Introduction

The aim of the present study is to address the nature and distribution of children’s productive causative errors such as *Baby powder sneezes me*. As a data source, the CHILDES database was used.

Acquisition of Causative Structures

Causative and noncausative verb argument structures bear directly on first language acquisition because, according to a number of studies (Bowerman 1974 and 1982; Lord 1979; Maratsos et al. 1987), children will use noncausative verbs to express causative events, as in (12) and (13):

(12) I'm gonna **fall** this chair on you.

(I'm gonna drop this chair on you.)

(13) **Go** the doggie away!

(Take/Send the doggie away!)

This kind of productive error will be referred to as **causative overregularization**. (Although most of the early works on this topic refer to it as **overgeneralization**, more recent works, including the present study, prefer **overregularization**. Since the present study focuses on the overregularization, all subsequent noncausatives verbs used in a causative manner will be underlined.) In (12) and (13),
children overregularize "by using a predicate that is normally noncausative . . . to mean roughly 'cause the state of affairs normally referred to by this word to come about'" (Bowerman, 1982, p. 11). What is missing from the overregularization is a causal component. Nevertheless, children attempt to indicate that the particular "state of affairs" was caused by someone or something. Throughout this study all correct (adult-like) occurrences of causative verbs or structures will be referred to as regular causatives.

To explain why children make the causative overregularization, several hypotheses have been proposed. (Bowerman 1982 gives a thorough review of these hypotheses.) The present study investigates two of these explanations, one proposed by Melissa Bowerman and the other proposed by Derek Bickerton. Bowerman (1974 and 1982), based on a longitudinal study of the speech of her daughters Christy and Eva, argues that the notion of causation is acquired (i.e. not innate) and that children have no cognitive means of making overregularizations as in (12) and (13) until they have acquired that notion. So, the overregularization indicates that children have acquired causation, although not completely. Bowerman (1974) reports that her daughter Christy accomplished this at the beginning of her second year (p. 163). The second hypothesis was proposed by Bickerton (1981) as a part of his language bioprogram
hypothesis (LBH). In contrast to Bowerman, Bickerton claims that the child’s ability to express causative events using language is innate, and that overregularizations like (12) and (13) are a consequence of children’s "having failed to extract from their input a consistent way of expressing the CNCD [causative-noncausative distinction]" (p. 200). That is, anytime a child uses noncausative verbs in a causative overregularization, it is due to the lack of the appropriate causative lexical items or structures and not due to an undeveloped notion of causation. According to Bickerton then, English speaking children will produce I’m gonna fall it on you, because they have not acquired the verb drop, and He cried me, because they cannot yet use the appropriate periphrastic make or cause.

The Present Study

It is the aim of the present study to evaluate and test the claims of these two competing theories. Results indicating that children do make the causative overregularization before 2;1 (the age when they allegedly grasp the causative rule according to Bowerman 1974) would be inconsistent with Bowerman’s theory, which holds that overregularizations of this type are impossible due to the lack of the causative rule. This would lend support to Bickerton’s LBH, because if the notion of causation is innate, then children would be expected to make novel
causative errors as soon as they go beyond the holophrastic stage and start combining words. (Hypothetical examples of two-word overregularizations would be \textit{Go doggie} for \textit{Take away the doggie} or \textit{Fall cup} for \textit{I dropped the cup}.)

On the other hand, evidence showing that children begin to overregularize only after they have acquired regular causative verbs and structures (e.g. \textit{I keep dolly here} and \textit{Brother made me cry}) would be counter evidence to Bickerton’s claim that such overregularizations appear despite a total lack of causatives in their lexicon. In order for such a finding to support Bowerman though, it must be shown that children's use of causative verbs before 2;1 are unanalyzed idiomatic chunks (e.g. \textit{drop it}, \textit{close it}, etc.).

\textbf{Bowerman's Explanation}

\textit{Introduction}. The first theory in question originates with Bowerman (1974), who says that children must first acquire the notion of causation before they can use causative constructions in creative ways, i.e., overregularize. Bowerman reports that her daughter acquired this notion between the ages of 2;0 and 2;1 (p. 163). Furthermore, Bowerman claimed that her daughter's alleged acquisition of the cause-effect rule was marked by "the emergence of the ability to produce periphrastic causative constructions with 'make' and 'get'" (p. 162). In fact,
Maratsos et al. (1987) cite anecdotal diary evidence to support the claim that children do not produce novel causatives until after they begin to use periphrastic causatives.

**Analogy with bound morphemes.** Bowerman does not elaborate on what triggers the ability to acquire the notion of cause and effect, other than the following:

Overregularizations stem from the child's newly attained grasp of a basic structural regularity underlying a class of forms (words, sentences, etc.) of the adult language. . . . What is still missing is more peripheral information about which forms are exceptions to the regularity." (Bowerman, 1982, p. 9)

This reasoning is based on an analogy with the overregularization that occurs during the acquisition of inflectional morphology. Bowerman (1974 and 1982) and Clark and Clark (1977) compare productive causative errors with other instances of overregularization such as adding the plural *-s* to irregular nouns such as *foot* to yield *foots* or *feets* and adding the past tense *-ed* to irregular verbs such as *throw* to yield *thowed*. Since there is general agreement among acquisitionists that children are rule-learners, Bowerman's model seems quite appealing.
In order for the analogy to hold in the strictest sense, there must be evidence of correct causative verb use before the onset of the overregularization, just as children produce *feet* and *threw* during the very early stages of morpheme acquisition. Indeed when one views the speech of children who are younger than two, Bowerman notes that causative verbs are present, as in (36-39):

(36) Mommy open.
(37) Open box.
(38) Break stick.
(39) Daddy bring letter.

Bowerman (1982) says that "in Christy's case, for example, *bring*, *keep*, and *leave* had all occurred in transitive causative contexts before the onset of the novel causative forms; these vanished for some time in favor of causative *come* and *stay*" (p. 20). To explain this, Bowerman (1974) offers the following:

When a child first begins to use causative verbs in 2- and 3-word sentences, the verbs are essentially 'unanalyzed' forms in that, although they are used referentially in a roughly appropriate way, the child is not yet in any sense aware of their internal structure in the way that he must become before he
could begin to create novel causative verbs by analogy with his preexisting ones. (p. 154)

This notion of "unanalyzed" is key to Bowerman's argument and she defines it as a child's usage of a "linguistic form without yet being aware of its internal structure" (p. 159). By internal structure, Bowerman is presumably referring to a verb’s argument structure which relates directly to its underlying semantic structure. Evidence that children have "analyzed a previously unanalyzed form" is when they overregularize as in The hunter died the rabbit. This of course assumes a generative semantics (GS) interpretation, the approach which Bowerman (1974 and 1982) takes in order to formulate her hypothesis. In a GS framework the deep semantic representation of an overregularization with die contains a "cause" element. That is, children have successfully analyzed cause-effect forms and discovered that they have a causal element. Children are overregularizing, then, based on their analysis. According to Bowerman, a child's causative acquisition schedule may be summarized as follows:

1;7--first correct, "unanalyzed" causatives
2;0--first periphrastic causatives
2;1--first causative overregularizations
Productivity of the overregularization. Based on evidence from her daughter's speech, Bowerman concludes that causative overregularizations are highly productive. Maratsos et al. (1987), however, report that causative overregularizations are only marginally productive (pp. 93-94). It should be noted that their study addressed children’s willingness to convert a made up verb into a causative. Thus, they did not rely on a body of spontaneous speech to claim marginal productivity for the causative overregularization. From this finding, the status of Bowerman's analogy becomes somewhat questionable, because morphological over-regularizations are highly productive and easily found in any sizable body of child language data (Kuczaj, 1977, p. 593). Moreover, Maratsos et al. found considerable individual differences as to the number of productive causatives used under the test conditions. All children, however, exhibit morphological overregularization and individual differences are insignificant.

