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ABSTRACT

A large number of factors are considered in their role in second language learning. Individual factors include language aptitude, personality, attitudes and motivation, and the role of the speaker's native language. Teacher factors involve the method of instruction, the sex of the teacher, and a teacher's training and competence, while sociocultural factors include the degree of urbanization, nationality, and socioeconomic status. Following a review of relevant literature, a study conducted in Sweden is described. During the spring of 1966, questionnaires were sent to local government school authorities in Sweden to determine how many, if any, immigrant children were receiving special instruction in Swedish, and to obtain information concerning the sex, nationality, place of emigration, and the father's occupation. A battery of tests were then sent out. Six language tests covered pronunciation, dictation, oral comprehension, reading comprehension, free written composition, and free oral composition. Three intelligence tests were administered, and teacher attitudes were sampled. Results show sex differences in favor of girls. Teacher competence and students' age seem to influence second language learning to a significant degree, while the speaker's native language and socioeconomic status have less importance. (CHK)

SOCIAL AND INDIVIDUAL FRAME FACTORS IN L2 LEARNING: COMPARATIVE ASPECTS

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Paper presented at the
1st Scandinavian Conference on Bilingualism
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PROBLEM AND BACKGROUND

Introduction

Research on L2-learning has gone into its second boom since the FLES movement during the 50:s and 60:s. The reason is the large increase in within- and between-countries migration during the 60:s and 70:s and the associated interest in minority groups. Kunkle (1972) argues that the FLES movement in the USA is dead: during the end of the 60:s, hundreds of communities have abandoned the FLES programs (p 417). In Europe, the interest in FLES is far from dead. In some countries, like Sweden, FLES has been integrated in the regular curriculum. In other countries, there is a lively debate and research activities are going on, which fact is mirrored in the reports by Doyé (1975) and Burstall (1975 a, b). In Sweden the debate at this moment is concerned with the possibility of moving the introduction of English in the regular curriculum from grade 3 to some lower grade. Much of the debate on L2-teaching, however, has moved to the realm of migrant teaching.

In the USA L2-teaching now seems to be concerned with English as a foreign language for minority groups rather than French, German or Spanish for Americans. Kunkle suggests that a new movement is needed and suggest nation-wide immersion programs like the Canadian S:t Lambert project (and a number of similar projects in the USA and other countries), where L2 is used as a medium of instruction. The realism of such a proposition may indeed be questioned. However, a revival of FLES is needed. Once it is realized that L2-learning - like L1-learning - is a slow process (Toukomaa, 1975, Snow, 1974, Ekstrand, 1976c), expectations may be more realistic and a patient work with FLES programs may be again taken up in the USA and elsewhere where it may have been dropped.

The research in the 1950:s and 60:s did not solve as many problems as it demonstrated. For instance, contradictory results on the optimal starting age, teaching methods, testing techniques, etc. served rather to pose and stress certain problems than to yield reasonably safe results. Therefore, the new situation where the emphasis has largely shifted to the problem how to teach the own language as a second language tends to repeat the old questions and problems. Similar research as that carried out twenty years ago is being initiated all over the world, but with a body of previous research to build on and with improved methods of design, measurement and statistical treatment at service.

Problem

It has become increasingly obvious that a large number of variables are involved in L2 learning. They may be referred to as two kinds of independent variables or frame factors: individual and social. These terms are preferred to the terms "hereditary" and "environmental" as individual variables like intelligence often are a product of heredity and environment. Also language learning takes place in a social and cultural context.

In order to sort out relevant variables from others and in order to assess their relative importance, comparative studies are necessary. The comparative approach may be applied in a number of ways. For instance, a number of frame factors should be studied with the same subjects under

comparable circumstances, rather than the single-variable studies which used to be conducted. Results from natives, studying a foreign language, should be contrasted to those of immigrants, learning the new language in a new country, in order to compare different motivational situations. Pupils with different native languages, coming from different cultures should be studied when learning one particular target language in one particular cultural setting. To cut a long discussion short, all possible kinds of comparisons should be attempted, in spite of the increased technical difficulties admittedly involved in comparative research strategies.

