Getting Schooled in Language Acquisition and Development: A Case Study Examining Nativist, Empiricist, and Constructivist Theories Among Preschoolers

Heather Skeen

Aurora University
Abstract

This paper will discuss three popular theories of language acquisition and development. The theories being examined are nativism, empiricism, and constructivism. Behaviorism will also be mentioned since it preceded the theory of empiricism. In order to better understand these theories, it is necessary to point out issues surrounding each one. After composing a literature review of past research and gathering her own data by conducting a case study, the researcher hopes to infer which theory most accurately applies to how this small group of children acquires and develops language.
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**Introduction**

Anne Curzan and Michael Adams (2006) point out that language is what makes humans unique from animals. Language has the ability to reflect attitudes, feelings, beliefs, personality traits, intellect, our place of origin, and thus, our identity (Curzan & Adams, 2006). Since it plays such a crucial role in each and every society, it is important to understand how we acquire and develop language. Children serve as a great source for researchers to learn about language acquisition and development. Infants and very young children are still learning the rules for their own specific language so they best exhibit the innate rules for acquisition of phonemes, morphemes, and grammar (Pinker, 1994). Today, many different theories of language acquisition are competing for notoriety, including nativism, empiricism, and constructivism.

There are two basic aspects of this paper: 1) a literature review of past research on language acquisition and 2) a case study conducted by the researcher with a local group of preschoolers. The purpose of this paper is to examine which theory most accurately describes how this group of children acquire and develop language. Therefore the importance of biology, the surrounding environment, and the interdependence of these two aspects will also be observed. Many scholars are searching to find support for each theory, and hopefully this paper will provide some insight into the popular linguistic question: How do we acquire and develop language?

**Purpose of this Study**

It is important for psychologists, linguists, psycholinguists, and professionals studying language acquisition and development in children to examine competing theories and discover which one is best supported through research. It is the purpose of this project to examine
nativism, empiricism, and constructivism in order to determine which theory most accurately
describes the results from the case study conducted by the researcher. In order to arrive at this
conclusion, the researcher will consider both past research on language acquisition and
incorporate the results from her case study that she will conduct. It is important to study
language acquisition and development in children in order to determine the biological and
psychological processes in which children truly learn language. Many question marks still exist
in this area of study, so it is important for researchers to increase their understanding and
knowledge of language acquisition and development.

**Literature Review**

In the historical study of language acquisition and development in children, many
behaviorists held the belief that we acquire language by observing and then imitating behavior
(Curzan & Adams, 2006). It is important to discuss behaviorism because it was a popular theory
of language acquisition for numerous years and it is also worth mentioning because behaviorism
serves as the precursor to empiricism. For an extended period of time, behaviorism dominated
studies on language acquisition (Curzan & Adams). Curzan and Adams (2006) explain that
behaviorism relies on conditioning as the mode of language acquisition: we are rewarded for
“good” language and punished for “bad” language, which shapes the way we speak as well as
our perception of the correct rules of grammar. This theory derived from John Locke’s idea of a
child’s mind as a *tabula rasa* or blank slate (Curzan & Adams, 2006). John Locke, George
Berkeley, and David Hume, three British philosophers, suggested that when we are born, we are
have no experiences and thus no knowledge, so as we go through life, we gain knowledge
through our experiences (Bernstein, Penner, Clarke-Stewart, & Roy, 2008; Curzan & Adams,
2006). Because behaviorism asserts that we can only and truly learn about the world around us
through our senses, it also coincides with the idea of *tabula rasa*; both beliefs rely strictly on experiences to form the basis of our knowledge and identity. This empirical idea inspired psychology as a social science and also laid the foundation for the field of behaviorism. Therefore, Locke, Berkeley, and Hume’s theory created a new agenda for researchers and inspired psychological research.

Behaviorism dominated the study of language acquisition for many years (Curzan & Adams, 2006). Psychologist John B. Watson, a noted supporter of behaviorism, believed that studying the consciousness was too difficult a task and it therefore prevented psychology from being taken as a respectable science (Bernstein et al., 2008). Although we are able to measure aspects of the consciousness now, such as judgment, memory, and emotion, instruments to conduct such research were unavailable during Watson’s time period. B.F. Skinner also supported behaviorism with his theory of operant conditioning, asserting that reward and punishment influence our behavior (Bernstein et al., 2008). Operant conditioning refers to the process of how parents and other adult figures consciously and unconsciously influence children’s behavior by rewarding “good” actions and punishing “bad” actions (Bernstein et al., 2008). Essentially, operant conditioning states that children are conditioned to respond in certain ways to specific stimuli. In regards to the theory of language acquisition, operant conditioning believes that children will learn to imitate and repeat “good” grammar because they are rewarded for doing so (positive reinforcement) and that they will learn to avoid “bad” grammar because of their fear of punishment (negative reinforcement). Thus behaviorist theories would suggest that these are the circumstances in which children learn or acquire language.

However, the nativist theory of language acquisition was later developed in contrast to behaviorism. Nativism declares that humans have an innate propensity for developing language
and that there is a specific area within the mind is responsible for language acquisition (Pinker, 1994). So while nativism recognizes that the environment plays a role in language acquisition, it stresses that the biological foundation is primarily responsible for language (Chomsky, 1999; Pinker, 1994). Noam Chomsky is viewed as the founder of this theory (Curzan & Adams, 2006). While studying Skinner’s theories, Chomsky noticed that behaviorism failed to account for several aspects of language acquisition (Curzan & Adams, 2006). There are several aspects of language acquisition that behaviorism cannot explain: 1) blind children learn language just as well as sighted children; 2) children learn the meaning of abstract concepts, such as love, pain, and hate; 3) children receive imperfect input from adults, like speech errors and incorrect enunciation, but they do not necessarily repeat these mistakes; 4) children say words or phrases they have never heard before, for instance, “eated” and “no go;” 5) all children, regardless of language or location, adhere to similar stages of language development; and 6) children can produce an infinite amount of sayings with a finite vocabulary (Chomsky, 1999; Curzan & Adams, 2006; Gleitman & Newport, 1995; Höhle & Weissenborn, 1999; Oates & Grayson, 2004; Pinker, 1995). Additionally, Gleitman and Newport (1995) note that blind children also experience the same language development stages as sighted children. In order to address these shortcomings, Chomsky suggested the theory of Universal Grammar, which proposed that all humans are born with an innate set of rules for language (Chomsky, 1999; Curzan & Adams, 2006; Pinker 1995). Thus for Chomsky, language acquisition is a biological process that children undergo; so just as children are predisposed to learn how to walk, they are also predisposed to learn how to talk (Gleitman & Newport, 1995). Additionally, Chomsky proposes a language module in the brain that is responsible for developing and retaining linguistic knowledge (Curzan & Adams, 2006). One of his most distinguished supporters, Steven Pinker
of the Massachusetts Institute of Technology, proposes a language instinct (Curzan & Adams, 2006.) Both of these theories suggest that there is a compartment within the mind where language develops and resides. As one might assume, while Chomsky’s ideas have become very popular, they have also become controversial in the fields of psychology and linguistics (Curzan & Adams, 2006).

Although Chomsky’s ideas on language acquisition have received a great deal of notoriety, there are other linguists and psychologists who assert the theory of empiricism to describe how children acquire language. As Oates & Grayson (2004) point out, “The days of tabula rasa empiricism are long gone” (pp. 197-198). Modern day empiricists have revised the outdated view of behaviorism into a more scientific theory; thus they recognize the complexity of the mind, especially the young mind. Empiricism believes that there is no preset or specific place in the mind for language; rather, they stress that children gather knowledge and take cues from their environment to acquire language (Oates & Grayson, 2004). Elman (1990, 1993) notes that children can learn language in a piece-by-piece fashion; children can establish categories and anticipate the sequence of words (as cited in Oates & Grayson, 2004). Empiricists do not deny that a biological basis is necessary in order for children to acquire language, but they assert that the environment is absolutely crucial for eliciting language learning (Oates & Grayson, 2004).