Opposition to Bowerman’s explanation. Other researchers, however, do not accept the analogy upon which Bowerman's model is based. Lord (1979), for example, in accounting for causative overregularizations in her own data, suggests that these errors can be interpreted in terms of a more general syntactic paradigm where overregularizations are based on the number of arguments that a given verb allows and not on the acquisition of the
semantic cause-effect notion. This insight comes from Lord's observation that children will produce errors "in the opposite direction," that is, one argument will be omitted instead of added (p. 84). The following examples where two-argument verbs are used with only one argument were taken from Lord's data:

(40) **see** They don't seem to see. Where are they? (B and M are looking for B's sandals).

(41) **bother** You're bothering me! You keep on talking to her! And that makes me bother! (p. 84).

Lord also finds "constructions in which three-argument verbs are used with two arguments" as in (42):

(42) **put** I wanna take it out so it can't put on my nose. (J wants to take ice cream out of cone so that it won't get on her nose as she eats it) (p. 85).

In response to Lord's claim, Pinker (1989) says that errors such as (40-42) are "almost surely overextended middles" [emphasis added] (p. 301). An adult middle construction is exemplified in (43):

(43) Hot butter cuts easily.
Thus, Lord's claim that the causative overregularization is part of a more general syntactic paradigm can be rejected in view of Pinker's argument.

At this point it is useful to turn to Bickerton's critique of these claims. Bickerton (1981) attacks Bowerman's generative semantics explanation of causative acquisition as "the logical fallacy of post hoc, ergo propter hoc" (p. 206). That is, Bickerton claims that the production of periphrastic causatives before the appearance of causative over-regularizations is not grounds to claim that the former is responsible for the latter. Bickerton bases this claim primarily on the results of a cross-linguistic study by Slobin (1982). In this study children from the United States, Italy, Yugoslavia, and Turkey were asked to act out causative sentences like "The horse makes the camel run" by using puppets (p. 142). The study showed that English speaking children often could not act out causative sentences even at age 4;0. Bickerton concludes that since English-speaking children are unable to do this, they certainly cannot "analyze" causative constructions at 2;0 as Bowerman suggests. Bickerton, then, refutes the analogy on grounds that, since children cannot act out causative sentences, they definitely cannot have acquired a causative rule.
Bickerton's Explanation

Introduction. In direct contrast to Bowerman, Bickerton claims that the notion of causation is innate and, therefore, he uses causation phenomena to support his language bioprogram hypothesis (LBH). It is perhaps beneficial, then, to outline this controversial hypothesis in order to put the present study into a broader context.

The bioprogram. The language bioprogram hypothesis was first proposed by Bickerton (1981) and later amended in Bickerton (1984a), (1988), and (1990). Briefly the LBH is an innatist account of how humans learn to process language. Bickerton (1981) holds that mental development (specifically that of language) follows a predetermined, genetic path just as physical development (breathing, eating, and standing upright) does (p. 133). A further parallel is that "the bioprogram is not present at birth, but unfolds progressively during the course of the first four years or so of life" (p. 199). Bickerton also says that the LBH is an "evolutionary device" that insures survival of the species (p. 144). This last notion is expanded in Bickerton (1990).

Bickerton has suggested three sources of supporting data for the LBH: pidgin and creole studies, first language acquisition studies, and second language acquisition studies. Research since Bickerton proposed this hypothesis, however, has focused only on data obtained from pidgin and creole studies for supporting and refuting the LBH (see
Owens 1990 and Schiller 1993). The studies by child language specialists have been limited both in number and in scope. Most of these efforts have analyzed the findings of previous research for possible application to the LBH. Cziko and Koda (1987) and Shirai (1994) are two first language acquisition studies that directly address the LBH. Finally, Bickerton (1984b) discusses how the LBH can be applied to second language acquisition research.

Bickerton incorporates causation phenomena into the LBH based on two related observations. First, the children of pidgin speakers, those who become first generation speakers of creole languages, very often use the same lexical item to express both causative and noncausative events. Second, the causative-noncausative distinction (CNCD) is, according to Bickerton (1981), an example of errorless acquisition of a semantic notion (p. 212). Bickerton reasons that the only way to account for any errorless acquisition is by positing the existence of some preprogrammed, facilitating device.

Evidence from creoles. To address this first claim, Bickerton notes that creole languages tend to rely heavily on lexical alternation type causatives (where the causative is identical to the noncausative in its phonological form); “notoriously, creoles avoid bound morphology solutions” (Bickerton, 1981, p. 199). Bickerton assumes this to be one of the default parameters of an innate biological language program. “If there is a language bioprogram, then children
are programmed with a set of basic distinctions which they expect that their native tongue will implement somehow" (p. 199). Thus, English-speaking children will fall back on this default setting when no other lexical item or bound morpheme is available. Accounting for creole-speaking children’s alleged avoidance of bound morphological solutions, Bickerton says “I suspect that the bioprogram may turn out as follows: both distinctions and means for implementing them are programmed, but are not necessarily conjoint in the program” (p. 199).

Support from other languages. As for Bickerton’s second argument, he cites cross-linguistic evidence to show that some groups of children accomplish nearly perfect acquisition of causative structures. For instance, Slobin (1982) found nearly 100 percent accuracy in Turkish children's use of a verbal affix that expresses causation. Turkish children use "the same lexical verb in both cases but differentiate them by means of a verbal affix" (Bickerton, 1981, p. 197). What is interesting in the case of Turkish is that children attain 100 percent accuracy by age 3;0. Also, Schieffelin (as cited in Bickerton, 1981) found that for learners of Kaluli, an ergative language of Papua New Guinea, "the suffix which is applied to causative agents is fully acquired and appropriately used by age 2;2, without ever being generalized to nonagentive subjects" (p. 198). Bickerton interprets such early achievements of
accuracy as evidence that children have an innate capacity for grasping the causative-noncausative distinction.