Social and individual frame factors in the light of previous research

Language aptitude

The usefulness of comparing the immigrant's learning situation to the native pupil's becomes immediately apparent when one acquaints oneself with Titone's (1972/73) and Diller's (1971) discussions of factors underlying second-language learning. The first type of factors in Titone's discussion is the language aptitude problem. Titone argues that language aptitude in fact is a number of factors, some of which have been identified by Carroll in several papers. Diller goes as far as to claim that language aptitude is one of the most important factors in language learning. Now, immigrant children must learn one or more second languages whatever their aptitude level might be. Their teachers must find methods, suitable for teaching in groups, composed of pupils with different native languages, with different educational back-ground and of different age, intelligence and interests, and certainly with different aptitude. It would seem as if the problem of varying aptitude is rather small, seen from a practical point of view as compared to the other factors mentioned. Language aptitude would not seem to be a top priority problem in teaching, e.g. in test construction, the grouping of pupils or the construction of teaching materials. On the other hand, it certainly seems to be an important theoretical problem. When we know more about it, this knowledge may well be transformed into practical classroom action.

Personality, attitudes and motivation

The second type of factors discussed by Titone is personality and attitude variables. This seem to be a more promising line to pursue. Unfortunately, this area is badly explored. Some of the approaches and hypotheses reviewed by Titone in the field of personality (a classical Freudian and an Adlerian approach) seem to be blind alleys: "Both these views seem inadequate as explanations of all the learning difficulties which arise from personality problems; they may at most account for certain limited phenomena." (p. 113). In the present author's opinion, learning theory based personlity models, as first suggested by Pavlov and later developed by Eysenck should prove more useful. This line of research seems to suggest that introverted individuals form conditioned reflexes better than extraverts concerning simple learning tasks, such as the learning of single words, while there is a tendency towards reversed roles concerning more complex tasks.

Introverts seem to have better concentration in monotonious tasks and conform more easily to abstract rules. Extraverts need varying stimuli and are more oriented towards realities. Such differences may well call for different methods of instruction (Eysenck, 1967, Eysenck and Rachman, 1965, Pavlov, 1960, 1967). Unfortunately, no new personality instruments seem to have been published recently. With all respect, the early instruments developed by Eysenck, like the EPI and others, could and should be much improved. The Cattell approcha seems to be too complex a model to be used in educational studies. Further, it does not include the emphasis on learning theory which Eysenck's approach does.

Burstall (1975 a) discusses instrumental versus integrative motivation. Instrumental motivation is defined as the student placing a purely utilitaian value on his acquisition of L2 proficiency, while integrative motivation is defined as the student's desire to get into contact with and share the culture of the country or countries of the L2. The latter type is believed to yield a higher success in L2 learning than the former, as claimed by Gardner and Lambert and their associates who originally presented the distinction. Burstall tried to test this hypothesis, but found that most pupils show both types of motivation.

Burstall (1975 a) interestingly claims that pupils' attitudes and achievement are "closely associated" (p. 7). This is puzzling, because correlations between affective and cognitive measurements, though positive, notoriously are low (Ekstrand, 1976 a, b). Ekstrand found remarkably low correlations between variables of language learning on the one hand and variables of social and emotional adjustment on the other hand in a study of more than 2.000 immigrant pupils in the Swedish comprehensive school. Lewis and Massad (1975) found only low to moderate correlations between affective and achievement variables in their IEA study of English as a foreign language in ten countries, in spite of their using "instrumental motivation" variables like "Perceived utility of English" and "English activities outside school", as well as variables of "Self perception" and "Aspiration". In some countries "Interest in English", which may be taken as a measurement of integrative motivation, yields lower correlations than the instrumental variables, in other countries it is the other way about.

A different approach may be made by applying a comparative strategy: dependent and independent variables of language learning in different motivational settings may be compared. Some crude comparisons are possible to make in this paper, using results from studies of Swedish children learning English in school and other similar studies, and comparing them with results from a study of immigrant children, learning Swedish after migration.