The theory of constructivism serves as a balance between nativism and empiricism. Constructivism is based on the theory of epigenesis, which argues that a child’s biology and environment are codependent in the formation of language acquisition (Oates & Grayson, 2004). Gleitman and Newport (1995) support this idea, noting the interdependence between environment and biology. Unlike nativism, constructivism does not believe that a compartment exists within the mind for language (Oates & Grayson, 2004). Oates & Grayson (2004) point out
that there is one specific biological issue that has yet to be completely solved: when brain
damage occurs in young children, the mind will find a different way to organize itself in order to
develop language. This evidence does support the idea of an innate ability for language, since it
does show the mind’s strong self-capability to acquire language regardless of interferences.
Although this idea demonstrates the mind’s natural propensity to develop language, it shows that
if a specific language-related area is damaged, it does not necessarily prohibit the child’s ability
to acquire language; thus this idea contrasts the nativist belief in a language module or instinct,
showing that there is no designated area in the mind responsible for language development
(Oates & Grayson, 2004). This interpretation demonstrates that the mind could create its own,
undesignated area for language with no necessary place of origin, which would dismiss the idea
of a specific biological and developmental place for language in the brain (Oates & Grayson,
2004). Oates & Grayson (2004) indicate that language could be a result of humans developing
advanced information processing systems. Therefore empiricism recognizes the importance of
both nature and nurture.

Clearly both environmental and genetic factors play a role in language learning and the story
of Genie is a popular example used to demonstrate the importance of these elements. In
accordance with nativism, Genie could only acquire a certain amount of linguistic knowledge
and skill because she had already long-since passed the critical age period when she finally
began to acquire language (Curzan & Adams, 2006). However, while this example supports an
important aspect of nativism, it also stresses the need for an environment conducive for
language, thus supporting empiricism’s emphasis on environment (Curzan & Adams, 2006).
Since she was hardly spoken to before her discovery at thirteen years of age, Genie never
developed the need or ability to use language (Curzan & Adams, 2006). Although Genie was
able to learn many linguistic rules and skills, she peaked before ever reaching the normal stage development for her age (Curzan & Adams, 2006). Therefore, since both nature and nurture aspects played vital roles in Genie’s inability to learn language, constructivism seems to be the most reasonable and applicable approach to discerning her situation. With convincing support for aspects of both nativism and empiricism, it is necessary to observe children’s behavior and critically discuss aspects of all three theories in order to determine which one most accurately describes the group of children from this case study acquire language.

Although nativism, empiricism, and constructivism provide more scientific explanations for language acquisition, it seems that most of the general public still believes in the outdated theory of behaviorism. It is more acceptable for mainstream society to have these beliefs since they are less familiar with the study of linguistics and language acquisition. Just as it would be uncommon for the general public to know how to solve advanced calculus problems, it would be very unusual for them to be familiar with any theories of language acquisition; these are specialized fields of interest and study. Nonetheless, people should have the opportunity and drive to gain knowledge. Believing in the idea of tabula rasa seems to undermine the intelligence of the young mind; therefore it is crucial to understand the complicated process undergone for children to acquire and develop language.

The case study involved a small group of preschoolers. Aspects of nativism were observed by replications of previous supporting research. In order to repeat these tasks, the author borrowed and modeled interview methods from Jean Berko (1958, as cited in Pinker 1995). Characteristics of empiricism were observed by third-party reports on the environmental effects of language-related stimuli on each child. Since it would be too difficult for the researcher to gather information about the child’s use of language and grammar, surveys were sent to the
child’s teacher(s) and parent/guardian in order to answer questions about the amount of language-related stimuli each child is exposed to on a daily basis. The researcher created these surveys.

It is the hypothesis of this study that constructivism will most accurately describe the acquisition and development of language, at least as it applies to this group of children. Constructivism emphasizes the importance of both environment and biology, which the researcher also believes to be crucial aspects for the acquisition of language. Therefore it was assumed that an equal relationship must exist between each child’s amount of exposure to language-related stimuli and his/her knowledge and use of grammar, but there is not necessarily a specific place in the mind where language resides. To clarify, the children needed to demonstrate at least a moderate amount of exposure to language-related stimuli as well as an understandable and consistent rule for creating plural nouns and past-tense verbs.

Methods

Since the later half on the 20th century, Chomskyan theories have become very popular and changed the way most linguists and psychologists view language acquisition (Curzan & Adams, 2006; Pinker, 1995). Now, other theories such as empiricism and constructivism have also fought for the spotlight in the psycholinguistic field. By replicating aspects of previous studies with children and creating surveys to gather data from parents/guardians and teachers, the researcher will hope to find evidence for the compromised view of constructivism, which asserts that genes and the environment work in sync with one another to develop language acquisition (Oates & Grayson, 2004). From the preschool-aged participants in this study, the researcher seeks to infer which theory most accurately describes how this specific group of children acquire and develop language.
This study seeks to find support for both nativist and empiricist aspects, showing their roles in each child’s ability to acquire and develop language. The researcher hypothesizes that the theory of constructivism will be supported. It is important that evidence is found for basic aspects of both nativism and empiricism since elements of each are needed to lay the foundation for the theory of constructivism. However, the mere presence of nativist and empiricist aspects are not enough to find support for the hypothesis; a compromised and interdependent relationship between the two theories must exist. The dependent variable is the age-appropriate language development and the independent variables are the child’s innate knowledge of language and the child’s environmental exposure to language-related stimuli. The basic study design will consist of one-on-one observational interviews with children between the ages of three and five years old at a suburban Chicago preschool. The data gathered from the children, their parents/guardians, and teacher(s) will be utilized in a case study from which qualitative data would be collected and analyzed.

The first step will be to schedule a date to visit the preschool in order to talk to the director of the preschool where the researcher will be working at during the study. While meeting with the director, a pre-screening will be conducted in order to determine if any children are unable to participate in the study because of any physical, mental, or emotional issues, learning disabilities, and/or children whose parents speak English as a second language. This action is necessary in order to avoid studying children who would have any complicating factors that would not follow normal stages of language acquisition and development in English speaking children, therefore skewing data.

After screening the children to make sure they do not possess any impeding qualities that would inaccurately represent the general population, the researcher will hope to find at least
eight participants. In order to inform the parents/guardians about the study, an introductory letter will be passed out to each child to take home (see Addendum A). The introductory letter will state the study is not meant to test the child’s intelligence but rather, it seeks to observe the child’s use of language. The letter will also encourage the parents/guardians to ask their children if they wish to be a part of this study. This process should help gain compliance from the children and avoid dropout rates. The parents/guardians and teachers of the children will also be asked to participate in the study. Attached to the introductory letter will be four consent forms—two for the child’s participation and two for the parent’s/guardian’s participation (one copy of each form to be sent back to the researcher and one for the parent’s/guardian’s records) that includes the purpose and procedures of the study (see Addendum B). The parent/guardian survey (see Addendum C) and the record sheet of the procedures that will be conducted with each child (Addendum D) will also be attached. The parent/guardian will be insured that the child’s name will be kept confidential in the paper and presentation, in case this issue was a concern. The consent forms will also explain that the child would be asked if he/she is willing to participate each time in the interview session that day. The child will never be asked more than once a day to participate. If the child chooses not to participate upon being asked on two different occasions, then he/she will be dropped from the study. To further insure the safety of each child, each interview will take place in a vacant room at the preschool with the researcher and a supervisor (the researcher’s faculty sponsor for the study). The parent/guardian would be provided with the researcher’s name, phone number, and e-mail address, as well as the university in which she attends in case they wish to know the results of the study or have any questions regarding the study. In addition, the consent form for their child’s participation would also ask the parents/guardians if they would allow their child’s teacher(s) to provide information about
the child. The researcher will then receive consent from the teachers for their participation in the study (Addendum B) and then the teachers will fill out a survey similar to the one completed by the parents (see Addendum E).