The situation with English. But according to the previous discussion, the acquisition of causatives in English is far from being errorless. Accepting Bowerman's analogy with the acquisition of inflectional morphology, even if such an analogy explains the productive errors, would be to deny innate status for the cause-effect notion, because if the notion has to be acquired as Bowerman says (and apparently with errors), then it cannot be innate. The situation with the acquisition of English is obviously problematic for Bickerton. As for children's overregularization of the causative in English, Bickerton (1981) claims that it "could be due to nothing more complex than the interaction of communicative need with available vocabulary. As long as the child can handle his needs with a relatively small vocabulary, the need to 'invent' new causatives simply will not arise" (p. 206). But since the need apparently does arise, then there must be an explanation. For example, Bickerton predicts that overregularizations will arise because the child has only noncausative verbs in his vocabulary. This would easily explain errors with lexical-suppletion type verb pairs such as fall/drop or come/bring. According to Bickerton the child would begin to search for a means of expressing causation from the onset of language use. If none were found, the
A child would opt for the most related verb, the noncausative. As for verbs that participate in the lexical alternation, for example *open*, *close*, and *shine*, the child’s first hypothesis would be the correct adult form and no overregularization would result. Bickerton’s hypothesis also accounts for situations where no lexicalized causative form exists (e.g., *cry*, *laugh*, and *blush*). The only alternative would be to use a periphrastic structure. Children would produce causative overregularizations with verbs in this third subclass then, because no appropriate periphrastic form exists in their grammar.

Bickerton's explanation of this phenomenon is simpler than Bowerman’s and, perhaps, too obvious to be noticed. Indeed, in the entire body of research on the causative overregularization, no one cites Bickerton or proposes a similar claim. There is, however, no lack of criticism of the language bioprogram hypothesis (see Mufwene 1984 and Romaine 1988 for critiques). These criticisms are not the same as those directed towards other innatist views, because Bickerton’s language bioprogram hypothesis differs somewhat from Chomskyan theories of innateness. Whereas Chomsky holds that linguistic ability is present from birth, Bickerton (1981) adds that “the bioprogram language would unfold, just as a physical bioprogram unfolds; the language would grow just as the body grows, presenting the appropriate structures at the appropriate times and in the appropriate,
pre-programmed sequences” (p. 135). Due to the inherent testability problems of innatist claims in general, the controversy of the LBH may never be truly settled. It may reach the status of theory, however, if it has enough predictive power. The present study, then, is meant to serve as a preliminary test of one of its controversial claims. In short, can the LBH account for children's causative overregularizations?

The Child Language Data Exchange System

As a data source for this study, the Child Language Data Exchange System (CHILDES) was used. Developed by MacWhinney (1996), CHILDES is a public access database devoted to collecting child language acquisition data. The database, available on CD-ROM, is divided into three parts: the data transcription and coding tools, the data analysis programs, and the database itself.

The database component of CHILDES consists of first language acquisition data in English and 19 other languages along with bilingual and language impairment data. The database is continually growing, but for this study, only the data on the 1996 version of CHILDES was used. In total, the database contains nearly 150 megabytes of data. CHILDES is particularly rich in English data; indeed, "the
directory of transcripts from normal English-speaking children constitutes about half of the total CHILDES database" (MacWhinney, 1995, p. 289). Most of the English data originates from studies by well-known researchers, including Elizabeth Bates, Roger Brown, Brian MacWhinney, Catherine Snow, and 32 others.

Advantages and Disadvantages

The justifications for using CHILDES in this study are as follows: (a) There are numerous longitudinal and cross-sectional studies on children from a variety of backgrounds, (b) the database comes equipped with a series of programs that enable the researcher to search automatically and quickly through a large amount of data, and (c) the database is readily available for verification and replication of this or any study.

For this particular study, CHILDES has one major disadvantage. The data files, which were prepared by the individual researchers, are not necessarily coded for causative errors. A preliminary search through the entire database found that only one researcher out of 35 used coding to mark causative overregularizations. The problem this presents is that, in order to discover every causative overregularization, the researcher has to view and evaluate all occurrences of noncausative verbs. Only then can the researcher be certain that every possibility was covered.
This of course greatly increases the research time. CHILDES, however, is equipped with ways that enable the researcher to limit the data pool and thus make what would otherwise be a tedious inefficient search quite reasonable.

The Nature of Database Searches

Empirical studies that rely on previous language corpora as the only data source face an inherent logical problem. The corpus data has the possibility of being skewed by unrepresentative data. In searching for a particular structure, the mere absence of that structure from the corpus does not necessarily insure that the structure does not exist outside that corpus. Finding no instances of the structure may mean that the database simply does not contain the right sample of speech. After all, researchers gather data at convenient times, in convenient locations, and in convenient manners.

Potential problems. The time of data collection can play a role in the quality of the data collected. For example, if the researchers are not family members or very close friends, then they usually will not collect data in the early mornings or late at night. This is not to claim that speech is really so different at these times, but the possibility is there nevertheless. The same goes for the location where the data is collected. Of the data sets searched in the two studies, almost all of them contained data that were collected inside, usually at the child’s
home; after all, researchers have to consider such practical things as noise. Recording children’s speech on a noisy playground is much more difficult than at home. Nevertheless, variability of speech style must be considered. Different styles of speech may exist in these two environments and may play a role in the kind of data ultimately collected. Also, children may use different speech depending on whether the researcher is a parent or not. Finally, there is always the possibility of researcher-influenced behavior. For example, the child may know that he or she is being recorded, and this could affect the child’s language production.

**Solutions.** Although these problems have the potential to introduce uncontrollable variables, the probability of finding the structure in question, if it exists, increases as the amount of data increases. But if the data sets are representative of the child’s overall speech pattern, then the amount of data becomes less important. No data file, however, is truly 100 percent representative. Regardless of these aforementioned problems, using CHILDES is an effective way to insure that realistic results are obtained due to the amount of data available. If each data set had to be evaluated totally by hand, the advantages of such a corpora would be negated by the likelihood of human error. But as already mentioned, the automatic search programs greatly reduce the research load and thus the potential for human
error. Thus in spite of these problems, CHILDES remains a viable data source for this type of study.
Chapter Four
Study One

In the Introduction and the Review of the Literature, one of the research questions was whether or not evidence could be found to contradict Bowerman. Evidence that contradicts Bowerman would include finding analyzed causatives (in the form of causative overregularizations) in a child's speech before his or her acquisition of the cause-effect rule. According to Bowerman this occurs at the beginning of the second year (at least for the children she observed). The following database search provides data that bears directly on this issue.

