produced their first word? ______

6. What was the first word? ________________

7. How many months old was your child when they produced their first phrase/sentence? ______

8. What was the first phrase or sentence? ________________

9. How many children are in your family? ______ birth order of this child? ______

10. Please circle the highest grade completed. Use 12 for high school graduate, 16 for college graduate, and 17 for advanced degree.
    Mom: 6 7 8 9 10 11 12 13 14 15 16 17
    Dad: 6 7 8 9 10 11 12 13 14 15 16 17

11. What are the parents’ occupations? ________________________________

12. What are the parents’ ethnic background (e.g., Asian, Black, Hispanic, White, or applicable category)? ________________________________
Appendix C

MacArthur-Bates Communicative Development Inventory Sample Form
### Part I: Words Children Use

**A. Vocabulary Checklist**

Children understand many more words than they say. We are particularly interested in the words your child SAYS. Please go through the list and mark the words you have heard your child use. If your child uses a different pronunciation of a word (for example, "raffe" instead of "giraffe" or "sketti" for "spaghetti"), mark the word anyway. Remember that this is a "catalogue" of all the words that are used by many different children. Don't worry if your child knows only a few of these right now.

#### 1. Sound Effects and Animal Sounds (12)

<table>
<thead>
<tr>
<th>baa baa</th>
<th>grrr</th>
<th>ouch</th>
<th>vroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>choo choo</td>
<td>meow</td>
<td>quack quack</td>
<td>woof woof</td>
</tr>
<tr>
<td>cockadoodledoo</td>
<td>moo</td>
<td>uh oh</td>
<td>yum yum</td>
</tr>
</tbody>
</table>

#### 2. Animals (Real or Toy) (43)

<table>
<thead>
<tr>
<th>alligator</th>
<th>cow</th>
<th>horse</th>
<th>puppy</th>
</tr>
</thead>
<tbody>
<tr>
<td>animal</td>
<td>deer</td>
<td>kitty</td>
<td>rooster</td>
</tr>
<tr>
<td>ant</td>
<td>dog</td>
<td>lamb</td>
<td>sheep</td>
</tr>
<tr>
<td>bear</td>
<td>donkey</td>
<td>lion</td>
<td>squirrel</td>
</tr>
<tr>
<td>bee</td>
<td>duck</td>
<td>monkey</td>
<td>teddybear</td>
</tr>
<tr>
<td>bird</td>
<td>elephant</td>
<td>moose</td>
<td>tiger</td>
</tr>
<tr>
<td>bug</td>
<td>fish</td>
<td>mouse</td>
<td>turkey</td>
</tr>
<tr>
<td>bunny</td>
<td>frog</td>
<td>owl</td>
<td>turtle</td>
</tr>
<tr>
<td>butterfly</td>
<td>giraffe</td>
<td>penguin</td>
<td>wolf</td>
</tr>
<tr>
<td>cat</td>
<td>goose</td>
<td>pig</td>
<td>zebra</td>
</tr>
<tr>
<td>chicken</td>
<td>hen</td>
<td>pony</td>
<td></td>
</tr>
</tbody>
</table>

#### 3. Vehicles (Real or Toy) (14)

<table>
<thead>
<tr>
<th>airplane</th>
<th>car</th>
<th>sled</th>
<th>tricycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>bicycle</td>
<td>firetruck</td>
<td>stroller</td>
<td>truck</td>
</tr>
<tr>
<td>boat</td>
<td>helicopter</td>
<td>tractor</td>
<td></td>
</tr>
<tr>
<td>bus</td>
<td>motorcycle</td>
<td>train</td>
<td></td>
</tr>
</tbody>
</table>

#### 4. Toys (18)

<table>
<thead>
<tr>
<th>ball</th>
<th>bubbles</th>
<th>glue</th>
<th>puzzle</th>
</tr>
</thead>
<tbody>
<tr>
<td>balloon</td>
<td>chalk</td>
<td>pen</td>
<td>story</td>
</tr>
<tr>
<td>bat</td>
<td>crayon</td>
<td>pencil</td>
<td>toy</td>
</tr>
<tr>
<td>block</td>
<td>doll</td>
<td>play dough</td>
<td></td>
</tr>
<tr>
<td>book</td>
<td>game</td>
<td>present</td>
<td></td>
</tr>
</tbody>
</table>
### 5. Food and Drink (68)