As mentioned above, this study would incorporate interview methods from previous research, which will require individual time with each child. The premise of these interviews are borrowed from and modeled after previous research and constructed into three of linguistic tasks (see Addendum F). The following list describes the exact procedures that will take place:

- Making Singular Nouns Plural: The researcher will show each child a picture of a made-up character, which is called a wug. Then the researcher will state, “This is a wug,” and the researcher will show a picture with two wugs and say, “Now there is another one. There are two of them. There are two…” and wait for the child to respond. If the child replies, “…wugs,” this will demonstrate the rule that to make an object plural, simply add an “-s/-es” to the end (like cats, dogs). The researcher will also use this method with other real, irregular and regular plural nouns to see if children will apply the same rule. If the child over-generalizes all the nouns by simply adding an “-s/-es” then this will also demonstrate that children have a rule for constructing plural nouns from the singular form. (Berko, 1958, as cited in Pinker, 1995).

- Making Present Tense Verbs Past Tense: Similar to the first task, the researcher will also show a picture to each child and tell him/her that the person is ricking. Then the researcher will ask, “If the person was ricking today, then yesterday she…” and see if the child responds by saying “…ricked.” This will demonstrate the rule that to create a past tense action, simply add “-ed” to the
end of a verb. The researcher will also use real irregular verbs like swim, eat, hold, and so forth, intermixed with regular verbs to see if the child applies the same rule. (Berko, 1958, as cited in Pinker, 1995)

• Making Present Tense Irregular Verbs Past Tense: Examining Consistency:
  Finally, the researcher will read a list of irregular verbs, waiting for the child to respond before moving onto the next verb. The first time through the list the researcher will correct any wrong answers after each response. The list will then be read two more times to see if the child responses differ after the original corrections or if the child maintains the same response. (Kuczaj, 1978, 1981, as cited in Prince & Pinker, 1989).

The children’s responses would then be scored and documented on the record sheets for later analysis and comparison. Surveys, which were created by the researcher, will also be given out to the parents/guardians and the teachers to establish how environmental language-related stimuli affect each child’s language acquisition and development.

In order to interact with this population, the author received consent from the university IRB and will receive consent from each child’s parent/guardian before beginning the study. Since this study aims towards replication and will model the interview tasks from previous methods of research, the interview record sheet consists of instruments of measurement from prior experiments. Each question of the interview process will coincide with a rule of Universal Grammar, so the children’s responses will be based on whether or not they act accordingly to the nativist theory. Almost all of the study’s procedures relate to irregular tenses and therefore morphology. It is necessary for both an understandable and consistent rule for creating language and at least a moderate amount of exposure to language-related, environmental stimuli to be
present in order to find support for the hypothesis of this study. The interview data will be interpreted and measured by the researcher according to the verbal response from each child. If the majority of the children’s responses demonstrate an understandable and consistent rule for creating language, then the researcher will infer that nativism is an important aspect of language acquisition and development. If the parent/guardian and teacher surveys show at least a moderate level of language-related, environmental stimuli for each child, then this would infer the importance of empirical elements for language acquisition. After collection, the children’s interviews and teacher and parent/guardian surveys will be analyzed using descriptive, qualitative analysis that has been assigned a number value. If both elements indicate at least a moderate level of innate knowledge as well as a moderate to high level of exposure to language-related stimuli, then this case would seem to support a constructivist theory. If little evidence is found for either element, then a new theory must be considered to address language acquisition in children.

It is also hypothesized that this replication of interviews and combination of surveys will support the theory of constructivism, showing an equally important relationship between an individual’s genetics and the environment. Therefore, according to a constructivist theory, it is necessary for a child to have at least a moderate level of innate knowledge of language and a moderate level of language-related stimulation, at minimum. This study seeks to support the necessity of these conditions. It is unlikely, yet not impossible, that all the theories will be completely rejected during this study. Since constructivism encompasses aspects of both empiricism and nativism, it is doubtful that all aspects of the theories will be rejected. There is a minute chance that this author’s replication will discover new aspects of language acquisition that professionals conducting previous studies did not find.
In order to measure each child’s exposure to language-related stimuli and their knowledge and ability for creating language, all responses will be assigned a point value and averaged. The exposure to language-related stimuli will be examined through the parent/guardian and teacher surveys. The averaging between the parent/guardian and teacher surveys should help eliminate any bias, whether conscious or unconscious, that could occur. The average between the two surveys must equal a minimum number in order for the child to be considered to have at least a moderate exposure to language-related stimuli. The child’s knowledge and ability for creating grammar and language will be determined by whether the child can produce an understandable and consistent rule for changing noun and verb forms.

**Results**

Although more than twenty packets of information were sent out to preschoolers, only six parents/guardians responded. The results from the children interviews, the parent/guardian surveys, and the teacher surveys were compared and it was noticed that a large portion of the collected responses were similar. First, the children’s responses to “Making Singular Nouns Plural” will be examined (see Addendum G, Table 1). Here, the researcher presented a series of words and indirectly asked the child to create the plural forms of each noun. All six of the children responded the same way to the word “wug” by transforming it to “wugs,” and they similarly changed the word “cat” to “cats” and the word “dog” to “dogs.” Five of the children also appropriately converted “fish” to “fish,” “bird” to “birds,” and “rabbit” to “rabbits,” although one child, Child 3, responded very similarly with the words, “fishy,” “birdies,” and “bunnies.” The four remaining words elicited varying answers. When presented the word “mouse,” four children replied, “mouse,” with one child responding with the word “mouses” and another child replying with “mice.” Child 1, who responded with the word “mouses,” also had
similar responses to the words “moose,” “goose,” and “octopus,” replying with “mooses,” “gooses,” and “octopuses.” It is likely that this child over-generalized the subconscious rule for making singular verb forms plural by simply adding “-s/-es” to the end of the word to these irregular verb forms. The four children who responded with “mouse” as the plural form of “mouse” may have over-generalized their subconscious rule for making irregular, singular verb forms plural by not adding any suffixes; i.e., fish can be both singular and plural. The “Making Singular Nouns Plural” provided the most relevant data for this study.

Unfortunately, the other two tasks that the children completed were not as revealing or clear to the study as the first task. The instructions for these two tasks were not as easy for the children to understand for some reason. The second task, “Making Present Tense Verbs Past Tense,” sought to have the children convert a series of present verb tenses into past tenses (see Addendum G, Table 2 for responses). With Child 1, the researcher attempted to help clarify the task by providing examples for the child, which seemed to have influenced her responses. Because this child was primed, so to speak, Child 1 was the only participant to reply with more anticipated answers. Another participant, Child 6, was similarly provided with examples, but after the first two words, she started to give different responses. For example, when the researcher said, “He is walking. If he walks today, then yesterday he…,” Child 6 responded with “…doesn’t walk.” This child replied similarly to the rest of the verbs by adding “doesn’t” in front of the present tense: “doesn’t eat,” “doesn’t shop,” “doesn’t hold,” etc. Child 2 interpreted this activity as more of an imaginative task. When the researcher stated, “He is walking. If he walks today, then yesterday he…” this child replied, “…walked on the sidewalk.” This child had similar responses to each part of this task: the researcher stated, “He is eating. If he eats today, then yesterday he…” and Child 2 replied with, “…tried to eat breakfast,” and when the
researcher stated, “She is holding the rabbit. If she holds the rabbit today, then yesterday she…” and the child responded, “…loved the rabbit.” With the imagination used in these responses, Child 2 used present, past, and future tenses, demonstrating the children’s lack of clarity in understanding this task. The other three remaining children, Child 3, Child 4, and Child 5, all primarily kept the same present tense for each verb. Therefore the word “swims” remained “swims,” “walks” remained “walks,” “eats” remained “eats,” and so on.