Data Set

To test Bowerman’s claim, the data set was first narrowed to include only those studies that document the speech of children 2;1 and younger. This age corresponds to when Bowerman said children begin to overregularize, but it is recognized that there may be significant variation across different children. Regardless of this potential for individual differences, some cut-off point had to be established for purposes of the study, and using Bowerman’s age of 2;1 was deemed reasonable. The names of these particular studies are listed in Table 1:
Table 1

<table>
<thead>
<tr>
<th>Name</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>bates</td>
<td>448 K</td>
</tr>
<tr>
<td>bloom70eric</td>
<td>240 K</td>
</tr>
<tr>
<td>bloom70pet</td>
<td>800 K</td>
</tr>
<tr>
<td>bloom73</td>
<td>240 K</td>
</tr>
<tr>
<td>braine</td>
<td>144 K</td>
</tr>
<tr>
<td>brown</td>
<td>704 K</td>
</tr>
<tr>
<td>cornell</td>
<td>144 K</td>
</tr>
<tr>
<td>ctuttend</td>
<td>208 K</td>
</tr>
<tr>
<td>higginson</td>
<td>560 K</td>
</tr>
<tr>
<td>howe</td>
<td>880 K</td>
</tr>
<tr>
<td>macwhin</td>
<td>1216 K</td>
</tr>
<tr>
<td>ne14</td>
<td>2544 K</td>
</tr>
<tr>
<td>ne20</td>
<td>2160 K</td>
</tr>
<tr>
<td>peters</td>
<td>464 K</td>
</tr>
<tr>
<td>post</td>
<td>736 K</td>
</tr>
<tr>
<td>sachs</td>
<td>736 K</td>
</tr>
<tr>
<td>suppes</td>
<td>320 K</td>
</tr>
<tr>
<td>valian</td>
<td>624 K</td>
</tr>
<tr>
<td>warren</td>
<td>240 K</td>
</tr>
<tr>
<td>wells</td>
<td>1776 K</td>
</tr>
<tr>
<td>wisc</td>
<td>1680 K</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td><strong>16864 K</strong></td>
</tr>
<tr>
<td></td>
<td><strong>16.86 MB</strong></td>
</tr>
</tbody>
</table>

These include work from 19 researchers and constitute 16.9 megabytes of total data, or about 23% of the total English acquisition data on CHILDES.

**Procedures**

First, it should be noted that each data set was treated as a separate mini-study. The program FREQ was used to generate a combined frequency count of every word used by the particular target child. From this frequency tally, all noncausative verbs that had the potential for causative overregularization were chosen as candidates for further
evaluation. Table 2 shows a typical list of these noncausative verbs.

<table>
<thead>
<tr>
<th>Noncausative</th>
<th>Potential overregularized meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>bark</td>
<td>cause to bark</td>
</tr>
<tr>
<td>be</td>
<td>give, cause to exist</td>
</tr>
<tr>
<td>bubble</td>
<td>cause to bubble</td>
</tr>
<tr>
<td>come</td>
<td>bring, pull, throw, put, etc.</td>
</tr>
<tr>
<td>cry</td>
<td>cause to cry</td>
</tr>
<tr>
<td>drink</td>
<td>give a drink, cause to drink</td>
</tr>
<tr>
<td>eat</td>
<td>feed, cause to eat</td>
</tr>
<tr>
<td>fall</td>
<td>drop, trip, knock down</td>
</tr>
<tr>
<td>fuss</td>
<td>cause to fuss</td>
</tr>
<tr>
<td>go</td>
<td>take, send, push, throw, put, etc.</td>
</tr>
<tr>
<td>hiccup</td>
<td>cause to hiccup</td>
</tr>
<tr>
<td>meow</td>
<td>cause to meow</td>
</tr>
<tr>
<td>laugh</td>
<td>cause to laugh</td>
</tr>
<tr>
<td>remember</td>
<td>cause to remember</td>
</tr>
<tr>
<td>run</td>
<td>cause to run</td>
</tr>
<tr>
<td>sleep</td>
<td>put to bed, cause to sleep</td>
</tr>
<tr>
<td>smile</td>
<td>amuse, cause to smile</td>
</tr>
<tr>
<td>squeak</td>
<td>cause to squeak</td>
</tr>
<tr>
<td>stay</td>
<td>keep, leave</td>
</tr>
</tbody>
</table>

Once a list was compiled for each of the data sets, each one was divided into two groups. One group included the verbs *come* and *go* while the second included all other verbs. The rationale for singling out *come* and *go* was that these verbs occurred with a very high frequency and thus proved very problematic for the final search procedure. For example, the search program would generate a large number of false hits with *come* and *go*. Since it is possible to limit using COMBO, treating *come* and *go* separately greatly reduced the number
of hits generated by the program. Two limits were set for these verbs. First COMBO was told to disregard common phrases such as in (1) and (2):

(1) Here/there comes the man.
(2) Here/there goes my truck.

Secondly COMBO was instructed to disregard any utterances in which come or go occurred last, such as in (3) and (4):

(3) Me go.
(4) They're coming.

Utterances such as (5) and (6) were typical hits for the resulting come-go search:

(5) Me go in the house.
(6) Come me to store too.

Thus all possibilities of an overregularization with come or go were considered.

The remainder of the noncausative verbs encountered in the frequency tally along with all of their observed forms (e.g. bark, barks, barked, etc.) were entered into an input file. This file was used in conjunction with COMBO to single out candidates for the overregularization. The program COMBO
then searched for all instances of the noncausative verbs in the input file followed by any other word. For the verb *cry*, for instance, (7) and (8) illustrate possible hits while (9) illustrates a non-possible hit:

(7) Brother *crying* me
(8) Who's gonna cry about it
(9) Billy always cries.

All possibilities were reviewed in context, and the ones that were clearly not instances of a causative over-regularization, such as (8) and (9), were discarded. The final candidates were then scrutinized to determine if they were indeed causative overregularizations. This entailed opening the individual data file in the CHILDES database to view the context of the utterance and any related dependent tiers (i.e., some researchers have used the dependent tiers to elaborate on the situation or the child's intended meaning).

**Results and Discussion**

After the individual CHILDES data files were reviewed to determine if the candidates were in fact
overregularizations, four unambiguous occurrences were found (10-13):

(10) Eve fell Red Bicycle. (age 1;9)
(11) Go this around, go this around, right? (1;11.15)
(12) Me going that backwards. (1;11-2;1)
(13) Lady gone that strawberry. (1;11-2;1)

The full utterances in context and with citations are listed in Appendix A. These findings suggest two things. First, overregularizations do exist in the speech of children younger than 2;1, as in examples (10) and (11). As for the other examples, no specific age was given for the child. Rather, an age range was given for the entire data set. Thus, it cannot be said that examples (12) and (13) definitely contradict Bowerman’s predicted age when children begin the overregularization. Secondly, these findings do not contradict Bowerman’s observations that there is a lower limit for when an individual child will overregularize. In fact, these findings support Bowerman in confirming that very young children do not overregularize.
The second question introduced in the Introduction and Review of the Literature was whether or not evidence could be found to contradict Bickerton's explanation of why children produce causative overregularizations. In order to contradict Bickerton, it must be shown that, even though a given child uses regular causative structures, he or she still chooses to overregularize. Finding either of the following possibilities will provide counter evidence: (a) if a child’s use of suppletive causatives precedes overregularizations that contain corresponding noncausative forms (e.g., if the verb drop is found in the child’s speech prior to the use of fall in an overregularization such as I fell spoon), or (b) if a child’s use of periphrastic causatives precedes over-regularizations that consist of noncausatives that have no suppletive or phonologically identical transitive form (e.g., if periphrastic structures with cause, get, have, or make precede overregularizations with verbs such as cry, laugh, or blush).

