

Nicaraguan Sign Language: The role of adult input in the formation and development of a unique Creole

Abstract:

One of the most intriguing areas of research in first language acquisition is the possibility of an innate language learning mechanism in children. A new language formed spontaneously by a group of deaf children in Nicaragua during the 1980's provides exciting new evidence supporting the idea of a built-in capacity for language acquisition. Because children were the primary factor (and indeed some would argue the only factor) involved in the creation of Nicaraguan Sign Language (ISN), most of the research surrounding the language has been focused on the impressive cognitive abilities naturally possessed by children (Bickerton 1991, Goldin-Meadow & Mylander 1990, and Roberts 2000). Some researchers, however, such as Lefebvre (1998), Singler (1988), and Mühlhäusler (1997), have argued that adult cognition plays a role in Creole formation. This paper attempts to examine the theories arguing for the necessity of adult input in creolization, in light of the evidence gathered surrounding the formation and development of Nicaraguan Sign Language.

The results of this investigation reveal that adults did indeed play a necessary role in the formation and development of Nicaraguan Sign Language. There were, however, different degrees of adult influence depending on whether the sign language was in fact the full Creole version, the Pidgin version created by the first group of children to come together as a group, or the more traditional contact Pidgin created for communication between hearing and deaf adults. The full Creole required both child and adult input in order to form, whereas the natively spoken Pidgin required exclusively child input, and the contact Pidgin only adult input. In terms of the conditions necessary for a Creole to form, it appears that adults perform a necessary function in providing a linguistic model, however incomplete or inconsistent, upon which children can build, regularize, and innovate.

1. Introduction

Most of the current research being conducted surrounding the newly formed Nicaraguan Sign Language has been focused on the role of children in its creation and development. Proponents of creolization theories which emphasize the importance of the innate capacities of children in language creation and acquisition have cited the events of the language's formation as evidence in support of their theories. This paper, however, will examine the role of *adult* linguistic input in the initial formation and subsequent

development of the Creole known as Nicaraguan Sign Language, in order to determine to what extent (if any) adult input is necessary for a Creole to form. We will review several positions held by scholars supporting primarily child-driven creolization theories, and also several theories stressing the importance of adults in Creole formation. We will then analyze data specific to the case of Nicaraguan Sign Language to compare the actual results of this natural experiment with the competing theories about the nature and origins of Creole languages.

The main questions being asked in this study ask: Are only children necessary for the initial formation of a Creole, or do adults also play a role? Do adults play an innovative role in the subsequent development of the Creole? And, what sources of input are required in order for a grammatically complex Creole to form as opposed to a more simplified Pidgin system of communication? We hypothesize that although children are the driving force in the initial formation of the Creole, adults are necessary for the development of the grammar into increasingly more complex forms. After a preliminary review of the data, it also seems evident that Nicaraguan Sign Language is not one homogenous system, but rather three manifestations of related but distinct communication systems resulting from the same social context (Kegl, Senghas, & Coppola 1999). Therefore, it seems prudent to expect that each of the three forms of Nicaraguan Sign Language will have formed from a different set of input. In other words, the amount of adult vs. child input required for each of the three versions of the language may vary.

There are several terms relevant to the discussion of Nicaraguan Sign Language data that should be clarified. Idioma de Señas de Nicaragua (ISN) refers to the full

Creole nativized by the second generation of children, and continuously restructured by subsequent generations. ISN is the only one of the three manifestations of Nicaraguan Sign Language that can be considered a structurally complete Creole. Lenguaje de Señas de Nicaragua (LSN) refers to the signed Pidgin created spontaneously by the first generation of children in the community. Pidgin de Señas de Nicaragua (PSN) is the term used to refer to the more traditional Pidgin used for communication purposes between deaf and hearing individuals. PSN uses a mixture of spoken Spanish lip movements, signs borrowed from ISN or LSN, and common Nicaraguan gestures.

In addition to the Nicaraguan Sign Language-specific terminology, there are several general terms that must be defined. When we use the term *Creole* in this paper, we will be using the following definition: A full, natural language resulting from the social contact of two or more distinct languages; expanded from a Pidgin. A *Pidgin* is defined as: A contact language lacking in structural complexity and lexical variety. And finally, because this paper will focus on the role of adult input in the creolization of a language, it is necessary to define the parameters of the term *adult*: Any person old enough to have passed the sensitive period for first language acquisition (beyond adolescence) *or* any native user of a mature, historically established and structurally complex language.