The role of the native language in L2-learning

The role of the native language in L2-learning may be studied in a number of ways. For instance, there are several reasons for comparing the results from pupils of different language groups and language families. Firstly, there is the question of quantifying the impact of different L1:s on the learning of a particular target language. It has long been known that there are qualitative differences in pronunciation, the use of grammar, errors made, etc. This has been studied by methods of contrastive analysis, notably in so-called error analyses (see e.g. Buteau, 1970, Dušková, 1969, Ringbom, 1975). New projects are underway, see e.g. Hammarberg, 1975. The question is whether such qualitative differences between the impact of native languages on the learning of one L2 brings about quantitative differences. That this is the case is argued by Diller (1971) who claims that the relative difficulty of the foreign language, along with language aptitude, is the most important variable in L2-learning (p. 93). The relative difficulty depends mainly on the similarity between L1 and L2, according to Diller.

One of the aims of this paper is to study this question on a reasonably large group of individuals.

Secondly, as mentioned above, Diller (1971) argues that the similarity between languages is decisive for the impact of one on the other, i.e. he presupposes what in psychological parlance is called positive transfer. Selinker (1972) argues in a similar manner, stating five central processes for L2-learning: language transfer, transfer of training, strategies of second-language learning, strategies of second-language communication and over-generalization of target language linguistic material. On the other hand, in psychology the concept of inhibition or negative transfer is equally important. Negative transfer would seem to be a result of what is linguistically known as interference. The interference problem is at present being investigated in

many parts of the world, see e.g. Oksar, 1976, and Ziros, 1976. It is a known fact in psychology that positive transfer occurs only when similarity conditions are optimal for stimuli as well as for responses. Otherwise no transfer or, most likely, negative transfer occurs. Therefore, similarity is not a sufficient condition; some degrees of similarity between languages might cause negative transfer. If L1-and L2-learning mechanisms are similar or indeed the same, this question becomes even more important. That L1-and L2-learning processes seem to be very similar has been studied by Garvie (1970), Snow (1976) and is also argued by Söderberg (1975).

A third reason for comparing pupils from different language groups is the theory proposed by Toukomaa (1975). Observing that older Finnish immigrant children in Sweden seemed to learn Swedish better than the younger ones, he suggested that this result was due to the older childrens' better mastery of their native language. As their L1 develops with age, the L2 acquisition becomes more efficient. This developmental view on the association between L1 and L2 seems to be completely new. Most theories on L2 acquisition predict better or at least faster learning in younger children. Some light might be shed on this hypothesis by means of a comparative approach.

Looking upon results so far obtained, we may first turn to correlations obtained by Toukomaa (1975) between four Finnish tests (picture vocabulary and 3 tests of verbal intelligence) and a Swedish criterion (a test of verbal intelligence). It should be noted that the tests are not the same in all grades. From table 5, p. 35, we find that coefficients for all the pupils in grades 3 - 6 (N_{max} = 165) with length of residence (LOR) partialised away vary between .20 and .41, i.e. the percentage of variance in common varies between 4 and 17 percent. Coefficients vary considerably in age or grade groups, but average coefficients over grades 1 -6 with LOR kept constant (table 7, p. 38) varies between .30 and .36 (percent of var. in common 9 - 13) with an N_{max} of 273. The later results comes from the same test types, but with a slightly different selection of actual tests. In conclusion, the association between L1 and L2 is marked, but not very strong. We disagree with Toukomaa's conclusion (p. 38) that L 1 "considerably" contributes to L2-learning prerequisites, but agree that the contribution is of about the same size as that from certain non-verbal tests of intelligence.

Löfgren (1972) computed correlations between marks (grade points) in Swedish and English and a dozen tests of German for a large sample (N = 1. 168) of Swedish pupils at the end of their first year of German (grade 7). The correlations between these tests and marks in Swedish vary between .23 and .50, in other words within a range close to that of Toukomaa's. However, tests of German correlate .26 - .57 (7 - 32 per cent) with grades in English, which is the first foreign language in the Swedish comprehensive school. In other words, proficiency in one foreign language is a somewhat better predictor for achievement in the second foreign language than is proficiency in the native language. This result lends some support to the idea of a specific L2-learning aptitude.

