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## *Age, Rate and Eventual Attainment in Second Language Acquisition\**

Stephen D. Krashen, Michael A. Long, and Robin C. Scarcella

This paper presents evidence for three generalizations concerning the relationship between age, rate, and eventual attainment in second language acquisition:

- (1) Adults proceed through early stages of syntactic and morphological development faster than children (where time and exposure are held constant).
- (2) Older children acquire faster than younger children (again, in early stages of morphological and syntactic development where time and exposure are held constant).
- (3) Acquirers who begin natural exposure to second languages during childhood generally achieve higher second language proficiency than those beginning as adults.

While recent research reports have claimed to be counter to the hypothesis that there is a critical period for language acquisition, the available literature is consistent with the three generalizations presented above.

One popular belief about second language acquisition is that younger-is-better, that younger acquirers are better at second language acquisition than older acquirers. Recently, certain research reports claim to counter this early sensitivity hypothesis; several of these papers imply that the literature on age and language acquisition is inconsistent, some showing older, others showing younger performers to be superior. (See Walburg, Hase and Pinzur Rasher 1978, McLaughlin 1977.) The purpose of this brief comment is to demonstrate that the available literature is consistent with three generalizations concerning the relationship between age, rate, and eventual attainment in second language acquisition: 1) Adults proceed through early stages of syntactic and morphological development faster than children (where time and exposure are held constant)<sup>1</sup>; 2) Older children acquire faster than younger children (again, in early stages of syntactic and morphological development where time and exposure are held constant);<sup>2</sup> and 3) Acquirers who begin natural exposure to

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<sup>1</sup> Explanations for these relationships (e.g., neurological, cognitive or affective) will not be discussed here.

<sup>2</sup> Here, we do not distinguish "learn" and "acquire," making no claim as to whether conscious language *learning* or unconscious language *acquisition* are involved.

second languages during childhood generally achieve higher second language proficiency than those beginning as adults.

In other words, adults and older children in general initially acquire the second language faster than young children (older-is-better for rate of acquisition), but child second language acquirers will usually be superior in terms of ultimate attainment (younger-is-better in the long run). Distinguishing rate and attainment, then, resolves the apparent contradictions in the literature.

In order to provide support for these generalizations, we examined investigations of child-adult differences in eventual attainment in second language acquisition and short-term studies which compare children and adults acquiring second languages in informal, natural environments, as well as formal, classroom environments.

### I. Investigations of Eventual Attainment: Long Term Studies

There have been surprisingly few studies investigating child-adult differences in eventual attainment in second language acquisition. The available studies all concur, however, that age of arrival in the country where the language is spoken is the best predictor of eventual attainment: 1) those who arrive as children attain higher levels of second language proficiency, and 2) after a certain period (see discussion below) length of residence (where length of residence taps linguistic interaction/input) is not a factor. (see Table 1)<sup>3</sup>

### 2. Investigations of Rate: Short-term Studies

**2.1. Comparisons of Adult/Child Differences.** The short-term studies comparing children and adults (see Table 2) show adults to be superior to children in rate. Treatment or length of residency in these studies varies from twenty-five minutes (Asher and Price 1969), an extremely short exposure time, to one year (Snow and Hoefnagel-Hohle 1978a). (Compare this to Oyama's (1976) study in which the length of residence varied from five to eighteen years.) Interestingly, in Snow and Hoefnagel-Hohle (1978a), adults, while clearly superior to young children in morphology and syntax, did not do better than the twelve to fifteen year-olds. Snow and Hoefnagel-Hohle suggest that the different sorts of linguistic experience the groups received affected the results of their study.

**2.2. Comparisons of Older and Younger Child Second Language Acquirers.** The short term studies which compare older and younger children consistently show older children to be faster learners of syntax and morphology when the duration of the exposure to the second language is similar, whether the exposure to the second language is in natural (as in Table 3), or formal environments (as in Table 4).

The generalizations given here imply that younger acquirers catch up to

<sup>3</sup> Since three out of four studies deal with pronunciation, it could be hypothesized that children are superior only for this aspect of linguistic competence. Oyama (1978) helps to counter this objection by using the sentence through noise test, considered a listening comprehension measure.