The structure of the paper will include an overview of the history of Nicaraguan Sign Language beginning with its origin in 1979, followed by a review of the literature supporting child-driven creolization theories, contrasted with literature in favor of the necessity of an adult role in Creole formation. Following the literature review will be the analyses of texts and data from research on Nicaraguan Sign Language specifically.

Finally we will compare the analysis to our initial hypothesis and present our conclusions to the problems outlined above, along with a discussion of the possible linguistic and social importance of those conclusions.

2. Literature Review

2.1 Historical Overview

The deaf population in Nicaragua before 1979 consisted of individuals with no access to the spoken Spanish language of their surrounding society, and no network of communication among the deaf members of the population. There was no Deaf community to speak of, but rather a number of unconnected people separated from society by a strong cultural bias toward those with physical disability. The deaf of Nicaragua were generally thought to be cognitively deficient, unteachable in a school setting, and for the most part incapable of caring for themselves. As a result of their isolation from both the spoken language around them, and lack of exposure to any signed languages, the Nicaraguan deaf went through life never learning any language at all. The year 1979 would bring about a cataclysmic change, however, after the Sandinista revolution, the government created an initiative to educate the deaf of their country and opened two schools in the capital city Managua. Approximately 50 deaf children from distinct parts of the country were brought together in the first serious attempt in Deaf education in Nicaragua (Glovin 1998).

The newly created school was poorly advised to use a finger-spelling method in order to communicate with the children (Osborne 1999). Not having had any previous experience with language, the children had no concept of words or grammar, let alone

sufficient knowledge of Spanish orthography to successfully communicate by spelling. Initially the children were forbidden from using their hands to communicate with each other or with the teacher in the classroom, but on the buses and during free periods the children began to compare the gestures that they used with their families in order to communicate among themselves. The teachers realized that although they were still unable to speak with their students, the children were somehow communicating with each other by use of rapid and unintelligible hand signals. Mystified and eager to understand what was happening in the school, the government recruited an American linguist, Judy Kegl, to decode the hand signals and explain how the children had been able to spontaneously create their own complex system of communication (Osborne 1999).

Kegl discovered upon her arrival that the signs being used by the then-adolescent first generation of Deaf school-children were more than just gestures, they were part of a complicated system of communication, later named Lenguaje de Señas de Nicaragua (LSN). Even more startling were her observations of the younger generation of children who had entered the school for the Deaf a few years after the first group. These young children communicated with their hands at a much more rapid pace and with a fluidity that the first group of teenagers lacked. The environment of the school in Managua was a mixing pot of languages, each child bringing his or her distinct system of home signs together into a micro society with a need for inter-communication. The result was a Creole, the Idioma de Señas de Nicaragua (ISN). The children had developed a fully complex and grammatically complete sign language, and were using it with the ease of native speakers (Kegl, Senghas, & Coppola 1999).

Kegl and other linguists have been studying the newly formed Nicaraguan Sign Language in an attempt to understand the cognitive processes at work in the creation and acquisition of language. Much of the work has focused on the important role of children and their innate capacity to learn and, in the case of ISN, create language (Bickerton 1984, Goldin-Meadow & Mylander 1990, Roberts 2000). However, there are existing theories about language acquisition and creolization that emphasize the effects of *adults*, along with the mature languages they use, on the formation of a language in language contact situations (Lefebvre 1998, Singler 1988, Mühlhäusler 1997).

2.2 Scholars' Views Claiming Only Children Necessary

The most well-known and oft-cited proponent of the theory that children are the driving force for Creole formation is Derek Bickerton, with his controversial Language Bioprogram Hypothesis (LBH). This hypothesis states that children are born with specific innate structures in place for learning language. When a child's language-learning program is activated, it uses the lexical information from his surroundings to fill in the structures already programmed in his brain, which according to Bickerton explains the grammatical similarities in Creoles of varying origins. Most relevant to our current study is the claim that creolization occurs within a single generation (Bickerton 1984). In a 1981 publication Bickerton states that "the period at which [a pidgin can creolize] will be decided, not by any internal development in the pidgin, but by the communicative needs of children." For him, therefore, the process of Creolization results not from any construction of language by the community as a whole, but rather relies solely on the

requirements of the children to communicate, thereby activating their Language Bioprogram.