Ekstrand (1962) reported a major study of Swedish pupils in grade 6, learning English. The study comprised 5. 347 pupils, distributed over 262 classes. Because of the great number of classes it was possible to use class means of various tests as input data in the statistical analyses to control for possible sampling effects. The classes had been used as sampling units forming a sample of the comprehensive school (which had not then spread all over Sweden). Statisticians argue that the pupils of a class cannot be regarded as completely independent: they are influenced by the same teacher, there may be a special group spirit in the individual class, etc. Therefore class means are better input data. Though it is not very likely that such factors can seriously bias language test results, we could afford to submit even to such harsh statistical demands. Correlations from this study between a test in Swedish, consisting of four combined subtests (disposition,

word knowledge, reading comprehension and grammar), and four tests in English are presented in table 1.

Table 1. Correlations between L1 (Swedish) and L2 (English). N = 262

Variables	r
Swedish - Pronunciation	.51
Swedish - Listening comprehension	.22
Swedish - Reading comprehension	.46
Swedish - Grammar	.39

Also this major study yielded correlations within the same range as the other studies cited, i.e. from 5 - 26 per cent variance in common. Summarizing, we find that a number of studies harmonize in yielding predominan low or low to moderate correlations between L1 and L2 variables.

Teacher factors

The teacher factor most spoken of is the method of instruction used. A survey of method types is given in Mackey (1965). In spite of all debate on the best method, studies notoriously show no or small differences only when methods are being compared. Some data from "English in grade 6" are given in table 2, adding another item to the collection of studies, suggesting that method of instruction may not be among the most important teacher factors.

Teacher competence, age sex, personality, creative ability, teaching experience and expectations vis-à-vis the pupils are among factors which may be as important or more as method. Burstall (1975a) discusses some of these factors. Especially her treatment of expectation effects is interesting, but cannot be reviewed here. In table 2, some results from "English in grade 6", are given. The results in four tests in English are given for Teacher sex, Education before teacher training and Competence in English (certificate vs. university training). Verbal intelligence, measured with a combined criterion of four subtests in Swedish, is kept constant by means of analysis covariance. Class means are used as input data, and the results are given for boys and girls separately. Teachers' sex and education before training do not yield significant differences, and the ω^2:s show that these variables explain less than 1 per cent of the test variance. Clearly, these variables lack importance for L2 acquisition. Teachers' competence in English, in contrast, yield significant differences or strong tendencies in all variables but Pronunciation. Pronunciation, however, was measured with a paper-and-pen test, which does not seem to have functioned very well. The ω^2 values show that competence in English explains more than the 5 per cent of the test variance conventionally required to attach importance to the independent variable.

Cultural factors

The degree of urbanization, i.e. the continuum big city - city - small town - rural area may be measured in a number of ways, for instance population density. It is a commonplace observation that pupils in the large schools of big cities often behave differently than pupils in small town or rural schools. The variable "degree of urbanization" (DU) seems to play an important part for the intellectual and emotional development of man, but these facts seem to be completely overlooked by politicians. Husén (1951) found a positive correlation between DU and intelligence: the more urbanized an area is the higher is the mean intelligence. There was also an interaction with SES which seems to play a relatively greater part for going to higher education in rural than in urbanized areas. In contrast, school marks did not follow test results. In fact there was a tendency towards a negative

correlation, which Husén ascribes to "a larger generosity with marks in rural schools" (p. 152). The better intelligence test results in cities are explained by the occupational structure, selective migration, large distances to overcome in the country-side and generally a higher degree of stimulation in the cities.

This rather negative attitude towards rural areas may be balanced by other findings. Parker, Kleiner and Needelman (1969), attempted to test the concept of culture shock by means of comparisons of migrants to a big city from rural and big city areas, assuming that migrants from big cities would adjust better. Instead, they found the opposite: migrants from heavily urbanized areas showed more psycho-pathological symptoms than did rural migrants. The explanation offered by Parker et al is that the large number of reference groups in cities creates stress.