- apple
- applesauce
- banana
- beans
- bread
- butter
- cake
- candy
- carrots
- cereal
- cheerios
- cheese
- chicken
- chocolate
- coffee
- coke
- cookie
- lollipop
- meat
- melon
- milk
- muffin
- nuts
- orange
- pancake
- peas
- pickie
- pizza
- popcorn
- potato
- potato chip
- pretzel
- pudding
- pumpkin
- raisin
- salt
- sandwich
- sauce
- soda/pop
- soup
- spaghetti
- strawberry
- toast
- vanille
- vitamins
- water
- yogurt

### 6. Clothing (28)

- beads
- bell
- bib
- boots
- button
- coat
- diaper
- dress
- gloves
- hat
- jacket
- jeans
- mittens
- necklace
- pajamas
- pants
- scarf
- shirt
- shoe
- shorts
- slipper
- sneakers
- socks
- sweater
- tights
- underpants
- zipper

### 7. Body Parts (27)

- ankle
- arm
- belly button
- buttocks/bottom
- cheek
- chin
- ear
- eye
- finger
- hair
- hand
- knee
- leg
- lips
- mouth
- nose
- penis
- shoulder
- toe
- tongue
- tummy
- vagina

*or word used in your family*
8. **Small Household Items (50)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Item</th>
<th>Item</th>
<th>Item</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>basket</td>
<td>dish</td>
<td>mop</td>
<td>spoon</td>
<td></td>
</tr>
<tr>
<td>blanket</td>
<td>fork</td>
<td>nail</td>
<td>tape</td>
<td></td>
</tr>
<tr>
<td>bottle</td>
<td>garbage</td>
<td>napkin</td>
<td>telephone</td>
<td></td>
</tr>
<tr>
<td>box</td>
<td>glass</td>
<td>paper</td>
<td>tissue/kleenex</td>
<td></td>
</tr>
<tr>
<td>bowl</td>
<td>glasses</td>
<td>penny</td>
<td>toothbrush</td>
<td></td>
</tr>
<tr>
<td>broom</td>
<td>hammer</td>
<td>picture</td>
<td>towel</td>
<td></td>
</tr>
<tr>
<td>brush</td>
<td>jar</td>
<td>pillow</td>
<td>trash</td>
<td></td>
</tr>
<tr>
<td>bucket</td>
<td>keys</td>
<td>plant</td>
<td>tray</td>
<td></td>
</tr>
<tr>
<td>camera</td>
<td>knife</td>
<td>plate</td>
<td>vacuum</td>
<td></td>
</tr>
<tr>
<td>can</td>
<td>lamp</td>
<td>purse</td>
<td>walker</td>
<td></td>
</tr>
<tr>
<td>clock</td>
<td>light</td>
<td>radio</td>
<td>watch</td>
<td></td>
</tr>
<tr>
<td>comb</td>
<td>medicine</td>
<td>scissors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cup</td>
<td>money</td>
<td>soap</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. **Furniture and Rooms (33)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Item</th>
<th>Item</th>
<th>Item</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>basement</td>
<td>crib</td>
<td>play pen</td>
<td>stairs</td>
<td></td>
</tr>
<tr>
<td>bathroom</td>
<td>door</td>
<td>porch</td>
<td>store</td>
<td></td>
</tr>
<tr>
<td>bathtub</td>
<td>drawer</td>
<td>potty</td>
<td>table</td>
<td></td>
</tr>
<tr>
<td>bed</td>
<td>dryer</td>
<td>refrigerator</td>
<td>TV</td>
<td></td>
</tr>
<tr>
<td>bedroom</td>
<td>garage</td>
<td>rocking chair</td>
<td>washing machine</td>
<td></td>
</tr>
<tr>
<td>bench</td>
<td>high chair</td>
<td>room</td>
<td>window</td>
<td></td>
</tr>
<tr>
<td>chair</td>
<td>kitchen</td>
<td>shower</td>
<td></td>
<td></td>
</tr>
<tr>
<td>closet</td>
<td>living room</td>
<td>sink</td>
<td></td>
<td></td>
</tr>
<tr>
<td>couch</td>
<td>oven</td>
<td>sofa</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. **Outside Things (31)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Item</th>
<th>Item</th>
<th>Item</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>backyard</td>
<td>lawn mower</td>
<td>sidewalk</td>
<td>stone</td>
<td></td>
</tr>
<tr>
<td>cloud</td>
<td>moon</td>
<td>sky</td>
<td>street</td>
<td></td>
</tr>
<tr>
<td>flag</td>
<td>pool</td>
<td>slide</td>
<td>sun</td>
<td></td>
</tr>
<tr>
<td>flower</td>
<td>rain</td>
<td>snow</td>
<td>swing</td>
<td></td>
</tr>
<tr>
<td>garden</td>
<td>rock</td>
<td>snowman</td>
<td>tree</td>
<td></td>
</tr>
<tr>
<td>grass</td>
<td>roof</td>
<td>sprinkler</td>
<td>water</td>
<td></td>
</tr>
<tr>
<td>hose</td>
<td>sandbox</td>
<td>star</td>
<td>wind</td>
<td></td>
</tr>
<tr>
<td>ladder</td>
<td>shovel</td>
<td>stick</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11. **Places to Go** (22)

