

CHILD-ADULT DIFFERENCES IN SECOND LANGUAGE ACQUISITION

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CHILD-ADULT DIFFERENCES IN SECOND LANGUAGE ACQUISITION



*Series on Issues in Second Language
Research*

EDITED BY STEPHEN D. KRASHEN, ROBIN C. SCARCELL
& MICHAEL H. LONG

CHILD-ADULT DIFFERENCES IN SECOND LANGUAGE ACQUISITION

Edited by Stephen D. Krashen, Robin C. Scarcella, and Michael H. Long

The second volume in the Newbury House Series on Issues in Second Language Research, *Child-Adult Differences in Second Language Acquisition* examines one of the most controversial issues in second language research—whether age affects the ability to acquire a second language.

This edited collection of papers addresses the issue in a unique way. It presents important empirical research indicating that generalizations about age differences in second language acquisition can be made. Bringing together research from various disciplines, it gives a complete picture of the similarities and differences in the findings of many studies. In addition, the editors offer their own interpretations of the data and perspectives on the issue.

Students of second language acquisition and psycholinguistics, as well as teachers and researchers, will find this probing volume of great interest.



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SERIES ON

ISSUES IN SECOND LANGUAGE RESEARCH



under the editorship of

Stephen D. Krashen and **Robin C. Scarcella**

ISSUES IN SECOND LANGUAGE RESEARCH is a series of volumes dealing with empirical issues in second language acquisition research. Each volume gathers significant papers dealing with questions and hypotheses in areas central to second language theory and practice. Papers will be selected from the previously published professional literature as well as from current sources. The first book in the series is *Research in Second Language Acquisition*. Subsequent books will each focus on one issue, including communicative competence (edited by Scarcella, Andersen, and Krashen).

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INTRODUCTION

The papers in this volume focus on what is perhaps the most controversial issue in second language research: Who is “better” in second languages, children or adults? One popular belief is that “younger is better,” that younger acquirers will always outperform older acquirers in second language acquisition. In recent years, this claim has been disputed, with several studies apparently showing that older students are “better.” The aims of this volume are, first, to present some of the important empirical research on this issue, in the hope of demonstrating that some clear generalizations about age differences in second language acquisition can be made and supported; second, to present some possible theoretical accounts for the research; and finally to suggest future research to settle issues that are, at this time, unresolved.

The question of age differences has clear theoretical and practical significance: Educators are interested in knowing the “optimal age” to begin instruction in second languages, and want to know just how far the older student can progress. Another important practical question is whether students of different ages need different methods or approaches in studying foreign and second languages. The question of age differences is also theoretical, in that any successful theory of second language acquisition must be able to account for observed differences in second language development in children and adults.

The first three sections of this book are devoted to studies that provide empirical evidence, that compare acquirers of different ages in different sorts of linguistic environments using different measures of linguistic progress. These sections are organized according to our interpretations of the literature, according to the generalizations the data lead to. Thus, we have divided the research not according to methodology, author, or date of publication but according to the hypotheses it supports. Section IV is our attempt to state these generalizations explicitly, generalizations based on the empirical research reported in Sections I to III, as well as other studies.

Our goal in presenting research studies on age and second language acquisition is not simply to show that the available literature supports one particular set of generalizations but also to emphasize that the issue is an empirical one and that a wide variety of research studies already exist. While these studies utilize different methodologies, different techniques, different subjects, and different languages, all contribute to our understanding of age differences in second language acquisition.

Taken one at a time, each of the studies presented and discussed here is “imperfect.” (There is a real sense in which all experiments are imperfect.) Each can be criticized; each leaves some questions unanswered. Taken as a group, however, they complement each other and allow a fairly complete picture to emerge. In other words, our view is that enough data are available now to form

hypotheses and make generalizations about child-adult differences in second language acquisition.

Section V is devoted to explanations for observed age differences. While several of the studies in Sections I to III present interesting theoretical discussions of their results, Section V deals with explanation only, explanation in terms of current second language acquisition theory.

We do not expect, of course, that this collection will be the final word on age differences in second language acquisition. Counterexamples nearly always arise when hypotheses are presented, and ideally these counterexamples lead to new, deeper generalizations and theories that account for the data even better than previous ones. We hope this volume will contribute to the process of growth.

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I

LONG-TERM STUDIES OF CHILDREN AND ADULTS

The five studies included in this section, despite some differences in research methodology, all examine *ultimate attainment* in second language acquisition, that is, how proficient second language performers can become, given a fairly long period of time.

These studies have a similar design; they compare second language performers who began second languages as children with performers whose initial exposure was during adulthood. The reader will note that the duration of the second language exposure varies from study to study, but in our interpretation it can always be considered "long-term." In every case, performers are exposed to the second language for several years. (In the next section, we present "short-term" studies, in which the duration of exposure to the second language is, in nearly all cases, less than one year and occasionally as short as a few sessions.)

Despite the methodological differences, and despite the lack of variation in target language (in all studies, with the exception of Seliger et al., the target language is English), the studies presented here are fully consistent with the hypothesis that over the long run, those who begin second languages during childhood achieve higher levels of linguistic competence. Whether it is simply a case of "the younger the better," as suggested by the linear correlations between age of arrival and proficiency found in Oyama's studies, or whether children as a group attain higher levels of proficiency than adults as a group remains a question to be settled by future research.

1

THE OPTIMAL AGE TO LEARN A FOREIGN LANGUAGE

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What is the optimal age to begin studying a second language? Theories have been created from which optimal ages have been inferred. Examples are the brain plasticity theory,¹ the biological predisposition theory,² and an imprinting theory.³ All these theories share a common theme, which is that something in the early development of the child maximizes the probability that the younger the human organism when exposed to a language, the greater the probability that the individual will acquire a native pronunciation.