Similarly, with the third task, “Making Present Tense Irregular Verbs Past Tense: Examining Consistency,” four children took creative liberty with the activity, believing it to be more of an imagination game. The first time through the list of words, the researcher corrected each child, prompting him/her to use the past tense of each verb. Therefore “drink” would become “drank,” “hit” would remain “hit,” and so on. However, none of the children responded the way in which the researcher anticipated. Child 4 and Child 5 primarily kept the verb tenses the same as the singular verb form each of the three times through the list: “drink” remained “drink,” “fall” remained “fall,” “give” remained “give,” and so forth. The other four children, though, gave creative responses including, “hit a ball” and “keep a rock” (Child 1); “you give a card to your friend,” (Child 2); “givel,” “hittle,” and “keeple” (Child 3); and “drink again” and “give me stuff” (Child 6). As seen with the second and third tasks, the children gave very scattered and indecipherable responses so the researcher was unable to make any generalized inferences relating to language acquisition and development from the data. (Because this data consisted of three rounds per child, a table is not included.)

Although the first task provided ample information about the children’s use of grammar and language, it is unclear why the second and third tasks were so difficult for the children to understand. Initially it seemed that the wording of the questions were simply not clear enough
for the children to understand the purpose of the tasks, but a significant amount of consideration was given to the specific diction used in each task; therefore, it is unwise to quickly discount the wording as too vague for the children to understand. It seems, rather, that there was some cognitive process occurring in these young children’s minds that interferes with the way in which they perceived this task. Unfortunately, the researcher can offer no hypotheses on why this misperception occurred. It would be interesting to understand how and why the children perceived these questions so much differently from the original and anticipated purpose of the tasks.

Since the responses from the last two tasks were indecipherable, the first task, “Making Singular Nouns Plural,” is the only task that will be examined here. In order to demonstrate a moderate knowledge and ability for creating grammar and language, children had to apply an understandable and consistent rule for creating plural noun forms. In order for the responses to be considered understandable, at least seven of the eight responses had to be a related version of the original word. Therefore words like “moosies” and “fishy” were acceptable terms. If children were to respond with words such as “moosesicles,” or “fish sticks,” these would not be interpreted as understandable. It should be noted that none of the children responded in any such way; all of them demonstrated understandable rules for creating language. To meet these criteria of consistency, the child had to apply the same rule to at least seven of the eight nouns, although two separate rules for regular and irregular noun forms were also acceptable. Five of the six children met these criteria and were thus considered to have a knowledge and ability for consistently creating grammar and language. It should be noted, though, that while one participant, Child 3, did not meet these criteria, this child produced understandable rules for creating grammar, but the rules were inconsistent.
In regards to the surveys completed by the parents/guardians and teachers, their responses were closely related in general. Overall, the responses from the parents/guardians were similar (see Addendum G, Table 3). The parents were able to respond by marking “Never,” “Seldom,” “Sometimes,” or “Often.” One of the questions, though, required the parent/guardian to roughly estimate how many hours per day the child spends watching television or movies. Here is the series of questions: 1) “How often do you read to your children?” 2) “How often does your child read on his/her own?” 3) “How many ours does your child (roughly) spend watching television and/or movies each day?” 4) “How often do you have conversations with your child, where you each take turns asking questions and answering and/or talking back and forth between one another?” 5) “How often does your child listen to you talk, not participating in the conversation?” 6) “How often does your child listen to the radio and/or music (with vocals)?” 7) “How often does your child talk with others in the family or other children?” 8) “How often do you correct your child’s grammar?”

When asked “How often do you have conversations with your child, where you each take turns asking questions and answering and/or talking back and forth between one another?” and “How often does your child talk with others in the family or other children?” all of the six parents/guardians replied “often.” Four children were read to “often” by their parents and four children also watched about two hours of television or movies each day (not counting the weekends). Five parents “sometimes” corrected their child’s grammar and five parents reported that their child “often” listens to the radio and/or music with vocals. When asked, “How often does your child read on his/her own?” and “How often does your child listen to you talk, not participating in the conversation?” a mixture of responses was given (see Addendum G, Table 3, Questions 2 and 5).
The last set of data was collected from each child’s teacher or pair of teachers (see Addendum G, Table 4). One of the children came from a different class with only one teacher, while the other five were from the same classroom with two teachers (this is why there is a blank for Child 3 in the second set of responses). To further clarify, three teachers participated in the study, with Child 3 having her own teacher and the other five children having two separate teachers. The responses from the children with two teachers were averaged together. Here is the series of questions: 1) “How often does the child speak and/or participate in class?” 2) “How often does the child read in class?” 3) “How often does the child talk with his/her classmates?” 4) “The child communicates in grammatically correct speech. (Check which option most accurately applies.)” 5) “The child communicates at an age-appropriate level. (Check which option most accurately applies.)” 6) “How often do you or child’s fellow classmates correct the child’s grammar?”

All of the teachers agreed that each child “often” talked with his/her classmates and they also agreed or strongly agreed that each child communicated at an age-appropriate level (Questions 3 and 5). The two teachers with five of the children in their class reported that those children never read in class, while the child’s teacher in the other classroom said that she seldom read in class (Question 2). All three of the teachers agreed that the children sometimes or often communicated in grammatically correct speech (Question 4). When asked how often someone in class corrects the child’s grammar, the second teacher replied, “never,” while the first teacher stated that five of the children were “seldom” corrected, with the exception of Child 2 who was “sometimes” corrected. The teacher for Child 3 replied that others “seldom” corrected the child’s speech. In regards to how often each child spoke or participated in class, Child 3’s teacher and the other two teachers agreed that Children 1, 3, 4, and 6 all participated and spoke
“often.” For Children 2 and 5, there were discrepancies between the teachers on the precise level of participation in class.

The responses from both the parents/guardians and teachers were assigned a point value. “Never” was assigned a value of 1; “Seldom” was assigned a value of 2; “Sometimes” was assigned a value of 3; and “Often” was assigned a point value of 4. However, Question 3 asked about the amount of time the child spent per day watching television or movies, and the number of hours written down was simply added into the score. Question 2, which dealt with how much the child read on his/her own, was dropped from the data because these young children were very limited in their ability to read without assistance. Also, Questions 5 and 8 were not used in the analysis of this data because it was unclear if the responses showed the hindering or advancement of the child’s exposure to language-related stimuli. For example, with Question 5, which asked how often the child listened to the parent/guardian talk without participating, it is unclear whether this was beneficial or detrimental to the child’s learning. Because of similar reasons, Questions 2 and 6 were also discarded from the teacher survey.