<table>
<thead>
<tr>
<th>beach</th>
<th>farm</th>
<th>park</th>
<th>woods</th>
</tr>
</thead>
<tbody>
<tr>
<td>camping</td>
<td>gas station</td>
<td>party</td>
<td>work</td>
</tr>
<tr>
<td>church*</td>
<td>home</td>
<td>picnic</td>
<td>yard</td>
</tr>
<tr>
<td>circus</td>
<td>house</td>
<td>playground</td>
<td>zoo</td>
</tr>
<tr>
<td>country</td>
<td>movie</td>
<td>school</td>
<td></td>
</tr>
<tr>
<td>downtown</td>
<td>outside</td>
<td>store</td>
<td></td>
</tr>
</tbody>
</table>

*or word used in your family

12. **People** (29)

<table>
<thead>
<tr>
<th>aunt</th>
<th>cowboy</th>
<th>lady</th>
<th>pet's name</th>
</tr>
</thead>
<tbody>
<tr>
<td>baby</td>
<td>daddy*</td>
<td>mailman</td>
<td>police</td>
</tr>
<tr>
<td>babysitter</td>
<td>doctor</td>
<td>man</td>
<td>sister</td>
</tr>
<tr>
<td>babysitter's name</td>
<td>fireman</td>
<td>mommy*</td>
<td>teacher</td>
</tr>
<tr>
<td>boy</td>
<td>friend</td>
<td>nurse</td>
<td>uncle</td>
</tr>
<tr>
<td>brother</td>
<td>girl</td>
<td>child's own name</td>
<td></td>
</tr>
<tr>
<td>child</td>
<td>grandma*</td>
<td>people</td>
<td></td>
</tr>
<tr>
<td>clown</td>
<td>grandpa*</td>
<td>person</td>
<td></td>
</tr>
</tbody>
</table>

*or word used in your family

13. **Games and Routines** (25)

<table>
<thead>
<tr>
<th>bath</th>
<th>go potty</th>
<th>patty cake</th>
<th>thank you</th>
</tr>
</thead>
<tbody>
<tr>
<td>breakfast:</td>
<td>hi</td>
<td>peekabo</td>
<td>this little piggy</td>
</tr>
<tr>
<td>bye</td>
<td>hello</td>
<td>please</td>
<td>turn around</td>
</tr>
<tr>
<td>call (on phone)</td>
<td>lunch</td>
<td>shh/shush/hush</td>
<td>yes</td>
</tr>
<tr>
<td>dinner</td>
<td>nap</td>
<td>shopping</td>
<td></td>
</tr>
<tr>
<td>give me juice</td>
<td>night night</td>
<td>snack</td>
<td></td>
</tr>
<tr>
<td>gonna get you!</td>
<td>no</td>
<td>so big!</td>
<td></td>
</tr>
</tbody>
</table>

14. **Action Words** (103)

<table>
<thead>
<tr>
<th>bite</th>
<th>catch</th>
<th>cry</th>
<th>dump</th>
</tr>
</thead>
<tbody>
<tr>
<td>blow</td>
<td>chase</td>
<td>cut</td>
<td>eat</td>
</tr>
<tr>
<td>break</td>
<td>clap</td>
<td>dance</td>
<td>fall</td>
</tr>
<tr>
<td>bring</td>
<td>clean</td>
<td>draw</td>
<td>feed</td>
</tr>
<tr>
<td>build</td>
<td>climb</td>
<td>drink</td>
<td>find</td>
</tr>
<tr>
<td>bump</td>
<td>close</td>
<td>drive</td>
<td>finish</td>
</tr>
<tr>
<td>buy</td>
<td>cook</td>
<td>drop</td>
<td>fit</td>
</tr>
<tr>
<td>carry</td>
<td>cover</td>
<td>dry</td>
<td>fix</td>
</tr>
</tbody>
</table>
### 15. Descriptive Words (63)

| allgone  | dry    | last   | scared |
| asleep  | empty  | little | sick   |
| awake   | fast   | long   | sleepy |
| bad     | fine   | loud   | slow   |
| better  | first  | mad    | soft   |
| big     | tall   | naughty| sticky |
| black   | gentle | new    | stuck  |
| blue    | good   | nice   | thirsty|
| broken  | green  | noisy  | tiny   |
| brown   | happy  | old    | tired  |
| careful | hard   | orange | wet    |
| clean   | heavy  | pool   | white  |
| cold    | high   | pretty | windy  |
| cute    | hot    | quiet  | yellow |
| dark    | hungry | red    | yucky  |
| dirty   | hurt   | sad    |        |
16. **Words About Time (12)**