As mentioned earlier in the discussion of Bickerton’s position, innatist claims in general present inherent testability problems when real data is used. Bickerton’s position is no different. A sound hypothesis should be set up in a way so that it is easily testable and falsifiable.
Unfortunately, Bickerton’s “hypothesis” neither lends itself well to testability nor to falsifiability. It is widely reported that children’s overregularizations are preceded by correct forms (e.g., went before goed, feet before foots, etc.). Bowerman (1974) found this to be the case for causative overregularizations as well. Here the testability question of Bickerton’s position may be addressed. If regular forms exist early in children’s speech, that is, well before the onset of overregularization, then Bickerton must concede that these early forms are really not recognized by children as causatives. If they are not, then the causative notion cannot be given innate status. This argument might be countered by saying that the bioprogram unfolds gradually, as Bickerton has claimed, but then the argument becomes circular with no way to be tested. Nevertheless, with the utmost interest in objectivity, the following test was constructed to avoid the testability problems in best way possible and attempts to evaluate this tenuous claim.

Data Set

This study requires longitudinal data. Furthermore, each set must be treated as a separate case study, because testing Bickerton's hypothesis requires a clear picture of the developmental stages of an individual child's speech. The entire CHILDES database was, therefore, narrowed to
include only longitudinal studies of English speaking children. Some of these studies were discarded because they contained essentially cross-sectional data spanning only two or three months.

One constraint that must be placed on these data sets is the age interval over which the data was collected. That is, the span of time covered by the data collection has to coincide with the emergence of causative overregularizations. But Maratsos et al. (1987) and Pinker (1989) show that not all children overregularize. Moreover, the results from Study One show that overregularizations can begin as early as 1;9 in some children. Therefore, keeping Bowerman's observed age of 2;1 as a working reference for when children begin to overregularize is pointless when addressing Bickerton's hypothesis. Nevertheless, it is necessary to discover if each child in fact overregularizes. Only then can previous data be searched for occurrences of the corresponding causatives.

One further constraint must be placed on the longitudinal studies. That is, when an overregularization is found, there has to be enough data before that point to enable a meaningful search for the corresponding causative. Explaining the organization of the longitudinal data sets will make this constraint more clear. A longitudinal set may consist of anywhere from four or five separate files to over 100 separate files. Some researchers collected data every
two weeks and some every month. For example, if there is
data for a child from 1;6 to 3;6, this has the potential to
coincide with causative overregularizations. But if one
occurs at 1;7, then there may not be a significant amount of
data to analyze, because only data from 1;6 can be searched.
The data file for 1;6 may be only a page or two and contain
very little of a particular child’s speech.

The final group contained 20 separate data sets, each
from a different child. In total these sets constituted 29.7
megabytes of data, or 40% of the English data in CHILDES.
The name of each study is listed in Table 3:

<table>
<thead>
<tr>
<th>Name</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>bloom70.peter</td>
<td>2784 k</td>
</tr>
<tr>
<td>bloom73.alison</td>
<td>240 k</td>
</tr>
<tr>
<td>brown.adam</td>
<td>2672 k</td>
</tr>
<tr>
<td>brown.eve</td>
<td>1056 k</td>
</tr>
<tr>
<td>brown.sarah</td>
<td>4016 k</td>
</tr>
<tr>
<td>clark</td>
<td>1872 k</td>
</tr>
<tr>
<td>cornell.haas</td>
<td>282 k</td>
</tr>
<tr>
<td>cruttend.jane</td>
<td>368 k</td>
</tr>
<tr>
<td>cruttend.lucy</td>
<td>384 k</td>
</tr>
<tr>
<td>demetras.trevor</td>
<td>736 k</td>
</tr>
<tr>
<td>higginson.april</td>
<td>272 k</td>
</tr>
<tr>
<td>kuczaj</td>
<td>3440 k</td>
</tr>
<tr>
<td>macwhinney (mark)</td>
<td>2432 k</td>
</tr>
<tr>
<td>macwhinney (ross)</td>
<td>2128 k</td>
</tr>
<tr>
<td>peters</td>
<td>1552 k</td>
</tr>
<tr>
<td>post.lewis</td>
<td>464 k</td>
</tr>
<tr>
<td>post.she</td>
<td>448 k</td>
</tr>
<tr>
<td>post.tow</td>
<td>528 k</td>
</tr>
<tr>
<td>snow</td>
<td>1312 k</td>
</tr>
<tr>
<td>suppes</td>
<td>2752 k</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td><strong>29,738 k</strong></td>
</tr>
</tbody>
</table>

| **29.7 MB**          |
Procedures

This study was carried out in two parts. First the 20 longitudinal data files were searched for all instances of causative overregularizations. Then, those sets that contained overregularizations were chosen as the data set for part two. In part two, a final search was used to find any corresponding causative forms that occurred prior to the overregularizations.

Search for overregularizations. First, the program FREQ was used to generate a frequency tally of every word used by the target child in each of the 20 studies. Then, each noncausative verb in the frequency tally was evaluated for its potential to be used in a causative overregularization. The next step was to find instances of the overregularization. The program COMBO was used to single out occurrences of these verbs when followed by any other word. COMBO was limited just as in Study One, and the verbs come and go were treated separately. From the 20 data sets investigated, only nine were found to contain the overregularization. The overregularizations from each of these studies are listed in Appendix B with full citations. The names of these sets along with the relevant ages are listed in Table 4.

Table 4
Longitudinal Sets Containing Overregularizations with Age Interval

<table>
<thead>
<tr>
<th>data set</th>
<th>age at time of earliest data</th>
<th>age of first recorded overregularization</th>
</tr>
</thead>
<tbody>
<tr>
<td>bloom70.peter</td>
<td>(1;9.8)</td>
<td>(2;2.13)</td>
</tr>
<tr>
<td>brown.adam</td>
<td>(2;3.4)</td>
<td>(2;11.0)</td>
</tr>
<tr>
<td>brown.eve</td>
<td>(1;6.0)</td>
<td>(1;9.0)</td>
</tr>
<tr>
<td>clark</td>
<td>(2;2.16)</td>
<td>(2;4.20)</td>
</tr>
<tr>
<td>cornell</td>
<td>(1;6)</td>
<td>(1;11.5)</td>
</tr>
<tr>
<td>kuczaj</td>
<td>(2;4.24)</td>
<td>(3;4.8)</td>
</tr>
<tr>
<td>macwhinney (mark)</td>
<td>(0;7)</td>
<td>(3;7.22)</td>
</tr>
<tr>
<td>macwhinney (ross)</td>
<td>(2;6)</td>
<td>(2;8.16)</td>
</tr>
<tr>
<td>suppes</td>
<td>(1;11.16)</td>
<td>(2;3.14)</td>
</tr>
</tbody>
</table>

Search for corresponding causatives. After the time of the first overregularization for each of these nine separate sets was determined, each data set was then searched for occurrences of the corresponding causative up until that point. For example, if the overregularization Can I stay my bike here was observed at (2;4), then all prior data files were searched for the corresponding causative, keep. First the original frequency tally of every word in each data set was inspected for all causative verbs and periphrastic structures whose noncausative counterpart was found as part of an overregularization. Then COMBO was used to find where these verbs were used. Finally each data file was opened to determine if the causatives were indeed used in a causative manner.