Another author who argues that children play the most important role in Creole formation is S. J. Roberts, and although she disagrees with some of Bickerton's interpretations of his data, they both agree that children drive the creolization process. Referring to Hawaiian Creole English: "Older children learned [Pidgin English (PE)] at school or from neighborhood friends, they brought it into the home where younger siblings began to learn it, children then began to speak to their parents in PE while being addressed in the [Ancestral Language (AL)], and eventually parents began to speak with their children in both AL and PE" (Roberts 2000). According to Roberts' interpretation then, the parents were still speaking their ancestral language while the children began the process of language mixing in school. The children then began influencing the adults and eventually the changes spread to the older generations.

A third scholar, Goldin-Meadow, emphasizes the ability of children to regularize and make more complex the input which they receive, producing a language far more developed than that which was presented to them originally: "children can produce language output which exceeds language input, and...children have the ability to organize the pieces of language they receive to produce a linguistic system which is governed by rules not used by the adults in their environment" (1990). Goldin-Meadow, along with Roberts and Bickerton would interpret the events leading to the creation of Nicaraguan Sign Language as evidence supporting the importance of child innovation in the process of creolization.

2.3 Scholars' Views Claiming Adult Input Also Needed

On the opposite side of the debate are authors who contend that although children may play a part in Creole formation, adults are a necessary and influential component of the process. Lefebvre could actually be considered to argue that adults provide the sole input required to form a Creole. She describes her interpretation of the creolization process: “the creators of a creole language, adult native speakers of the substratum languages, use the properties of their native lexicons, the parametric values and semantic interpretation rules of their native grammars in creating the creole” (1998). In other words, a Creole is formed by taking the rules from each substratum language’s grammar and combining them. The process according to Lefebvre is the opposite of Roberts’ interpretation, beginning with the mixing of the different adult language grammars which may then be extended and nativized to include children, thereby transmitting the Creole to subsequent generations.

Singer also argues that adults are the creators of Creoles. If one accepts the concept of a Creole as a language with substrate and superstrate influences, as is commonly done in reference to plantation Creoles and other “classic” Creole situations, then by definition there must be a strong adult influence. The substratum language itself is a developed adult model from which the Creole is derived, or at least heavily influenced: “substrate influence, by its very nature, assumes an important adult-language influence” (1988). Of course, this assumption is based on the idea that all Creoles do in fact have a substrate influence. In the case of Nicaraguan Sign Language, however, it is somewhat more difficult to define what the substrate languages are, given that in most cases the home sign systems that the children used were no more complex than a Pidgin,

certainly not complete languages themselves, although they would be the best equivalent of a person's native or ancestral language in terms of the elements of a "normal" language contact scenario.

Another proponent of the importance of adults in language change, Mühlhäusler, draws his conclusions based mainly on research about Tok Pisin, a well-researched expanded Pidgin. He acknowledges that the distinction between a Creole and an expanded Pidgin is minimal, and that aside from their historical origins, the complexity in grammar and usage in each classification is comparable. On the topic of adult input in creolization, or the formation of an expanded Pidgin, Mühlhäusler remarks that these complex products of language contact "illustrate the capacity of adults to drastically restructure existing linguistic systems" (1997). Although the supporters of adult input do not categorically deny the influence of children on the process of language change, they stress the importance of an adult model and indicate that adults are in fact capable of significantly changing a language's grammar.

3. Analysis

The case of Nicaraguan Sign Language is a nearly ideal natural experiment for testing the competing theories outlined above most closely correlates with the actual events of ISN's formation. We will be using several recent studies specific to Nicaraguan Sign Language development and their data in order to pinpoint what kinds of adult input affected the development of the Creole, and to what extent.

3.1 Specific Sources of Adult Input

Adult input refers to any of a number of possible sources of input, not to a single readily identifiable source, and not always the same sources in every scenario. So to begin with, it is important to define the parameters of “adult input” within the Nicaraguan Sign Language context. One study deals not with Nicaraguan Sign Language in particular, but which sheds light on the situation outlines the different possible sources of adult input to a deaf child in a similarly language-deprived environment. In this study by Goldin-Meadow and Mylander (1984), it is suggested that adult input into early gesture systems may have been derived from the following sources: imitations of a hearing adult’s immediately preceding gestures, a gesture model provided by the mother from which the deaf child could induce regularities, or thirdly, maternal responses from gestural communications by the child. It was concluded, however, that none of these situations actually shape the development of the children’s language, which means that parental input was likely not a factor in the formation of the signed systems in Nicaragua.