<table>
<thead>
<tr>
<th>after</th>
<th>later</th>
<th>now</th>
<th>tomorrow</th>
</tr>
</thead>
<tbody>
<tr>
<td>before</td>
<td>morning</td>
<td>time</td>
<td>tonight</td>
</tr>
<tr>
<td>day</td>
<td>night</td>
<td>today</td>
<td>yesterday</td>
</tr>
</tbody>
</table>

17. **Pronouns (25)**

<table>
<thead>
<tr>
<th>he</th>
<th>me</th>
<th>their</th>
<th>we</th>
</tr>
</thead>
<tbody>
<tr>
<td>her</td>
<td>mine</td>
<td>them</td>
<td>you</td>
</tr>
<tr>
<td>hers</td>
<td>my</td>
<td>these</td>
<td>your</td>
</tr>
<tr>
<td>him</td>
<td>myself</td>
<td>they</td>
<td>yourself</td>
</tr>
<tr>
<td>his</td>
<td>our</td>
<td>this</td>
<td></td>
</tr>
<tr>
<td>i</td>
<td>she</td>
<td>those</td>
<td></td>
</tr>
<tr>
<td>it</td>
<td>that</td>
<td>us</td>
<td></td>
</tr>
</tbody>
</table>

18. **Question Words (7)**

<table>
<thead>
<tr>
<th>how</th>
<th>when</th>
<th>which</th>
<th>why</th>
</tr>
</thead>
<tbody>
<tr>
<td>what</td>
<td>where</td>
<td>who</td>
<td></td>
</tr>
</tbody>
</table>

19. **Prepositions and Locations (26)**

<table>
<thead>
<tr>
<th>about</th>
<th>beside</th>
<th>next to</th>
<th>there</th>
</tr>
</thead>
<tbody>
<tr>
<td>above</td>
<td>by</td>
<td>of</td>
<td>to</td>
</tr>
<tr>
<td>around</td>
<td>down</td>
<td>off</td>
<td>under</td>
</tr>
<tr>
<td>at</td>
<td>for</td>
<td>on</td>
<td>up</td>
</tr>
<tr>
<td>away</td>
<td>here</td>
<td>on top of</td>
<td>with</td>
</tr>
<tr>
<td>back</td>
<td>inside</td>
<td>out</td>
<td></td>
</tr>
<tr>
<td>behind</td>
<td>into</td>
<td>over</td>
<td></td>
</tr>
</tbody>
</table>

20. **Quantifiers and Articles (17)**

<table>
<thead>
<tr>
<th>a</th>
<th>any</th>
<th>not</th>
<th>the</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>each</td>
<td>none</td>
<td>too</td>
</tr>
<tr>
<td>a lot</td>
<td>every</td>
<td>other</td>
<td></td>
</tr>
<tr>
<td>an</td>
<td>more</td>
<td>same</td>
<td></td>
</tr>
<tr>
<td>another</td>
<td>much</td>
<td>some</td>
<td></td>
</tr>
</tbody>
</table>
21. Helping Verbs (21)

<table>
<thead>
<tr>
<th>verb</th>
<th>is</th>
<th>were</th>
</tr>
</thead>
<tbody>
<tr>
<td>am</td>
<td></td>
<td></td>
</tr>
<tr>
<td>do</td>
<td></td>
<td></td>
</tr>
<tr>
<td>are</td>
<td></td>
<td></td>
</tr>
<tr>
<td>does</td>
<td></td>
<td></td>
</tr>
<tr>
<td>be</td>
<td></td>
<td></td>
</tr>
<tr>
<td>don't</td>
<td></td>
<td></td>
</tr>
<tr>
<td>can</td>
<td></td>
<td></td>
</tr>
<tr>
<td>gonna/going to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>try/try to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>could</td>
<td></td>
<td></td>
</tr>
<tr>
<td>gotta/got to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>wanna/want to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>didn't ya</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hafta/have to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>was</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

22. Connecting Words (6)

<table>
<thead>
<tr>
<th>conjunction</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>but</td>
<td></td>
<td></td>
</tr>
<tr>
<td>so</td>
<td></td>
<td></td>
</tr>
<tr>
<td>because</td>
<td></td>
<td></td>
</tr>
<tr>
<td>if</td>
<td></td>
<td></td>
</tr>
<tr>
<td>then</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. How Children Use Words

Not Yet | Sometimes | Often
---|------------|------------|

1. Does your child ever talk about past events or people who are not present? For example, a child who saw a parade last week might later say parade, clown, or band.