Results and Discussion
The results from Study Two refute Bickerton’s hypothesis outright. First of all, only nine longitudinal studies out the twenty were found to contain an overregularization. Of those nine studies that contain an overregularization, eight of them contain at least one example that can be used as counter evidence to Bickerton’s claims. Appendix C contains a list of the 27 overregularized verbs and the corresponding causative found prior to it. From the set of 27 verbs, the corresponding causative was found in data prior to the overregularization in 22 of the cases. In only five of the cases were the corresponding causatives not found.
Chapter Six
Discussion and Conclusion

Of all the literature reviewed, the present work represents the most thorough search for causative overregularizations, at least in terms of the amount of data analyzed and the number of subjects involved. The following discussion of the results from Study One and Study Two attempts to put the present study into context by addressing the major findings and explores the theoretical implications and the possibilities for further research.

Late Occurrence of the Overregularization

The first major finding that will be addressed is the late occurrence of the overregularization, also posited by Bowerman (1974). As indicated in the Results and Discussion section of Study One, the lower age limit for producing causative overregularizations was found to be 1;9 for the data in CHILDES. But trying to establish the typical age when children begin to overregularize should not be the primary focus here. Indeed, children may vary considerably as to when they begin to exhibit specific components of their target language. The results of this study are significant for another reason. That is, no two-word causative over-regularizations were found in the entire database; even the earliest of overregularizations contained
at least three words. This means that overregularizations, if a child indeed made them, appeared only after the child had passed out of the two-word stage. This implies that the child must reach a certain level of formal linguistic ability in order to make causative overregularizations. This interpretation accords well with Bowerman’s hypothesis but can be used in support of Bickerton’s as well.

Bowerman’s entire argument for the existence of causative overregularizations is based on the analogy with the acquisition of bound inflectional morphology. Namely, children reach a certain stage of linguistic development before morphological overregularizations are possible. Other than cognitive development, the child also needs certain grammatical triggers in the form of, for example, regular past tense verbs or regular plurals as input (i.e., played before goed or cats before foots). If the analogy is correct, then the ability to produce the causative overregularization should be dependent upon a similar kind of formal linguistic development. The results of this study suggest that the child must be at a certain stage in his development, that is, beyond the two-word stage before he produces the overregularization. Thus the analogy is upheld. From Bowerman’s generative semantics point of view, it may be argued that the reason why children cannot make the overregularization in the two-word stage is because there is not enough space in the underlying semantic structure to
accommodate a “cause” element. Presumably the underlying structure expands as the surface structure expands. Three or more word utterances can accommodate an underlying cause element. Whether or not this is the case, the evidence of a lower limit for causative overregularization is consistent with Bowerman’s analogy.

This late occurrence of the overregularization could also support Bickerton’s position. Bickerton claims that the bioprogram unfolds gradually in a “pre-programmed sequence.” If this is the case, then certain components of the bioprogram will be later than others, just as some physical developments are later than others. By extension, children acquire key components of their language before they can make the causative overregularization. It is not in the scope of the present study to speculate on what these key components may be. But if language structure unfolds in a systematic and regular manner, then certain key components are sure to exist in order to give children this ability.

**Individual Differences**

The second major finding of the study is that individual differences exist in the productivity of the over-regularization across children. The results from Study Two indicate that not all children overregularize; in fact, only nine out of 20 children investigated did so (see Table 4). These findings are problematic for Bowerman’s
hypothesis, but they fail to lend any support to Bickerton’s either.

Again focusing on Bowerman’s analogy, all children overregularize bound inflectional morphology. If the analogy is to hold up, then all children should be found to make causative overregularizations. Thus, the analogy fails with respect to the productivity of the causative overregularization across individuals and makes Bowerman’s explanation less compelling.

The fact that eleven children do not make the overregularization could be interpreted to support Bickerton if these children were the only ones involved in the study. But for the other nine, there is clear evidence against errorless acquisition. The upshot of these results is that there is an inconsistency across children, although Bickerton claims that the LBH is innate and present in all children. These individual differences in productivity of the causative overregularization are, then, evidence against Bickerton’s notion of universality for the acquisition of causative-noncausative verb argument structure. Furthermore, Bickerton’s original hypothesis that children make the overregularization only when they lack the appropriate causatives is untenable. Again, results from Study Two show many instances (22 out of a possible 27) where the suppletive causative form is present but then is followed by the overregularization.
Some Specific Examples

Thus far, the results have been considered only quantitatively. Citing a few specific examples will provide a better picture of causative overregularizations in the context of the two competing hypotheses.

First of all, example (1), which was found in Study Two, provides clear evidence of a child’s preference for an overregularization over the appropriate causative form.

(1) Brown.adam.adam51.ln 965-966 (4;7.29)

*ADA: you have to wind it and wind it and wind it.

*ADA: if you can go it fast the pictures might run.

In this case the appropriate causative form could either be the periphrastic make structure, yielding if you can make it go fast, or the causative suppletive form wind, yielding if you can wind it fast. Curiously though, wind is used in the child’s previous utterance. In any case, he clearly had the appropriate lexical item but chose an overregularization instead. Example (2) illustrates a similar occurrence:

(2) MacWhinney.ross.ross24.ln 500-504 (2;8.16)

*FAT: The race car's gonna get the tractor.

*ROS: Yeah # I better hurry up.
*ROS: The tractor # the tractor # the race
car's gonna fall the tractor.

*FAT: What are you gonna do?

*ROS: He's gonna knock him over.

In example (2) the child overregularizes and immediately replaces the overregularization fall with the appropriate lexical causative knock over. This could be due to the fact that his father draws his attention to the error. Example (2) introduces a new element into the discussion of causative overregularizations—the use of caretaker speech or "parentese." If this indeed plays a role in other overregularizations, then children would be expected to overregularize less when their parents are around.

For Bowerman, such inconsistent linguistic behavior poses no real problems for her hypothesis. The acquisition of certain linguistic structures does not happen overnight. Overregularized past tense verbs, for example, appear concurrently with the correct irregular forms.