Pidgin de Señas de Nicaragua undoubtedly received input from both the hearing and deaf populations. Spanish-speakers influenced PSN by adding a lip movement to the gestural repertoire, a characteristic that is not present in ISN or LSN. The deaf PSN users were also familiar with a more heavily sign-based system (as opposed to iconic gestures), and so some of the arbitrary signs filtered through to the Pidgin (Kegl, Senghas, & Coppola 1999). In the same article, Kegl, et al discuss the interactions between LSN signers with their instructors in the setting of a vocational school. “In the vocational school, the teachers themselves used a mixture of signing and speaking with the students (PSN). The students, in turn, used PSN with their teachers and other hearing staff members” (Kegl, Senghas, Coppola 1999). The communications between adult LSN

signers and adult Spanish-speakers constitutes a definite source of adult input influencing LSN, and possibly filtering to ISN learners who use an evolved version of LSN as their input model.

Finally, according to the definition being used in this investigation, all of the LSN and ISN signers who have grown beyond their sensitive period for language acquisition use a crystallized version of the signed language. Their linguistic models are considered to be adult input even if by age they would be considered an adolescent. We will discuss in more depth the effect of adult input from each successive generation of ISN speakers in section 3.3, but here it can simply be said that the older generations of ISN signers are indeed an important source of adult input in the development of the Creole.

3.2 Adult Role in Initial Formation

The initial contact between the first group of children to come together had a different set of adult influences from the generations that followed, because there was no coherent linguistic model for them to access, apart from the gestures and other movements that accompany speech with semi-regularity. “We believe that in many cases paralinguistic, non-manual gestures used with unconscious regularity by hearing Nicaraguans gesturing to Deaf signers or even to each other at home or in these school contexts may inadvertently contribute to what eventually become grammatical building blocks of LSN and ISN” (Kegl, Senghas, Coppola 1999). Beyond these paralinguistic gestures and rudimentary home signs used by individuals with their families, the initial adult input prior to the formation of LSN consisted of commonly understood motions such as pointing or movements meant to symbolically represent the motion or object

itself. None of this input included a means to refer to events outside of the present concrete space of the speaker.

The formation of ISN resulted from a much more coherent language model than the original children were able to access. LSN had already formed by the time the second generation of children entered the school in Managua. The new children were able to use LSN as their main source of adult input, regularizing and making more complex grammar rules than their older peers. The result was, of course, a more complex language, and it seems that even though the LSN model was incomplete, it was sufficient to activate whatever mechanism children possess for native language acquisition. However, even ISN appears to have gone through a relatively gradual creolization process: “Although the first cohort, as children, had access to multiple sources of input (e.g., the interlanguage formed by older students in the early 1980s, family homesign gesture systems, and the gestures that accompany spoken Spanish), the language did not develop its full complexity by 1983” (Senghas & Coppola 2001). A partially formed adult model (LSN) was key for the initial creation of ISN, but the language would undergo further development in the years ahead.

3.3 Adult Role in Subsequent Development

A large amount of research has focused on the changes in ISN’s grammar from one generation to the next. Led by Ann Senghas and colleagues, these investigations have revealed the startling speed at which the newly formed Creole is evolving. Investigates the changes in grammar of INS through its first few generations. One recent study by Senghas (2003) separates the participants into three cohorts, depending on the

chronological year in which each person entered the ISN community. All of the participants learned the language before the critical or sensitive period for language acquisition, and speak it with a native proficiency. Interestingly, the oldest and youngest cohorts seem to be unaware that their grammars differ; rather, they view the others' version of the grammar rule as incomplete or incorrect. The middle cohort is conscious that there is a difference in the grammars of the generation immediately preceding them and following. Senghas concludes that even after the initial crystallization of the Creole's grammar with the earliest cohort (now the oldest members of the community) the subsequent generations of children entering the community reanalyzed the system used by the older children and made further adjustments to its grammar. All crystallized versions of ISN (spoken by anyone beyond the critical period) affect the formation of the language in each generation that follows.