In order for the children to be recognized as having a moderate exposure to language-related stimuli, they had to attain a total average of at least 13.0. It is important to average the teacher and parent/guardian surveys together to help eliminate any biases that may consciously or unconsciously occur. The number 13.0 was chosen after determining that a score of 15.0 or higher would represent children with a high exposure to language. The average of 15.0 was representative of a high exposure to language-related stimuli because it suggests that typically children were “often” exposed to the stimuli, as according to the parent/guardian and teacher surveys. All six of the children demonstrated a moderate or high exposure to language-related stimuli (see Addendum G, Table 5).
Discussion

The hypothesis of this study was that constructivism would most accurately describe the acquisition and development of language in this group of children; therefore aspects of both nativism and empiricism needed to be present. This hypothesis required an equal relationship between each child’s amount of exposure to language-related stimuli and his/her knowledge and use of language. As noted earlier, this relationship requires more than just the presence of both empiricist and nativist features; these features need to blend together and work interdependently. To clarify, it was necessary for each child to demonstrate a moderate exposure to language-related stimuli as well as a consistent and understandable rule for making noun forms, reflecting a knowledgeable use of and ability to create language. As a reminder, this hypothesis is only being applied to the first task the children completed, “Making Singular Nouns Plural,” because the responses from the other two tasks were scattered and indecipherable. The parent/guardian and teacher survey responses need to produce a total mean average of at least 13.0 in order for the child to demonstrate at least a moderate exposure to language-related stimuli.

Overall, support was found for both empiricist and nativist elements. The parent/guardian and teacher surveys supported the empiricist aspect of the hypothesis by exceeding the average of 13.0. These data thus showed that all of the children had a moderate if not high exposure to language-related, environmental stimuli. In regards to the nativist aspect of the hypothesis, five of the children showed the knowledge and ability to create grammar and language through a consistent and understandable rule for creating plural noun forms, with the exception of Child 3 who created understandable plural noun forms but did so without applying a consistent rule. For example, Child 1 consistently added the “-s/-es” suffix to all nouns, including both regular and irregular, to create a plural noun forms; however, Child 2 consistently added “-s/-es” to singular,
regular noun forms to make them plural and did not add any suffixes to the end of irregular noun forms to make them plural, such as fish, mouse, and moose. While Child 3 gave understandable responses, they were inconsistent. As nativists suggest, young children often rely on their innate knowledge of grammar because they are still learning the rules of their specific language (Pinker, 1995). This idea seems to be supported by most of the children’s understandable and consistent rules for creating plural noun forms that were not necessarily grammatically accurate. Consistent and understandable rules used by five of the children and partially used by one child indicate that overall these children have the knowledge and ability for creating grammar and language, seeming to support the nativist theory aspect of the hypothesis.

Overall it seems that support was found for the hypothesis, which would mean that theory of constructivism could be applied to how this group of children acquire and develop language. The data from the “Making Singular Nouns Plural” and the parent/guardian and teacher surveys seemed to support the theory of constructivism. The interview task suggested that children showed an internalized rule for creating language. The surveys demonstrated that the children had a moderate or high level of exposure to language-related stimuli. One possible confound, though, is that the parents exaggerated or understated their responses on the survey. With any related form of self-reporting, it is difficult to ascertain one hundred percent truthful answers. It is possible that parents could have overestimated how often they read to their child, understated how often their child watches television, or they could have made other related errors consciously or unconsciously.

It should be mentioned, though, that the researcher could only speculate that the theory of constructivism explains how this group of children acquires language. It may be that children do have a language module or instinct in the mind and that the moderate amount of exposure to
language-related, environmental stimuli only served to elicit this innate capacity to create language. Then again, it could be that the moderate level of environmental exposure was crucial in developing an advanced information processing system in the children’s young mind. More advanced experiments with children would need to be conducted in order to establish stronger evidence to support the theory of constructivism. Otherwise, it seems too difficult for researchers to credibly support one theory over another. While some critics could argue whether the theory of constructivism was supported by this research, it is clear that the environment and biology do have roles in the development of language. It is the purpose of future research, though, to define whether environment, biology, or a combination of these two elements, is primarily responsible in the acquisition of language.

Admittedly, this was a small case study that cannot be generalized to the entire population. The group was limited to six preschoolers, although over twenty children received packets of information. As a case study, it was already assumed that these results would not be generalized to the rest of the population, but the unexpectedly low number of participants even for a case study further complicated the data. This complication made it more difficult to generalize the results even among the participants. Therefore it would have been more beneficial for the case study to involve a few more children. This sample of children was also taken from a suburban Chicago preschool, thus this population consisted of parents/guardians who could afford sending their children to private preschools. The socioeconomic status as well as the additional and quality education the children receive at preschool could have affected the data. Demographic information of the children or their parents/guardians was not obtained. Since there were only six students involved, it would not have been useful to this particular study to observe demographic information because the results are unable to be generalized to the rest of the
population; however, in a case study replication or quantitative experiment version of this study, it would be necessary to obtain this kind of background information about the children and parents. In order to obtain more scientifically sound evidence, a quantitative experiment would be the next appropriate step for gathering research. Case studies only serve as jumping off points, so to speak, for research and a quantitative experiment would be necessary to affirm or contradict any initial evidence.

As noted earlier, two of the three tasks were unable to be analyzed because the responses were scattered and inconsistent. Therefore one option for future researchers would be to develop more understandable tasks for the young participants. However, the prompts used in this study seemed to be very straightforward and carefully worded, so future research could also examine why these children produced such undecipherable and unexpected responses. It would be beneficial to understand where the breakdown occurs between what the researcher is asking and what the child perceives the researcher to be asking. Because of this lack of clarity in the responses from the second and third tasks, future research may want to study children’s information processing systems in hopes of better understanding their perceptions of such tasks. Also, if only the first task were used in the study then perhaps more parents would have agreed to participate and allow their children to participate. Future researchers may also want to consider including children who were not enrolled in preschools and who represented more diverse socioeconomic statuses.

It is important to note that since Jean Berko first performed these tasks in 1958, many different sociocultural changes have occurred throughout the United States. In roughly the last decade there has been a drastic increase in the amount and variety of language-related stimuli children are exposed to on a daily basis. One of the most noticeable areas where this expansion
has taken place is with electronic media, such as television shows targeted at young children and even toddlers. There has also been an increase in working mothers; therefore it is likely that more children are spending time at preschool, with babysitters, and/or watching television. Therefore it could be that children are getting a broader range of exposure to language that was limited only one or two decades ago. Then again, children could also be acquiring and developing language differently because of their exposure to different languages. Over the past several years there has also been a rise in Spanish-speaking people moving to the United States, which could have affected children’s understanding of language as well. These relatively new changes in our culture could have complicated the traditional way children acquire and develop language.

Overall, these results support the idea that children possess a very complicated and unique understanding of grammar and language. Regardless of which theory the results did or did not support, each child demonstrated a sophisticated information processing system. Future research is needed to gain more information about how children acquire and develop language, in addition to understanding the dynamics of their information processing systems. On a more scientific level, information on these ideas could help scientists better understand language learning. On a more practical level, information learned from these children could potentially be used to construct environments and methods for teaching that would allow for maximum linguistic growth among young children. The importance of language should never be simplified or exaggerated; it can be both the most basic yet complicated form of communication. Therefore it is crucial for us to understand the intricacies of our knowledge and use of language.
References


Addendum A: Introductory Letter
Getting Schooled in Language Acquisition and Development:
A Case Study Examining Nativist, Empiricist, and Constructivist Theories Among Preschoolers
An Honors Study at Aurora University

Dear Parent/Guardian,

My name is Heather Skeen and I am a senior member of the Honors Program at Aurora University. In the Honors Program, each student must develop a senior research project to work on over the course of one and half to two years. The project must be presented at Aurora University’s annual Undergraduate Research Conference the spring of our senior year.