For Bickerton though, the mere existence of examples (1) and (2) would cast serious doubt on his basic hypothesis. For the other examples where corresponding causatives were found in the data some time before the overregularization, it could be argued that the child simply stopped using the causative for some reason and chose to rely on an overregularized form. But in (1) and (2) the lexical item is available, and there is no doubt that the child preferred to overregularize regardless.

Conclusions

From the previous discussion, it can be concluded that the present study is significant because of three key findings:

1. Bowerman’s observation that causative overregularizations appear only after a child has reached a certain stage in his language development was confirmed. This supports Bowerman’s analogy with the appearance of bound inflectional morphology. But this finding also supports Bickerton’s idea of a bioprogram which unfolds gradually.
2. Not all children represented in CHILDES make causative overregularizations. This casts doubt on Bowerman’s hypothesis and accompanying analogy, because all children overregularize bound inflectional morphology. Also, the existence of these individual differences brings into question the innate status that Bickerton has claimed for the causative notion. Furthermore, when overregularizations
were found, many followed the regular corresponding causative, a contradiction to his basic claim that overregularizations arise before regular causatives in the child’s lexicon.

3. Caretaker speech may play a factor in influencing the frequency of causative overregularizations. This does not counter Bowerman’s hypothesis because children are inconsistent in their use of bound inflectional morphemes. If caretaker speech does play a role, then the child’s production of overregularizations are influenced by the input. This would explain the individual differences encountered in this study, and would certainly argue against a language bioprogram.

Thus the two empirical studies represented in the present work offer results that bear directly on two competing hypotheses of why children make causative overregularizations. When put into context, these results lend more support to Bowerman’s hypothesis than to Bickerton’s. That is, Bowerman’s hypothesis appears to have more predictive power than does Bickerton’s. These results might have been predicted, because of the built-in testability problems of Bickerton’s hypothesis. Essentially, one can never know for sure if a child has acquired a semantic notion, such as causation, by examining the syntactic structure of his utterances—but this is exactly what Bickerton proposes in order to explain the causative overregularization. For this reason, and with the results from the present study, it must be concluded that Bickerton’s position is not really a hypothesis at all but rather an untenable proposal that requires the manipulation of the data at hand to make it fit a larger claim, that of the language bioprogram. If the LBH is composed of vague claims such as the one that purports to explain causative overregularizations, then the credibility of the entire language bioprogram hypothesis may be called into question on the grounds that its underlying tenets are untestable and inherently unfalsifiable.

Directions for Further Research

As a final note, the advantages of using CHILDES as a research tool should be emphasized. Even with the limitations that were encountered in the present study, the database offers a chance to replicate past studies, examine past data, and formulate new research questions. With the growing body of English data, it would be particularly beneficial to examine other creative errors encountered in the speech of children in order to pinpoint their role in the acquisition sequence and to determine their productivity. As the non-English component of CHILDES grows, future research could be directed towards languages that have been generally unrepresented in acquisition research.
Thus, studies such as the present one illustrate the value of empirical database searches in the context of language research.
Bibliography


Causative Overregularization from Children 2;1 and Under
Found in Study One

1. Brown.Eve.Eve08.ln 337-338 (1;9)
   *EVE: Eve fall Red Bicycle.
   %act: <bef> dropped the book

2. Cornell.haas.19235.ln 214-218 (1;11.15)
   *MOT-CHI: Can you color in a circle?
   *CHI-MOT: Yeah.
   *CHI-MOT: Around and around and around.
   *MOT-CHI: Right!
   *CHI-MOT: Go this around, go this around, right?

3. Howe.ian2.ln 164-166 (1;11-2;1)
   %act: <bef> pushes car
   *IAN: me going that backwards.
   *IAN: that backwards.

4. Howe.sally2.ln 1275-1278 (1;11-2;1)
   %act: picks another block up and puts down
   *SAL: eh gone that gone.
   *MOT: that's the last one # where's the little one?
   *SAL: lady gone that strawb(erry).
Appendix B

Causative Overregularizations from Longitudinal Data Sets Used in Study Two

1. Bloom70.Peter09.ln 915-916 (2;2.13)

*PET: no this xxx go this home.
%act: <aft> moves tricycle

2. Bloom70.Peter12.ln 2016 (2;4.15)

*PET: come one Daddy.

3. Bloom70.Peter19.ln 5634-5639 (2;10.19)

*PAT: I do need my coat.
*PAT: it's in the other room.
*PAT: I just haven't put it on yet.
*PET: nope # stay yours here your don't # (be)cause it's not dark outside.
*PET: it's not cold.

4. Brown.adam.adam17.ln 134-136 (2;11.0)

*ADA: I # come one.
*ADA: just like two airplane # just like dat.
%act: pulls airplane by string

5. Brown.adam.adam34.ln 434-436 (3;7.0)

*ADA: Twirly the bird.
*ADA: gon fall him to pieces.
*MOT: Adam # now don't bother him anymore.

6. Brown.adam.adam37.ln 751-753 (3;7.26)

*ADA: Mommy # let's go bowling.
*ADA: one # two # three.
*ADA: you go all of us.

7. Brown.adam.adam42.ln 175-179 (4;0.14)

*ADA: just go some work.
*MOT: what?
*MOT: you just what?
*ADA: I work in the morning time sometimes # <and I go> /// # I work in morning two times.

8. Brown.adam.adam51.ln 720-722 (4;7.29)

*ADA: how to go it?
*ADA: how it goes [=? go]?
*URS: there's a button on the side that turns the light on.

9. Brown.adam.adam51.ln 965-966 (4;7.29)

*ADA: you have to wind it and wind it and wind it.
*ADA: if you can go it fast the pictures might run.

10. Brown.adam.adam52.ln 763-768 (5;2.12)

*ADA: what can we tear it out with?
*URS: shall I tear it for you?
*ADA: yes.
%spa: SRES
*URS: what d(o) you want me to tear?
*ADA: just go this and go on +...


*EVE: Eve fall Red Bicycle.
%act: <bef> dropped the book

12. Clark.shem08.ln 169-174 (2;4.20)

*SHE: go it on there?
*INV: let's see # let's look # no # almost though # let's look at more of these cards and see if we can find it # oh # is that it?
*SHE: yeah # there.
*INV: yeah # right # so what do you do?
*SHE: uh put it on <the> /// that.

13. Clark.shem08.ln 935-940 (2;4.20)

%com: C showing the paper helicopter
*SHE: look at that.
*MOT: very little xxx.
*SHE: i wan(t) do that # i can-'nt go it around.
51

%com: S is blowing towards the propeller which
does-'nt move
*INV: you can-'nt make it go around?

14. Clark.shem12.ln 889-890 (2;5.16)

*SHE: go it.
%com: throws the ball

15. Cornell.haas.19235.ln 214-218 (1;11.15)

*MOT-CHI: Can you color in a circle?
*CHI-MOT: Yeah.
*CHI-MOT: Around and around and around.
*MOT-CHI: Right!
*CHI-MOT: Go this around, go this around, right?