A similar study by Senghas and Coppola (2001) examines the usage of spatial modulations in two groups of participants, divided according to the year in which they were first exposed to Nicaraguan Sign Language. The results show that the second group (the younger of the two) produced more spatial modulations than the first, indicating that "sequences of child learners are creating Nicaraguan Sign Language" (Senghas & Coppola 2001). The younger members of the group not only learn the grammar from the older members, but they actually make modifications and add layers of complexity that surpass the original model.

4. Conclusion

As explained in Kegl, Senghas, & Coppola (1999), there are actually three distinct manifestations of Nicaraguan Sign Language, each of which has its own possible set of adult influences. The most complex form of the language, Idioma de Señas de Nicaragua, is a natively spoken Creole which is continually adjusted and added to by each new generation of children that enter the ISN community.

The evidence implies that adult input was necessary for the formation of ISN. The Creole was not in fact fully formed by the first generation of children creating the language, but rather a result of the second generation building upon the adult model provided by their older peers (Senghas & Coppola 2001). Although the grammatical changes in the language took place during childhood, the model is transmitted by adults for future development and stabilization. ISN required both an adult model (LSN) and children's innovation to create and advance the grammar (Senghas 2003).

The Lengua de Señas de Nicaragua (LSN) is a less complex but still systematic form of the language, created by the first generation of children to come together. This form of the language, although not as structurally complex or fluidly spoken as the previously mentioned form, shows the immense creative capabilities of children; the group of children with no experience in any language, and without any coherent model from which to draw, was able to combine each individual's basic system of home signs, used primarily to communicate simple ideas with their families, into the communally accepted system of communication that served as a template for the following generations to build upon. Children seemed to be the principal creative force shaping the new language in its earliest native form. Therefore, aside from a possible lexical

influence based on gestures which accompany the hearing population's speech, the formation of LSN appears to have occurred without any noticeable degree of adult input.

The simplest form of Nicaraguan Sign Language, Pidgin de Señas de Nicaragua (PSN), actually developed in parallel to ISN and LSN. ISN and LSN did not evolve directly from the corresponding Pidgin, but rather has developed as a simple means of communication between the Nicaraguan Deaf and their hearing counterparts. PSN contains many more gestural elements than the more complex sign languages used within the Deaf community (LSN and ISN), and it also links many of its manual signs with a mouthed version of the Spanish equivalent. Of the three manifestations of Nicaraguan Sign Language, PSN has the most obvious ties to the surrounding spoken language, and is the most susceptible to adult influence, simply because it is intended to be understood by adult hearing Spanish-speakers. The influence from children on the development of PSN is negligible, and therefore the adult input is the driving force behind its creation.

Although the formation of the three forms of Nicaraguan Sign Language each required a different degree of adult and child influence, we must revisit the main problem that this paper attempts to answer: what is the role of adult input in the formation and development in a *Creole*? There are some interesting implications from the different processes required by the two Pidgins of Nicaraguan Sign Language (LSN and PSN), but the answer to our principal question lies with ISN, as the only true Creole to come out of the language contact scenario in Nicaragua. LSN is more structurally complex than the more traditional Pidgin, PSN, and represents the extent to which Bickerton's Bioprogram Hypothesis has some validity, but it lacks the same degree of complexity that full, native languages possess. Therefore, although a relatively complex Pidgin may form within the

first generation of children, both children and adults are necessary in order for a true Creole language to form.

5. Discussion

It seems that our language acquisition abilities have been evolutionarily programmed to allow us to acquire a socially constructed language from our parents. Nature also limits the extent to which a child can create a language anew, a practical restriction which prevents the spontaneous creation of a new language by countless children born every day. It is possible for a group of children to create their own system of communication similar in complexity to LSN, but it is not possible for them to natively learn a unique and original language without input from the society around them. Perhaps this is nature's way of ensuring the transmission of language through the generations, so that grandparents can communicate with their grandchildren, and so that stories may be passed down from generation to generation.

The findings of this study indicate that language does not and cannot exist in a vacuum. Although children have an extraordinary ability to acquire language and make innovative changes, that ability does not extend to the creation of an entirely new language. Rather, a language can only be fully realized if there is a stable communicative need within a social setting in which there is a constant presence of child innovation. This investigation has focused on the importance of adult input in the formation of a Creole, but it has never been doubted that children provide the creative spark that motivates the language change. It is the balance between adult and child input that

allows for not only language structure, but verbal style, culture, humor, in short every aspect of a budding society.

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