Interestingly, the data from "English in grade 6" (Ekstrand, 1962) reveal a similar tendency as Husén's marks, only that standardized tests are used and intelligence is kept constant. Thereby any suspicion of tendentious marks seem to be removed. Though the differences are not significant in all variables (most certainly due to the dramatically reduced N) the χ^2:s suggest that degree of urbanization plays an important role and that the effect seems to be positive (table 2).

These results are in harmony with Burstall's (1975) discussion of factors which may have contributed to the better French results in the small schools in the NFER study (pp. 12-13).

Nationality may be regarded as a crude measure of culture differences. Nationality and language group will be compared and the results presented later in this paper.

Age

The age problem is treated extensively in Burstall (1975a) and Ekstrand (1976c) and cannot be given much space here. Contradictory results keep being published. For instance, Seliger, Krashen and Ladefoged (1975) present data which seem to indicate that the acquisition of L2 accent is highly dependent on age of arrival. Krashen and Seliger (1975) found the same tendency for second dialect acquisition. Like Thorndike (1928) Krashen and his associates used a questionnaire technique. Unlike Thorndike, who found that experimental data gave opposite results, they have not checked their findings by direct measurements.

The impact of SES

As Burstall (1975a) points out, correlations between SES and school achievement have been found to be positive in study after study. This proved to be true for L2 acquisition as well in the NFER study of French (p. 10) Other studies have recently produced evidence that there are SES differences in the syntactic rule system of the mother tongue and corresponding differences in language production (pp. 9-10).

In a major study of children in Stockholm (N = 4.885) during the 40:s, Boalt could show that not only is SES and intelligence positively correlated, but that there exists a social handicap. This is manifested in fewer children going to higher education from lower social strata than could be expected from the actual intelligence distribution. Boalt controlled intelligence by means of partial correlations and showed that SES correlations with different social handicaps varied between .09 - .57 and income correlations with the same handicaps varied between .06 and .45 (Husén, 1951, p. 58). Husén(1951) has shown that social factors become more important the lower the "degree of urbanization", that is, they have the highest effects in the countryside.

Table 2. Result from the study "English in grade 6". Analyses of covariance.

Independent variable	Pronunciation			Listening comprehension			Reading comprehension			Grammar		
	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls
Primary school. Big cities $\bar{X}$	4.54	4.32	4.82	4.22	4.15	4.23	4.47	4.43	4.51	4.71	4.52	4.91
Compre- Cities $\bar{X}$	4.87	4.69	4.97	4.39	4.52	4.58	4.89	4.75	4.98	4.90	4.78	5.02
hensive A. Countryside $\bar{X}$	5.06	4.64	5.39	5.52	5.31	5.72	5.28	4.97	5.58	5.28	4.98	5.59
school B_1 Countryside $\bar{X}$	4.87	4.45	5.30	5.52	5.30	5.76	5.06	4.85	5.33	4.99	4.71	5.33
B_2 Countryside $\bar{X}$	4.73	4.18	5.23	4.98	4.47	5.45	4.77	4.17	5.25	4.94	4.37	5.24
F	1.67	1.48	1.68	9.73	6.58	10.92	4.19	3.26	5.66	1.73	1.59	2.56
P	.20	.30	.20	.001	.001	.001	.001	.05	.001	.20	.20	.05
$100 \times \omega^2$	4.4	4.0	4.5	21.4	15.6	23.4	10.5	8.4	13.8	4.6	4.2	6.6
df within	145	144	145	144	143	144	143	143	143	145	145	145
Teacher sex F	.080	.099	.004	1.80	1.77	2.06	.466	1.14	.481	.983	.663	.939
P	-	-	-	.20	.20	.20	-	-	-	-	-	-
$100 \times \omega^2$	-	-	-	.7	.7	.8	.2	.5	.5	.4	.3	.4
df within	247	245	246	248	246	247	246	245	245	248	247	247
Teaching method F		.001	2.10		.138	.062		.235	.276		299	.606
P		-	.10		-	-		-	-		-	-
$100 \times \omega^2$		-	1.1		.1	-		.1	.2		.2	.3
df within		182	183		181	182		181	181		183	183
Teachers' education before training (Jr. or Sr. High School)												
F		.199	.824		.199	1.77		.004	1.65		471	569
P		-	-		-	.20		-	.20		-	-
$100 \times \omega^2$		.1	.4		.3	.9		-	.8		.2	.3
df within		197	198		197	197		196	196		198	198

Table 2 Results from the study ....