2. Does your child ever talk about something that's going to happen in the future, for example, saying "choc choc" or "airplane" before you leave the house for a trip, or saying "swing" when you are going to the park?

3. Does your child talk about objects that are not present such as asking about a missing or absent toy, referring to a pet out of view, or asking about someone not present?

4. Does your child understand if you ask for something that is not in the room, for example, by going to the bedroom to get a teddy bear when you say "where's the bear?"

5. Does your child ever pick up or point to an object and name an absent person to whom the object belongs? For example, a child might point to mommy's shoe and say "mommy".
### Part II: Sentences and Grammar

#### A. Word Endings/Part 1

1. To talk about more than one thing, we add an "s" to many words. Examples include cars (for more than one car), shoes, dogs, and keys. Has your child begun to do this?

   - Not Yet: 
   - Sometimes: 
   - Often: 

2. To talk about ownership, we add an "'s", for example, Daddy's key, kitty's dish, and baby's bottle. Has your child begun to do this?

   - Not Yet: 
   - Sometimes: 
   - Often: 

3. To talk about activities, we sometimes add "ing" to verbs. Examples include looking, running, and crying. Has your child begun to do this?

   - Not Yet: 
   - Sometimes: 
   - Often: 

4. To talk about things that happened in the past, we often add "ed" to the verb. Examples include kissed, opened, and pushed. Has your child begun to do this?

   - Not Yet: 
   - Sometimes: 
   - Often: 

#### B. Word Forms

Following are some other words children learn. Please mark any of these words that your child uses.

**Nouns**

- children
- men
- teeth
- feet
- mice

**Verbs**

- ate
- fell
- made
- blow
- flew
- ran
- bought
- got
- sat
- broke
- had
- saw
- came
- heard
- took
- drank
- held
- went
- drove
- lost

#### C. Word Endings/Part 2

Young children often place the wrong endings on words. For example, a child might say "Auntie goed home." Mistakes like this are often a sign of progress in language. In the following lists, please mark all the mistakes of this kind you have heard your child say recently.

**Nouns**

- blockses
- foots
- mouses
- toeses
- children
- mans
- shoeses
- tooths
- childs
- mens
- sockses
- feets
- mices
- teeths

**Verbs**

- ated
- bringed
- broked
- doed
- blewed
- buyed
- came
- dranked
- blowed
- breaked
- comed
- dranked

(continued)
Has your child begun to combine words yet, such as "nother cracker", or "doggie bite"?

If you answered not yet, please stop here. If you answered sometimes or often, please continue.

D. Examples

Please list three of the longest sentences you have heard your child say recently.

1. 

2. 

3. 

E. Complexity

In each of the following pairs, please mark the one that sounds MOST like the way your child talks right now. If your child is saying sentences even more complicated than the two provided, just pick the second one.

1. Two shoe.
   Two shoes.

2. Two foot.
   Two feet.

3. Daddy car.
   Daddy's car.

4. (Talking about something happening right now)
   Kitty sleep.
   Kitty sleeping.

5. (Talking about something happening right now)
   I make tower.
   I making tower.

6. (Talking about something that already happened)
   I fall down.
   I fell down.

7. More cookie!
   More cookies!

8. These my tooth.
   These my teeth.

   Baby's blanket.

10. (Talking about something that already happened)
    Doggie kiss me.
    Doggie kissed me.

11. (Talking about something that already happened)
    Daddy pick me up.
    Daddy picked me up.

12. (Talking about something that already happened)
    Kitty go away.
    Kitty went away.

    Doggie on table.

14. That my truck.
    That's my truck.

15. Baby crying.
    Baby is crying.

16. You fix it?
    Can you fix it?

17. Read me story, Mommy.
    Read a story, Mommy.

18. No wash dolly.
    Don't wash dolly.

19. Want more juice.
    Want juice in there.

20. There a kitty.
    There's a kitty.

    Wanna go bye bye.

22. Where mommy go?
    Where did mommy go?

23. Coffee hot.
    That coffee hot.