TABLE 1  
Child-Adult Differences in Eventual Attainment in Second Language Acquisition

<i>Study</i>	<i>Ages Compared</i> <sup>a</sup>	<i>n</i>	<i>L1</i>	<i>L2</i>	<i>Measures</i>	<i>Results</i>
†Asher and Garcia 1969	1-6 7-12 13-19	19 37 15	Span.	Eng.	Sentence pronunciation task, judged by high school students	1-6 year old arrivals were closer to native speaker level; 13-19 year old arrivals were farthest. Those in the US 5-8 years were better than those in the US 1-4 years.
Seliger, Krashen, and Ladefoged 1975	below 10 10-15 over 16	91 100 173	varies	Eng., Heb.	Self-report <sup>b</sup>	Below 10: most (85%) report no accent. 10-15: 50% report accent, 50% report no accent. Over 16: 92% report accent No effect for years lived in country. <sup>c</sup>
Oyama 1976	6-20	60	Ital.	Eng.	Read paragraph Tell anecdote (Rated for accent)	Correlation for accent and age of arrival in the United States ( $r = -.83^d$ ) No correlation for accent and years in the United States ( $r = -.02^e$ )
Oyama 1978	6-20	60	Ital.	Eng.	Sentence through noise task	Correlation for LC and age of arrival ( $r = -.57^f$ ) No significant correlation for LC and years in the United States ( $r = -.02^g$ )

<sup>a</sup> Age of arrival in country, *not* age when tested. (Age when tested = 7-19)

<sup>b</sup> Subjects were asked, "Do you think most ordinary Americans (Israelis) could tell now that you are not a native speaker of English (Hebrew)?"

<sup>c</sup> Comparisons done with the "no accent", 10-15 group only, mean years = 15; S.D. = 11.5; "Accent group" mean = 20.6; S.D. = 19.4. (Reported in Krashen and Seliger 1975.)

<sup>d</sup> Partial correlation, with years in the United States partialled out (paragraph reading score only).

<sup>e</sup> Partial correlation, with age of arrival partialled out (paragraph reading score only).

<sup>f</sup> Partial correlation, with years in the United States partialled out.

<sup>g</sup> Partial correlation, with age of arrival, actual age, partialled out.

*Generalization:* All studies agree that those who arrive as children attain higher levels of proficiency than those who arrive as adults.

TABLE 2  
Children vs. Adults in Rate of Second Language Acquisition

<i>Study</i>	<i>Duration</i>	<i>n</i>	<i>L2<sup>a</sup></i>	<i>Ages Compared</i>	<i>Treatment</i>	<i>Measures</i>	<i>Results</i>
Asher and Price 1969	25 minutes	134	Russian	Adult (college) 8, 10, 12 year-olds	Total Physical Response (TPR) Teaching	TPR	Adults outperformed all child groups
Olson and Samuels 1973	10 sessions	100	German	Adult (19-26) Junior High (14-15) Elementary (9.5-10.5)	"Phoneme drills"	Pronunciation	Adults = junior high Adults and Junior high students superior to elementary students
Snow and Hoefnagel-Hohle 1978a	1 month-1 year	96	Dutch	3-15 year olds Adults	Natural Exposure	Pronunciation, Morphology, Imitation, Translation	12-15 best for morphology; adults next best followed by the 8-10 year-olds. Differences diminish over time.
Snow and Hoefnagel-Hohle 1977	1 session	136	Dutch	5-31	Imitate 5 nonsense words, repeated 20 times.	Pronunciation	Linear increase in pronunciation according to age

<sup>a</sup> In all cases, L1 = English.

**Generalization:** Adults are faster than small children, but not always better than 12-15 year olds in early stages of morphology and syntax development.

TABLE 3  
 Studies of Child Second Language Acquisition (Older versus Younger)  
 Informal Environments with Similar Length of Exposure

<i>Study</i>	<i>Time of Residence</i>	<i>n</i>	<i>L2</i>	<i>Ages<sup>a</sup></i>	<i>Measures</i>	<i>Results</i>
Ekstrand 1976	Up to 2 years <sup>b</sup>	2,189	Swedish	8-17	Listening Comprehension, reading, free writing, pronunciation, speaking	Older children did better than younger children Linear relationship with age
Fathman 1975	1-3 years	200	English	6-15	SLOPE Test, picture description	11-15 year olds superior to 6-10 year olds for morphology and syntax. 6-10 year olds better for pronunciation (See footnote 4.)
Snow and Hoefnagel- Hohle 1978a	1 month-1 year	approximately 90	Dutch	3-15	Pronunciation, morphology, Imitation, Translation	12 to 15 year-olds best for morphology and syntax; 8-10 year-olds next best. Differences diminish over time, (strongest at 1-3 months).
Ervin- Tripp 1974	maximum of 9 months	31	French	4-9	Comprehension (Acting out)	Older children superior for syntax, morphology, and pronunciation; 7-9 year-olds superior to 4-6 year-olds

<sup>a</sup> Age at which children were tested, *not* age or arrival in new country.