As a psychology and English double major, I have chosen to examine theories of language development and acquisition among children, or more simply stated, how children learn to speak and what elements impact their ability to learn language.

In this study, I propose to observe each child’s use of irregular verb and noun forms. This will require two to three 15-minute sessions with your child. In addition to the child’s participation, I will need one of the parents/guardians to fill out a very brief questionnaire about the child. It is crucial to my study that the questionnaires are answered truthfully. This study will not serve as any form of personal evaluation of you or your child. This study is not an intelligence test nor is it a critique of anyone’s parenting skills. This study simply seeks to understand language development and acquisition among children and determine which theory most accurately describes how this particular group of children learns/acquires language.

I am attaching the consent forms for you and your child. One copy is for you to keep, the other please mail back to me in the stamped envelope provided if you choose to participate in this study. I am also attaching the parent/guardian survey, which you may mail back with the consent forms. The teacher survey is included so you are fully aware of what information is being collected about your child. You may keep or throw away the teacher survey.

I appreciate you taking the time and consideration to participate in this study. Please know that if you consent to have your child participate you may withdraw that consent at any time. If you are interested, I can send you my final report on the study when it is finished. Please feel free to contact me with any questions you may have before you decide to participate. If you wish to speak to my faculty sponsor, I will be happy to forward his number to you. If you would agree to participate in this study and allow your child to participate in this study, please mail back the attached consent form. Thank you very much.

Heather Skeen
(970) 219-7735
hskeen01@aurora.edu
Addendum B: Consent Forms

CONSENT FORM ON THE USE OF HUMAN SUBJECTS IN RESEARCH
Parent/Guardian Permission Form

I, _______________________________, the parent/guardian of ________________________________, am being asked if I will allow my child to participate in a research project entitled, “Getting Schooled in Language Acquisition and Development in Children: Examining Nativist, Empiricist, and Constructivist Theories Among Preschoolers.” This project is being conducted as a requirement for the Honors Program Senior Project to be presented at the Aurora University Undergraduate Research Conference in the spring of 2009.

My child’s teacher is also being asked to participate in this study by providing information about my child. I have seen the survey in which the teacher will respond to questions about my child. I am being asked if I will allow my child’s teacher to give information about my child for the purposes of this study.

From this project the researcher hopes to learn more about language development and acquisition in children.

As a participant in this project, my child will be asked a series of questions to observe his/her use of language.

The nature of this study has been explained to me by Heather Skeen. I understand that the anticipated benefits of my child’s participation are to help a student majoring in psychology and English learn how to conduct a research project and fulfill her requirements as a member of the Honors Program at Aurora University. It is also expected that this project will help the college student better understand language development and acquisition in young children. I understand that the known risks of my child’s participation in this study are the possible annoyance or discomfort of spending 10-15 minutes away from class on three separate occasions of my child’s time at preschool.

The researcher will make every effort to safeguard the confidentiality of the information that my child provides. Any information obtained from this study that can be identified with my child will remain confidential and will not be given to anyone without my permission. The researcher has asked me if videotaping of my child during these sessions is permitted strictly as a possible visual for the presentation of her Senior Project at Aurora University’s Undergraduate Research Conference. At the bottom of the form I will choose to allow or disallow the videotaping of my child during these sessions by initialing my choice.

If, at any time, I would like additional information about this project, I can contact Heather Skeen at hskeen01@aurora.edu and/or (970) 219-7735 or Dr. Richard Westphal at rwestpha@aurora.edu and/or (630) 844-4881. If I have questions about my rights as a participant, I may also contact Dr. Flynn, chair of the Aurora University Institutional Review Board, at vflynn@aurora.edu.

I understand that my child has the right to refuse to participate in this study. I also understand that, if my child does agree to participate, he/she has the right to change his/her mind at any time and stop participating. I acknowledge that the researcher will ask my child if he/she is willing to participate the day of an observational study. I also acknowledge that my child will not be asked to participate more than once per day by the researcher and that if my child chooses not to participate on two separate occasions, then he/she will be dropped from the study. My signature below indicates that I have given my informed consent for my child to participate in the above-described project and that I have also given my informed consent to allow my child’s teacher to provide information about my child. My signature also indicates that:
• I have been given the opportunity to ask any and all questions about the described project and my child’s participation, and that all of my questions have been answered to my satisfaction.
• I have been permitted to read this document and I have been given a signed copy of it.
• I am at least 18 years old.
• I am legally able to provide consent.
• I have discussed my child’s participation in this study with my child and believe that he/she will be comfortable participating.

I am comfortable with my child’s observational sessions being videotaped and used as a visual for the researcher’s presentation of this study. (Please initial by your decision.)

_____ I agree. _____ I do not agree.

________________________________  ________________
Signature of the parent of child participant     Date
CONSENT FORM ON THE USE OF HUMAN SUBJECTS IN RESEARCH
Statement of Informed Consent for Parent’s/Guardian’s Participation

I, _______________________________, am being asked if I will participate in a research project entitled, “Getting Schooled in Language Acquisition and Development: Examining Nativist, Empiricist, and Constructivist Theories Among Preschoolers” This project is being conducted as a requirement for the Honors Program Senior Project to be presented at the Aurora University Undergraduate Research Conference in the Spring of 2009.

From this project the researcher hopes to learn more about language development and acquisition in children.

As a participant in this project I shall be asked to fill out one questionnaire about my child’s exposure to language-related, environmental stimuli.

The nature of this study has been explained to me by Heather Skeen. I understand that the anticipated benefits of my participation are to help a student majoring in psychology and English learn how to conduct a research project and fulfill her requirements as a member of the Honors Program at Aurora University. It is also expected that this project will help the college student better understand language development and acquisition in young children. I acknowledge that the known risks of my participation in this study are the possible annoyance or discomfort of filling out a survey and taking up no more than 15 minutes of my valuable free time.

The researcher will make every effort to safeguard the confidentiality of the information that I provide. Any information obtained from this study that can be identified with me will remain confidential and will not be given to anyone without my permission.

If, at any time, I would like additional information about this project, I can contact Heather Skeen at hskleen01@aurora.edu and/or (970) 219-7735 or Dr. Richard Westphal at rwestpha@aurora.edu and/or (630) 844-4881. If I have questions about my rights as a participant, I may also contact Dr. Flynn, chair of the Aurora University Institutional Review Board, at vflynn@aurora.edu.

I understand that I have the right to refuse to participate in this study. I also understand that, if I do agree to participate, I have the right to change my mind at any time and stop participating. My signature below indicates that I have given my informed consent to participate in the above-described project. My signature also indicates that:

• I have been given the opportunity to ask any and all questions about the described project and my participation, and that all of my questions have been answered to my satisfaction.
• I have been permitted to read this document and I have been given a signed copy of it.
• I am at least 18 years old.
• I am legally able to provide consent.

______________________________  _______________________
Signature of participant            Date
CONSENT FORM ON THE USE OF HUMAN SUBJECTS IN RESEARCH
Statement of Informed Consent for Teacher’s Participation
I, ______________________________, am being asked if I will participate in a research project entitled, “Getting Schooled in Language Acquisition and Development: Examining Nativist, Empiricist, and Constructivist Theories Among Preschoolers.” This project is being conducted as a requirement for the Honors Program Senior Project to be presented at the Aurora University Undergraduate Research Conference in the spring of 2009.

From this project the researcher hopes to learn more about language development and acquisition in children.

As a participant in this project I shall be asked to fill out one questionnaire about each child participant’s exposure to language-related, environmental stimuli.