Independent variable		Pronunciation			Listening comprehension			Reading comprehension			Grammar		
		All	Boys	Girls	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls
Teacher training	F		.338	1.54		14.94	7.80		4.41	2.99		5.88	3.09
(Certificate vs.	P		-	-		.001	.01		.05	.10		.05	.10
university	$100 r^2$		.7	3.0		23.0	13.5		8.1	5.7		10.5	5.8
training)	df within		51	51		51	51		51	51		51	51
Classes													
following vs. not	F		.061	1.07		2.73	11.78		.009	2.33		.063	5.47
following broadcast	P		-	-		.20	.001		-	.20		-	.05
English	$100 r^2$		-	1.1		2.9	11.2		-	2.4		.1	5.5
	df within		93	94		93	94		94	94		95	95

Husén also argues that verbal intelligence is the socially most important kind. Svensson 1971 has shown that the social handicaps still exist in Sweden in spite of the comprehensive school. In lower SES strata, more pupils under-achieve than might be expected from the intelligence distribution. In higher strata, more pupils over-achieve than what is predicted from intelligence.

Obviously, these facts must be taken into consideration when migrant pupils are being studied. Toukomaa (1975) compares pupils from the working class with test norms for Swedish and Finnish populations, i.e. a selected group with a SES bias is compared with a general population where all social strata are represented. It turns out that Finnish migrant children in Sweden get low results in verbal tests of intelligence but normal results in certain nonverbal tests, such as additions and reaction time. Toukomma argues that these results are due to language problems solely and that the explanation is semilingualism, caused by migration. This might to some extent be true, but Toukomaa oversimplifies the issue by denying any effects of social group, arguing that the children of factory workers are as intelligent as any other children. As discussed above, a large number of international studies agree upon the existence of social handicaps, particularly in language functions. Simply denying these facts is inadequate, as is the comparison between selected groups with a population. The nonverbal tests in Toukomaa's study is of the very kind where the SES effects might be expected to be small or non-existent. Until SES is controlled, migration or semilingualism cannot be supposed to be the only or the whole explanation to a poor achievement in school. Nor can certain effects, like older pupils learning Swedish better than younger ones or achieving better in Swedish school, be attributed to language factors solely, which Toukomaa in fact argues.

METHOD

Data collection procedures

During the spring term of 1966, a data collection was carried out. In February, a questionnaire was sent out to all Local Government School Authorities (L.G.A.s) in Sweden, inquiring if they had any immigrant children receiving special tuition in Swedish. Of 991 such authorities, 93,7 per cent answered in the positive or negative . 34,7 per cent of the L.G.A.s reported having such pupils. To all schools who had answered positively or not answered, a second questionnaire was sent out in March to be filled in by the teachers. The questionnaire contained questions about the sex, nationallity, place for emigration, father's occupation and a large number of other background variables. 2.188 completed questionnaires from 90.3 per cent of the I.G.A.s with migrant children were returned. The data collection procedures are described in greater detail in Ekstrand (1976 a, b).

Of the L.G.A.s not answering questionnaire 1, the majority were small rural L.G.A.s or towns in areas of economic stagnation, which in all probability did not have any immigrants. Two L.G.A.s may well have had immigrants. One L.G.A. was situated on the border to Finland and did not regard Finnish children as immigrants, as Finnish is spoken also on the Swedish side of the border. The 93,7 per cent L.G.A.s who had immigrant children do not seem to belong to any particular kind of L.G.A. but seem to be fairly representative of the others, i.e. they were small or middle sized industrial cities or rural areas with an industrial town as the central place.