<sup>b</sup> "...only 8.3% of the pupils have a longer LOR (length of residence) than two years" (Ekstrand 1976:190)

*Generalization:* In all cases, older children acquire early syntax and morphology faster than younger children.

TABLE 4  
Comparisons of Studies of Child Second Language Acquisition (Older versus Younger)<sup>a</sup>  
Formal or Experimental Environments with Similar Treatments

<i>Study</i>	<i>Duration</i>	<i>n</i>	<i>L2</i>	<i>Grades/Ages</i>	<i>Treatment</i>	<i>Measures</i>	<i>Results</i>
Ekstrand 1978	1 year	335	English	grades 3, 4, 5 (ages 8–11)	“Audio-visual”	Imitation, Listening Compre- hension (LC) Trans- lation	Older children better than younger children: Linear relationship between age and second language learning
Asher and Price 1969	25 minutes	96	Russian	grades 8, 10, 14	Total Physical Response (TPR)	TPR	14 year-olds best, tend to be better than 8 year-olds
Olson and Samuels 1973	10 sessions	80	German	ages 9.5–10.5; 14–15	“Phoneme Drills”	Pronun- ciation	14 to 15 group superior to 9.5–10.5 group
Florander and Jansen 1979	80 hours; 320 hours	300– 400	English	grades 4–6	EFL	Grammar Vocabulary, Reading, LC	Grade 6 superior to younger groups. Difference lessens after 320 hours.
Grinder, Otomo, and Toyota 1962	1 year	148	Japanese	grades 2–4	Audio-lingual	Vocabulary, LC, Pro- nunciation	Strong relationship between grade (age) and LC, some pro- nunciation; trend for older students to excel in vocabulary

<sup>a</sup> See also Snow and Hoefnagel-Hohle, 1977, Table Two.

*Generalization:* In all cases, older children acquire faster than younger children.

older acquirers and, in the case of children compared to adults, eventually surpass them. The literature allows us to make some preliminary generalizations about the amount of time this catch-up process takes. For morphology and syntax, children apparently surpass adults in about one year. Snow and Hoefnagel-Hohle (1978b) report that their 8-10 year old subjects surpassed adult acquirers of Dutch after one year on nearly all measures of syntax and morphology, and the 6-7 year olds surpassed the adults on some measures, including speech fluency. Younger children may take a little longer to catch up to older children. The 6-10 year olds in Snow and Hoefnagel-Hohle's study had still not caught up to the 12-15 year old group after one year. We assume both groups eventually attain native or near-native proficiency with continued interactions in Dutch. Also, in Fathman (1975), older children (11-15) maintained a slight superiority in syntax over 6-10 year olds even after three years in the country. (This difference may not have been statistically significant, however.)<sup>4</sup>

A separate class of studies compares children who begin the study of second languages in formal circumstances at different ages (for example, foreign language in the elementary school, FLES, beginning at age eight is compared to FLES at age eleven.) The results of such studies usually indicate that children starting FLES later catch up to those beginning earlier. For instance, Burstall's 1975 study, involving several thousand children studying French in elementary schools, essentially reports no differences in French attainment between those starting French at ages eight and eleven and those starting French at age sixteen. Similar results have been reported in other studies, summarized in Table 5.

This finding could be considered consistent with Generalization Two (that older children acquire faster than younger children); the younger children in these studies acquired at a so much slower pace than the older children that extra time counted for very little. Other explanations are also possible. For example, in Oller and Nagoto's (1974) study, those who had early FLES were mixed