The nature of this study has been explained to me by Heather Skeen. I understand that the anticipated benefits of my participation are to help a student majoring in psychology and English learn how to conduct a research project and fulfill her requirements as a member of the Honors Program at Aurora University. It is also expected that this project will help the college student better understand language development and acquisition in young children. I acknowledge that the known risks of my participation in this study are the possible annoyance or discomfort of filling out a survey for each child participant and taking up no more than one hour of my valuable free time.

The researcher will make every effort to safeguard the confidentiality of the information that I provide. Any information obtained from this study that can be identified with me will remain confidential and will not be given to anyone without my permission.

If, at any time, I would like additional information about this project, I can contact Heather Skeen at hskeen01@aurora.edu and/or (970) 219-7735 or Dr. Richard Westphal at rwestpha@aurora.edu and/or (630) 844-4881. If I have questions about my rights as a participant, I may also contact Dr. Flynn, chair of the Aurora University Institutional Review Board, at vflynn@aurora.edu.

I understand that I have the right to refuse to participate in this study. I also understand that, if I do agree to participate, I have the right to change my mind at any time and stop participating. My signature below indicates that I have given my informed consent to participate in the above-described project. My signature also indicates that:

• I have been given the opportunity to ask any and all questions about the described project and my participation, and that all of my questions have been answered to my satisfaction.
• I have been permitted to read this document and I have been given a signed copy of it.
• I am at least 18 years old.
• I am legally able to provide consent.

________________________________clie __________________________________
Signature of participant Date
Addendum C: Parent Survey
Parent Survey

Child’s Name_____________________________________

1. How often do you read to your child?

Never            Seldom            Sometimes           Often

2. How often does your child read on his/her own?

Never            Seldom            Sometimes           Often

3. How many hours does your child (roughly) spend watching television and/or movies each day?

________

4. How often do you have conversations with your child, where you each take turns asking questions and answering and/or talking back and forth between one another?

Never            Seldom            Sometimes           Often

5. How often does your child listen to you talk, not participating in the conversation?

Never            Seldom            Sometimes           Often

6. How often does your child listen to the radio and/or music (with vocals)?

Never            Seldom            Sometimes           Often

7. How often does your child talk with others in the family or other children?

Never            Seldom            Sometimes           Often

8. How often do you correct your child’s grammar?

Never            Seldom            Sometimes           Often
Addendum D: Record Sheet

Record Sheet for One-on-One Studies

Child’s Name___________________________

1. Making Singular Nouns Plural
A. The researcher will show each child a picture of a made-up character, which is called a wug. While holding up the picture, the researcher will state, “This is a wug. Now there is another one. There are two of them. There are two…” and wait for the child to respond. The child responded:

B. The researcher: [Showing the picture.] “This is a fish. Now there is another one. There are two of them. There are two…”
The child responded:

C. The researcher: [Showing the picture.] “This is a cat. Now there is another one. There are two of them. There are two…”
The child responded:

D. The researcher: [Showing the picture.] “This is a mouse. Now there is another one. There are two of them. There are two…”
The child responded:

E. The researcher: [Showing the picture.] “This is a moose. Now there is another one. There are two of them. There are two…”
The child responded:

F. The researcher: [Showing the picture.] “This is a bird. Now there is another one. There are two of them. There are two…”
The child responded:

G. The researcher: [Showing the picture.] “This is a dog. Now there is another one. There are two of them. There are two…”
The child responded:

H. The researcher: [Showing the picture.] “This is a goose. Now there is another one. There are two of them. There are two…”
The child responded:

I. The researcher: [Showing the picture.] “This is an octopus. Now there is another one. There are two of them. There are two…”
The child responded:
J. The researcher: [Showing the picture.] “This is a rabbit. Now there is another one. There are two of them. There are two…”
The child responded:

2. Making Present Tense Verbs Past Tense
A. Similar to the first task, the researcher will also show the child a picture of a person performing an action. In the first example, the researcher will say, “She is ricking. If she ricks today, then yesterday she…” and wait for the child’s response. The child responded:

The researcher will also use the same method with other real, irregular and regular nouns to see if children will apply the same rule.
B. The researcher: [Showing the picture] “He is swimming. If he swims today, then yesterday he…”
The child responded:

C. The researcher: [Showing the picture] “He is walking. If he walks today, then yesterday he…”
The child responded:

D. The researcher: [Showing the picture] “He is eating. If he eats today, then yesterday he…”
The child responded:

E. The researcher: [Showing the picture] “She is shopping. If she shops today, then yesterday she…”
The child responded:

F. The researcher: [Showing the picture] “She is holding the rabbit. If she holds the rabbit today, then yesterday she…”
The child responded:

G. The researcher: [Showing the picture] “He is playing. If he plays today, then yesterday he…”
The child responded:

H. The researcher: [Showing the picture] “She is reading. If she reads today, then yesterday she…”
The child responded:

I. The researcher: [Showing the picture] “She is going to the store. If she goes to the store today, then yesterday she…”
The child responded:

J. The researcher: [Showing the picture] “He is brushing his teeth. If he brushes his teeth today, then yesterday he…”
The child responded:

_________________________

3. Making Present Tense Irregular Verbs Past Tense: Examining Consistency
The researcher will have a list of irregular verbs and will ask the child to conjugate each verb into its past tense. After going through the list once, the researcher will repeat this twice more, for a total of three times.

The researcher: “I have a list of words I’d like to read to you. After I read each word, I’d like you to take the word and say it as if it happened yesterday. [Pause for a few seconds.] So if I say fly, you’d say flew. If I say run, you’d say ran. Do you understand?” If the child says yes, then proceed. If the child says no, then explain the directions again. If the child still does not understand, then try again at a different session. The first time through the list, the researcher will correct any grammatically wrong forms.

1A. The researcher: “Drink…”
The child responded:

_________________________

1B. The researcher: “Fall…”
The child responded:

_________________________

1C. The researcher: “Give…”
The child responded:

_________________________

1D. The researcher: “Hit…”
The child responded:

_________________________

1E. The researcher: “Keep…”
The child responded:

_________________________

2A. The researcher: “Drink…”
The child responded:

_________________________

2B. The researcher: “Fall…”
The child responded:

_________________________

2C. The researcher: “Give…”
The child responded:

_________________________

2D. The researcher: “Hit…”
The child responded:

_________________________

2E. The researcher: “Keep…”
The child responded:

_________________________

3A. The researcher: “Drink…”
The child responded:

_________________________
3B. The researcher: “Fall…”
The child responded: ________________________________

3C. The researcher: “Give…”
The child responded: ________________________________

3D. The researcher: “Hit…”
The child responded: ________________________________

3E. The researcher: “Keep…”
The child responded: ________________________________
Addendum E: Teacher Survey

Teacher Survey

Child’s Name __________________________________________

1. How often does the child speak and/or participate in class?
   | Never | Seldom | Sometimes | Often |

2. How often does the child read in class?
   | Never | Seldom | Sometimes | Often |

3. How often does the child talk with his/her classmates?
   | Never | Seldom | Sometimes | Often |

4. The child communicates in grammatically correct speech. (Check which option most accurately applies.)
   | Never | Seldom | Sometimes | Often |

5. The child communicates at an age-appropriate level. (Check which option most accurately applies.)
   | Strongly Disagree | Disagree | Agree | Strongly Agree |

6. How often do you or the child’s fellow classmates correct the child’s grammar?
   | Never | Seldom | Sometimes | Often |
Addendum F: Pictures for Case Studies

This is a WUG

Now there is another one.
There are two of them.
There are two ______.
This is a FISH.

Now there is another one.  
There are two of them.  
There are two __________.
This is a CAT.