Extrapolating, it was estimated that the total number of pupils would have been around 2.400. In conclusion, we have studied about 90 per cent of the population of pupils of foreign extraction who had actually immigrated who had been subjected to special action from the L.G.A.s. Of the 2.188

questionnaires, 7 were discarded from further treatment for various reasons. For instance, some might have been duplicates or other uncertainties arose. Of the 2.181 remaining questionnaires, 22 pupils were reported having been born in Sweden and have therefore been discarded. Pupils, born in Sweden, i.e. second-generation immigrants, must have been several thousand , probably tens of thousands at the time. No action by the L.G.A.s seem to have been taken at the time, an observation confirmed by other investigators (see for instance Chaib, 1974). Pupils who have immigrated and second-generation pupils cannot be regarded as belonging to the same kind of population. Though they have many experiences and difficulties in common, their situation is very different in a number of respects. This distinction is unfortunately not always being made in research or in official statistics.

A battery of tests was sent out to the teachers in April. There were six language tests, constructed for this investigation: Pronunciation (imitation of 12 standard phrases, recorded on tape), Dictation (11 phrases were read 3 times and should be written down), Listening Comprehension (51 picture multiple choice items), Reading comprehension (51 picture multiple choice items), Free written production (a picture was to be described) and Free oral production (3 pictures were to be described; the answers were recorded on tape). For reasons of economy, the Pronunciation and Free oral production tests were distributed to 1/3 of the pupils.

There were 3 tests of oral reading, which were scored in 3 ways: time used, errors made and number of words read within the time limit (120 seconds). There were also 3 tests of intelligence: DBA 4 (PMA factor R), DBA 7 (Factor N) and DBA 8 (Factor S). Finally, teacher answers to four open questions were categorized and rated on five-point scales. They measure Progress in school in general, Social adjustment (getting along with mates), Emotional adjustment (getting along in general) and Progress in Swedish. For more detailed descriptions of the 22 measurement variables, please see Ekstrand (1976 a, b) and Ekstrand (1974).

Missing data

The questionnaires have been completed to a varying degree. The teachers have not known all the details of their pupils' background. For instance, father's or mother's occupation in the native country has not been known for more than half the pupils. Likewise , the tests have been completed to a very varying degree. There are many reasons for this. The tests of intelligence were standardized from grade 4 only. The teachers may have completed the tests they found most useful for themselves, etc. The teachers were not asked about the reasons for not performing this or that test. The numbers of missing pupils for test and background data have been given elsewhere (Ekstrand, 1976, a,b).

The question which interests us here is whether the missing data have come about in a systematic way or not. To test for this, the dichothomy test completed/not completed for each test variable was correlated with values in all other test variables. Similarly, the dichothomy information/no information for 23 back-ground variables was correlated with values in all 22 test variables. Finally, the dichothomy test completed/not completed was correlated with values in 40 background variables. Some of these exist in several finer or coarser codings, so the number of unique background variables is around 30. Low correlations suggest that missing results are not systematically related to good or bad performance in tests or to conditions measured by the back-ground variables.

Out of 506 correlations between missing data in back-ground variables and test performance, 492 were between + .10 and the remaining 14 between ± .20. These coefficients are low and suggest that no serious bias in the

background variables exists. For missing data in tests, 5 percent out of 576 coefficients were not possible to calculate because of too few cases. 2 per cent fall between $\pm$ .37, 18 per cent between $\pm$ .30 and 75 per cent fall between $\pm$ .10. These data suggest that no serious systematic selection affects the test variables as far as test performance is concerned. For missing test data against back-ground variables, 380 or 43 per cent (out of 880 possible coefficients) vary between 0 and .10. 370 coefficients (42 per cent) vary between .11 and .20. 80 coefficients (9 per cent) vary between .21 and .30. 21 coefficients (2.4 per cent) vary between .31 and .40. These are interesting. It turns out that missing data in some tests are correlated with population density in place of living, part of country and age at arrival. As mentioned, the intelligence tests were not used for pupils in grades 1-3, which explains the correlation between age and missing test data. Inspection of correlation tables reveal only minor differences between places of different population size or part of country. It is difficult to discover more than a slight and rather inconsistent overweight for more missing data in densely populated areas. The correlation is low but seems to have been able to reach its maximal value because the variables are very finely graded. These correlations do not imply any bias which is worth considering. 22 coefficients (2.5 per cent) were not computed. DBA 8, the S factor test, correlates between .40 and .51 with grade, class type (special or ordinary class), number of grades in native country, age and .93 with another age coding. These correlations (less than 1 per cent) are all explained by this test not having been carried out with the youngest pupils. We conclude that missing test data are not related to back-ground variables in such a way as to create any serious bias like uncontrolled systematic selection. In summary, none of the three checks on missing data have revealed systematic selection which may have seriously biased the results.