<sup>4</sup> Several studies also report that older children acquire phonological competence (pronunciation) faster than younger children (Ervin-Tripp, 1974; Ekstrand, 1976, for example). Snow and Hoefnagel-Hohle (1977) report that the ability to imitate nonsense words in a second language increases linearly with age, using subjects 5 to 31. Fathman (1975), however, reports that her younger subjects were superior to her older subjects. This difference may be due to the different age groups studied (Ervin-Tripp compared 7-9 to 4-6 year olds, Ekstrand's sample consisted of 8-11 year olds, while Fathman compared 11-15 year olds to 6-10 year olds) or length of exposure; Fathman's subjects were in the United States from one to three years while maximum length of exposure for Ervin-Tripp's subjects was nine months. As we have seen earlier, it may take quite a while for syntax in younger children to catch up to the level attained by older children. Phonological competence, however, may catch up very rapidly. Snow and Hoefnagel-Hohle (1977) report that "age differences (in pronunciation of Dutch as a second language) disappeared by 4-5 months after starting to learn the second language . . . by 10-11 months . . . the younger children still excelled in pronouncing some sounds, though there was still no overall age difference" (p. 357). (Snow and Hoefnagel-Hohle also report, however, that even after 18 months, few subjects were native-like, regardless of age.) Thus, the younger children in Fathman's study may have caught up with and (temporarily) surpassed the older children in pronunciation. In Ervin-Tripp's study, there may not have been enough time for this to have taken place. Asher and Garcia, however, report that their subjects who were in the United States from 5-8 years outperformed those in the United States 1-4 years on their pronunciation task. This result implies that acquisition of phonology may take somewhat longer. Further research may settle this issue.



TABLE 5  
 Child Second Language Studies: Formal Environments with Dissimilar Amounts of Exposure  
 (Older Children Catch-up Studies)

<i>Study</i>	<i>Ages/Grades Compared</i>	<i>n</i>	<i>L1</i>	<i>L2</i>	<i>Measures</i>	<i>Results</i>
Burstall 1975	starting FLES at age 8 <i>versus</i> starting at age 11	approx. 17,000	English	French		At age 16, no difference (except in LC) <sup>a</sup> group starting at age 8 = group starting at age 11
Bland & Keisler 1966	Kindergarten <i>versus</i> grade five	4 6	English	French	oral production	Fifth graders took less time to reach criterion (4.5 hours vs. 12.5–17.5 hrs.).
Oller & Nagato 1974	7th, 8th, and 9th grades; one group had FLES in grades 1–6, the other did not.	233	Japanese	English	cloze	+FLES superior to –FLES at grade 7; less difference at grade 9; no difference at grade 11
Rameriz & Poltizer 1978	ESL/BE starting in junior high school <i>versus</i> ESL/BE starting in kindergarten	21 46	Spanish	English	LC production	After ½ year, junior high school students nearly at grade 3 level
Vocolo 1967	“second year high school French” tenth graders with one year high school French <i>versus</i> ninth graders with 3 years FLES (grades 5–8)	31 31	English	French	MLCT	3 years FLES group only slightly better than group with one year of high school French

<sup>a</sup> Abbreviations:

FLES = Foreign Language in the Elementary School  
 LC = Listening Comprehension  
 BE = Bilingual Education  
 MLCT = Modern Language Cooperative Test

*Generalization:* FLES studies show that older children catch up to children who have had earlier FLES.

in with those who had no FLES; thus the early starters may have had to mark time (p. 18) while the others caught up.

### 3. Discussion

The literature provides no evidence which is seriously inconsistent with any of the above generalizations. Walburg et al. showed that language proficiency of children of Japanese businessmen was directly related to time in the United States and not the age of arrival, a finding which Walburg et al. consider to be counter to the "Optimal Age Hypothesis." Their study is not even potentially in conflict with Generalizations One and Three, however, since no adults were actually involved in the study. Subjects' ages at the time of testing ranged from six to fifteen and most had been in the United States a range from zero to twelve years.

Although the study by Walburg et al. differs from others in failing to find a superiority for older versus younger children, this may be due to the measures used (self-report, teacher-report); tests which specifically focus on syntax and morphology might show more agreement with other studies. Also, there may have been enough time for the younger children to have caught up to the older children; recall that most subjects had been in the United States "three to four years" and some stayed as long as twelve years. It should be emphasized that Walburg et al. agree with other studies in failing to find a superiority for the younger child with respect to rate of acquisition.

To conclude, the available literature is consistent with the generalizations presented earlier. Any hypothesis dealing with the relationship between age, rate, and eventual attainment in second language acquisition needs to account for the data from the variety of studies presented here, as does any general theory of language acquisition. Moreover, any educational decisions pertaining to second language learning and teaching (e.g., FLES, bilingual education) must also consider all of the empirical evidence.

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