16. Kuczaj.abe092.ln 147-148 (3;4.8)

*FAT: ok then stop messing up my cards.
*ABE: I wan(t) (t)a go it this way or this way I'm
gon (t) a have them go this way ok?

17. MacWhinney.boys.boys61.ln 1223 (3;7.22)

*MAR: can I stay my collection here?

18. MacWhinney.boys.boys63.ln 1871-1872 (3;8.18)

@Situation: the son wanted his Father to drop him,
he was holding him
*MAR: fall me over there [= on the couch].

19. MacWhinney.boys.boys65.ln 1038-1040 (3;10.20)

*MAR: Michael watch stays his watch right here.
%com: Means Michael Knight keeps his watch right
here. He calls his quartz watch a Michael
Knight watch.

20. MacWhinney.boys.boys67.ln 1609-1611 (3;11.18)

%exp: he wanted father to leave them in the lower
drawer; where they are always kept so he can
reach them.
52

**MAR:** I want to stay them in there so I can get them.

21. MacWhinney.ross.ross24.ln 500-504 (2;8.16)

**FAT:** The race car's gonna get the tractor.
**ROS:** Yeah # I better hurry up.
**ROS:** The tractor # the tractor # the race car's gonna fall the tractor.
**FAT:** What are you gonna do?
**ROS:** He's gonna knock him over.

22. MacWhinney.ross.ross32.ln 1064-1066 (3;0.1)

**ROS:** And my mommy might break this and fall this.
**FAT:** You mean might break it and make it fall?
**ROS:** Yeah.

23. MacWhinney.ross.ross33.ln 468 (3;0.16)

**ROS:** we might fall you [= we might make you fall over].

24. MacWhinney.ross.ross37.ln 15-17 (3;3.14)

@Situation: Ross had tried to make the belt on his shirt disappear
**ROS:** I want to disappear it.
%com: causative

25. MacWhinney.ross.ross37.ln 33-35 (3;3.14)

@Situation: Ross was pushing a box down the stairs.
**ROS:** Maybe I can fall it down the stairs.
%com: causatives

26. MacWhinney.ross.ross41.ln 598-600 (3;5.11)

**ROS:** And are you going to stay me at my new school at Pittsburgh [= Do I get to stay at my new school at Pittsburgh? I'm not going to leave and go to another country]?
27. MacWhinney.ross.ross46.ln 1088-1095 (3;10.26)

*ROS: Yeah # but now I need some water to drink it down.
*ROS: It's just in my heart # no in my breast # and I got to get water to make it go down in my tummy.
*ROS: One drink.
*FAT: What for?
*ROS: To go it down my tummy.
*FAT: To go it down my tummy.
*ROS: To take it down my tummy.


*ROS: How did it disappear this air out of here? [= How did it make the air disappear out of there?]

29. Suppes.NINA17.line 276-277 (2;3.4)

*MOT: what will happen if you're not careful?
*NIN: that's fall the people.

30. Suppes.Nina17.line 1461-1465 (2;3.4)

*NIN: you # you drink her.
*MOT: you mean you give her a drink?
*MOT: do you want me to give her a drink?
*NIN: yup [= yes].

31. Suppes.NINA19.line 98-99 (2;3.28)

*NIN: I drinking my doll.
%exp: giving the doll a small bottle to drink

32. Suppes.NINA27.line 1006 (2;5.24)

*NIN: I'm go clothes off .

33. Suppes.NINA28.line 318-319 (2;5.25)

*MOT: what did you do with him?
*NIN: play with him and drink him milk.

34. Suppes.NINA30.line 1674 (2;5.27)
*NIN:  <her going the dog> [//] the dog's under the carriage.
# Appendix C

## Results from Study Two

<table>
<thead>
<tr>
<th>Noncausative</th>
<th>Corresponding causative</th>
<th>Causative present in prior data?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloom70.peter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>go</td>
<td>take</td>
<td>Yes</td>
</tr>
<tr>
<td>come</td>
<td>pull</td>
<td>Yes</td>
</tr>
<tr>
<td>stay</td>
<td>keep/leave</td>
<td>Yes</td>
</tr>
<tr>
<td>Brown.adam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>come</td>
<td>pull</td>
<td>Yes</td>
</tr>
<tr>
<td>fall</td>
<td>drop</td>
<td>Yes</td>
</tr>
<tr>
<td>go</td>
<td>take</td>
<td>Yes</td>
</tr>
<tr>
<td>go</td>
<td>do</td>
<td>Yes</td>
</tr>
<tr>
<td>go</td>
<td>turn on</td>
<td>Yes</td>
</tr>
<tr>
<td>go</td>
<td>wind/crank</td>
<td>Yes</td>
</tr>
<tr>
<td>Brown.eve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fall</td>
<td>drop</td>
<td>Yes</td>
</tr>
<tr>
<td>Clark</td>
<td></td>
<td></td>
</tr>
<tr>
<td>go</td>
<td>spin/make go</td>
<td>Yes</td>
</tr>
<tr>
<td>Cornell.haas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>go</td>
<td>turn/spin</td>
<td>No</td>
</tr>
<tr>
<td>Kuczaj</td>
<td></td>
<td></td>
</tr>
<tr>
<td>go</td>
<td>make/have go</td>
<td>Yes</td>
</tr>
<tr>
<td>MacWhinney.boys</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stay</td>
<td>leave/keep</td>
<td>No</td>
</tr>
<tr>
<td>fall</td>
<td>drop</td>
<td>Yes</td>
</tr>
<tr>
<td>stay</td>
<td>keep</td>
<td>No</td>
</tr>
<tr>
<td>stay</td>
<td>keep</td>
<td>No</td>
</tr>
</tbody>
</table>
### Results from Study Two (cont.)

<table>
<thead>
<tr>
<th>Overregularized noncausative</th>
<th>Corresponding causative</th>
<th>Causative present in prior data?</th>
</tr>
</thead>
<tbody>
<tr>
<td>MacWhinney.ross</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fall</td>
<td>make fall</td>
<td>Yes</td>
</tr>
<tr>
<td>fall</td>
<td>make fall</td>
<td>Yes</td>
</tr>
<tr>
<td>fall</td>
<td>make fall</td>
<td>Yes</td>
</tr>
<tr>
<td>disappear</td>
<td>make disappear</td>
<td>Yes</td>
</tr>
<tr>
<td>Suppes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fall</td>
<td>knock over</td>
<td>No</td>
</tr>
<tr>
<td>drink</td>
<td>give a drink</td>
<td>Yes</td>
</tr>
<tr>
<td>drink</td>
<td>give a drink</td>
<td>Yes</td>
</tr>
<tr>
<td>drink</td>
<td>give a drink</td>
<td>Yes</td>
</tr>
<tr>
<td>go off</td>
<td>take off</td>
<td>Yes</td>
</tr>
<tr>
<td>go</td>
<td>push/make go</td>
<td>Yes</td>
</tr>
</tbody>
</table>