The brain plasticity theory suggests that the young child's brain has a cellular receptivity to language acquisition. This receptivity may be a function of cellular plasticity or elasticity which is controlled by a sort of biological clock. With age, the biological clock changes the cellular plasticity, which reduces the organism's capacity to learn language.

There is clinical evidence for a theory of brain plasticity which is controlled by a biological clock. For instance, Penfield has observed in accident cases that if the left hemisphere of the brain is damaged and speech is lost, children but not adults will tend to enjoy a recovery in the power of speech. Furthermore, for those children who regain speech, it can be demonstrated that the speech function somehow shifted from the left to the right hemisphere of the brain. This was shown by injecting sodium amytal into the child's carotid artery, producing hemiplegia for the right hemisphere of the brain. Then with aphasia tests it was observed that speech temporarily disappeared as long as the right hemisphere was paralyzed with the drug. The shift of speech from the left to right hemisphere in children but not adults suggested a greater cellular elasticity for children.

The biological predisposition theory states that the human organism is born with a unique capacity to learn language. The theory does not explain why this special ability should diminish with age. An intriguing explanation is possible if the imprinting theory is linked with a theory of biological predisposition. If, for example, there is a "critical period" early in the child's development when imprinting occurs for language acquisition, then this could account for the superiority of children.

Imprinting has been demonstrated with birds, fish, insects, and some mammals. The classic study with ducklings showed that there is a critical period of short duration in which the infant bird learns to follow its mother. The behavior of following its mother is not an instinctive response which automatically occurs just because the bird is a duckling. Rather, during a certain critical period the response of following is learned. If during this critical time the mother is absent and other objects or persons are present, then the infant bird may "imprint" and thereafter follow the object such as a toy or human in preference to the mother. By analogy, the capacity to learn a language may be keenly operative during some yet to be discovered critical period in the early development of humans.

As attractive as these theories are, there is no direct evidence that the child has a special language learning capacity which is absent in the adult. The superiority of children over adults in second language learning is a strong belief that probably results from the common observation that children living in a foreign country seem rapidly to achieve nativelike fluency in the alien language while their parents may lag far behind. In language acquisition, the implication is that children have a biological predisposition for language learning which is perhaps related to brain plasticity or imprinting.

This belief in the superiority of children for second language acquisition may be an illusion, however. Children may learn the new language in play situations when utterances are synchronized with physical movement (i.e., "Come on, Billy, let's run to the corner!"). It may also be that adults learn the new language in static, nonplay situations in which their kinesthetic system is not active and not synchronized with speech transmission or reception (i.e., "Hello, it's a beautiful day, isn't it?").

If the difference in language acquisition between children and adults is play versus nonplay, action versus nonaction, and physical involvement versus nonphysical involvement, these variables may partially explain the accelerated learning of the child. When this idea was tested in a controlled situation by Asher and Price,⁴ the results showed a surprising inverse relationship between age and learning listening comprehension of Russian. When adults and children (ages 7, 11, and 14) all learned to understand Russian in situations in which the Russian utterances were synchronized with physical movement, the adults were vastly superior to the children in any age group ($p < .0005$ using two-tail t tests), and the older children outperformed the youngest children.

The superiority of adults to children may hold only for listening comprehension. Children may indeed have a prepuberty biological predispo-

sition which enables them to achieve fidelity in pronunciation. The data to be presented next are a direct test of the biological predisposition hypothesis.

PROCEDURE

Subjects: The experimental group was Cuban immigrants ($N = 71$) between the ages of 7 and 19, most of whom had been in the United States about 5 years. This group had 26 boys and 45 girls. In the control group were 30 American children, of whom 13 were boys and 17 were girls. All the children, American and Cuban, learned their English in the San Francisco Bay Area of California.

Design: The intent was to compare the Cuban children with the American children in their pronunciation of English sentences. From the comparison we wanted to develop answers to the following questions: Is our measure of pronunciation reliable and valid? What is the optimal age for Cuban children to enter the United States if they are to achieve a nativelike pronunciation? Is there an interaction between the age of the individual when entering the country and years of residence in the United States? Is there a difference between male and female Cuban children in the fidelity of English pronunciation?

In collaboration with several linguists,⁵ the measure of English pronunciation was four sentences containing a sample of English sounds which speakers of Spanish are most apt to find difficult. Each Cuban and American child was asked to utter the following sentences:

1. I had two hot dogs and a glass of orange juice for lunch yesterday.
2. The girls were jealous because we had a better party.
3. Pat and Shirley are measuring the rug to see if it shrank.
4. It started to snow when we were about to leave for the mountains.

Before a child's pronunciation of a sentence was tape-recorded, the child read and rehearsed that sentence many times until he or she felt ready to make the utterance on tape. With this procedure, the subject was able to concentrate on one sentence at a time. The pronunciation of Ss was grouped according to age with all 7-year-old children together, all 8-year-old children together, and so forth. The Cuban and American children were randomly placed in an age group.

Then each member of a class of American high school students ($N = 19$) most of whom were juniors and seniors, sat in a booth located in the language laboratory at the Blackford High School in San Jose, California, and listened to a replay of the sentences uttered by the Cubans and Americans. After hearing a set of four sentences uttered by a subject, the judges made a decision about the fidelity of pronunciation by checking one of the following categories:

- A indicated a native speaker
- B indicated a near native speaker
- C indicated a slight foreign accent
- D indicated a definite foreign accent

The judges, all of whom learned their English in the San Francisco Bay area, were instructed that a voice would utter four sentences, after which each