Now there is another one.
There are two of them.
There are two __________.
This is a MOUSE.

Now there is another one.
There are two of them.
There are two __________.
This is a MOOSE.

Now there is another one.
There are two of them.
There are two __________.
This is a BIRD.

Now there is another one.
There are two of them.
There are two __________.
This is a DOG.

Now there is another one.
There are two of them.
There are two __________.
This is a GOOSE.

Now there is another one.
There are two of them.
There are two __________.
This is an OCTOPUS.

Now there is another one.
There are two of them.
There are two __________.
This is a RABBIT.

Now there is another one.  
There are two of them.  
There are two __________.
She is ricking. If she RICKS today, then yesterday she ___________.
He is swimming. If he SWIMS today, then yesterday he ____________.
He is walking. If he WALKS today, then yesterday he ____________.
He is eating. If he EATS today, then yesterday he ____________.
She is shopping. If she SHOPS today, then yesterday she ____________.
She is holding the rabbit. If she HOLDS the rabbit today, then yesterday she ____________.
He is playing. If he PLAYS today, then yesterday he ____________.
She is reading. If she READS today, then yesterday she ____________.
She is going to the store. If she GOES to the store today, then yesterday she ____________.
He is brushing his teeth. If he BRUSHES his teeth today, then yesterday he ____________.
### Addendum G: Tables

#### Children’s Responses to the First Task

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<td>birds</td>
<td>birds</td>
<td>birds</td>
</tr>
<tr>
<td>dogs</td>
<td>dogs</td>
<td>dogs</td>
<td>dogs</td>
<td>dogs</td>
<td>dogs</td>
</tr>
<tr>
<td>gooses</td>
<td>goose</td>
<td>geese</td>
<td>goose</td>
<td>goose</td>
<td>goose</td>
</tr>
<tr>
<td>octopuses</td>
<td>octopus</td>
<td>octopus</td>
<td>octopus</td>
<td>octopus</td>
<td>octopus</td>
</tr>
<tr>
<td>rabbits</td>
<td>rabbits</td>
<td>bunnies</td>
<td>rabbits</td>
<td>rabbits</td>
<td>rabbits</td>
</tr>
</tbody>
</table>

**Table 1**

#### Children’s Responses to the Second Task

<table>
<thead>
<tr>
<th>Child 1</th>
<th>Child 2</th>
<th>Child 3</th>
<th>Child 4</th>
<th>Child 5</th>
<th>Child 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ricked</td>
<td>Play golf</td>
<td>Ricks</td>
<td>Ricked</td>
<td>Ricks</td>
<td>Ricked</td>
</tr>
<tr>
<td>Swimmmed</td>
<td>Swim for a lesson</td>
<td>Swims</td>
<td>Swims</td>
<td>Swims</td>
<td>Swimmmed</td>
</tr>
<tr>
<td>Walked</td>
<td>Walked on the sidewalk</td>
<td>Walks</td>
<td>Walks</td>
<td>Walks</td>
<td>Doesn’t walk</td>
</tr>
<tr>
<td>Eated</td>
<td>Tried to eat breakfast</td>
<td>Eats</td>
<td>Eat</td>
<td>Eats</td>
<td>Doesn’t</td>
</tr>
<tr>
<td>Shopped</td>
<td>Went to a store</td>
<td>Shops</td>
<td>Shops</td>
<td>Shops</td>
<td>Doesn’t shop</td>
</tr>
<tr>
<td>Hold</td>
<td>Loved the rabbit</td>
<td>Hold</td>
<td>Holds</td>
<td>Holds</td>
<td>Doesn’t hold</td>
</tr>
<tr>
<td>Played</td>
<td>Ride a Bike</td>
<td>Plays</td>
<td>Plays</td>
<td>Plays</td>
<td>Played tomorrow</td>
</tr>
<tr>
<td>Read (present)</td>
<td>Read a book (present)</td>
<td>Reads</td>
<td>Reads</td>
<td>Reads</td>
<td>Doesn’t read tomorrow</td>
</tr>
<tr>
<td>Goed</td>
<td>She’s gonna eat something</td>
<td>Goes</td>
<td>Goes</td>
<td>Goes</td>
<td>Doesn’t go</td>
</tr>
<tr>
<td>Brushed</td>
<td>Makes his teeth clean</td>
<td>Brushes</td>
<td>Brushed</td>
<td>Brushes</td>
<td>Doesn’t brush</td>
</tr>
</tbody>
</table>

**Table 2**
<table>
<thead>
<tr>
<th>Q #</th>
<th>Child 1</th>
<th>Child 2</th>
<th>Child 3</th>
<th>Child 4</th>
<th>Child 5</th>
<th>Child 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Often</td>
<td>Sometimes</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
<td>Seldom</td>
</tr>
<tr>
<td>2</td>
<td>Often</td>
<td>Sometimes</td>
<td>Never</td>
<td>Sometimes</td>
<td>Never</td>
<td>Never</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
</tr>
<tr>
<td>5</td>
<td>Often</td>
<td>Sometimes</td>
<td>Never</td>
<td>Sometimes</td>
<td>Seldom</td>
<td>Often</td>
</tr>
<tr>
<td>6</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
<td>Sometimes</td>
</tr>
<tr>
<td>7</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
</tr>
<tr>
<td>8</td>
<td>Sometimes</td>
<td>Sometimes</td>
<td>Sometimes</td>
<td>Often</td>
<td>Sometimes</td>
<td>Sometimes</td>
</tr>
</tbody>
</table>

“Q#” denotes the question number

Table 3
### Responses from Teacher Survey

<table>
<thead>
<tr>
<th>Q#</th>
<th>Child 1</th>
<th>Child 2</th>
<th>Child 3</th>
<th>Child 4</th>
<th>Child 5</th>
<th>Child 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Often</td>
<td>Sometimes</td>
<td>Often</td>
<td>Often</td>
<td>Sometimes</td>
<td>Often</td>
</tr>
<tr>
<td>2</td>
<td>Never</td>
<td>Never</td>
<td>Seldom</td>
<td>Never</td>
<td>Never</td>
<td>Never</td>
</tr>
<tr>
<td>3</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
</tr>
<tr>
<td>4</td>
<td>Often</td>
<td>Sometimes</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
</tr>
<tr>
<td>5</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>6</td>
<td>Seldom</td>
<td>Sometimes</td>
<td>Seldom</td>
<td>Seldom</td>
<td>Seldom</td>
<td>Seldom</td>
</tr>
</tbody>
</table>

1. Often Seldom -- Often Often Often
2. Never Never -- Never Never Never
3. Often Often -- Often Often Often
4. Often Sometimes -- Often Sometimes Often
5. Strongly Agree Agree -- Strongly Agree Agree Agree
6. Never Never -- Never Never Never

“Q#” denotes the question number

“—” denotes no response (because this child had only one teacher)

### Table 4

<table>
<thead>
<tr>
<th>Survey</th>
<th>Child 1</th>
<th>Child 2</th>
<th>Child 3</th>
<th>Child 4</th>
<th>Child 5</th>
<th>Child 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent/Guardian</td>
<td>17</td>
<td>17</td>
<td>18</td>
<td>21</td>
<td>18</td>
<td>15</td>
</tr>
<tr>
<td>Teacher Average</td>
<td>16</td>
<td>12.5</td>
<td>16</td>
<td>16</td>
<td>14.5</td>
<td>15.5</td>
</tr>
<tr>
<td>Total Average</td>
<td>16.5</td>
<td>14.75</td>
<td>17</td>
<td>18.5</td>
<td>16.25</td>
<td>15.25</td>
</tr>
</tbody>
</table>

**Table 5**