RESULTS

Some of the results, viz. intercorrelations between test domains; and the test as functions of age and length of residence has been presented in other contexts (Ekstrand, 1971, 1976 a, b, c). In table 3, the results of simple analyses of variance are presented for sex, age, national language group, father's occupation, length of residence, previous knowledge of Swedish and teaching materials used.

Sex yields significant differences in favour of the girls in most adjustment, language and intelligence variables. For 5 variables only out of 22, the differences are not significant, but the tendency is constant in these variables too. The ω^2 values, however, are very low. As most indices of correlation, the ω^2 is rather sensitive to coarse grouping, which in this case cannot be improved (fortunately). Possibly the low ω^2 values are due to "coarse grouping" effects. This possibility will have to be studied further and reported in another context.

Age seems to be the most important factor by far, judging from the ω^2:s. When thirds of year are used for grouping the pupils, there are significant differences between groups in all language and reading variables but one. The ω^2 values are exceptionally high for a behavior study and the highest by far for the frame factors discussed in this report.

When pupils are grouped in two age groups only, in order to show the direction and size of differences between means, it appears that the significant differences remain in all language and reading variables but two. The tendency in favour of older pupils is pervasive, also for the two variables where differences are non-significant. In the intelligence factors, a trend of development with age becomes apparent, while a weak tendency in the opposite direction becomes apparent for the adjustment variables (i.e. the

teacher ratings, variables 1-4). The last tendency is very weak indeed, even if it is statistically significant in two out of the four variables. The ω^2 values are low, however, and this result should not be payed too much attention to. It does suggest, however, that the age factor in the social and emotional adjustment of migrant children should be explored further, preferrably by means of objective instruments and in a more thorough manner than has been possible in this study.

Nationality differences have been computed for the largest groups only. The highest N values are for Finnish pupils 1.127, Yugoslave pupils 336, Greek pupils 93 and Spanish pupils 28, but they vary between different tests. In the adjustment variables, 1-4, there are not significant differences. In the six language variables, 5-6 and 19-22, differences are significant. Finnish and Spanish pupils do best. In the reading tests, most differences are insignificant. The significant differences appear in two out of three tests in the best measure, Errors. Also here, Finnish and Spanish pupils do best. This might have something to do with intelligence, as the same pupils do best also in the intelligence tests. The R factor test correlates .41 - .46 with Reading Comprehension, Dictation and Free writing and .22 - .27 with Listening Comprehension, Free Speaking and Pronunciation. The N factor test correlates .34 - .35 and .14 - .23 and the S factor test .25 -.28 and .02 - .13 with the same two groups of language variables. The correlations are low, but together the intelligence factors may contribute substantially. We will know more about this when canonical correlations have been computed. However, ω^2:s show that nationality does not explain much of the test variance, except in two of the intelligence tests and Free Speaking.

Language group yields significant differences in all variables but the less important measures of Time and Words in the Oral Reading tests. The ω^2:s are slightly higher, but still very low in most variables. They are highest in the intelligence tests and the language production tests, variables 19-22. The Slavic group has the highest means in the adjustment variables, all the language variables and two of the intelligence variables. In all the variables mentioned, the Germanic group comes next, except in Dictation, where the Romanic group comes second. The Germanic group scores best in the Oral Reading tests and the S factor intelligence test. In these variables, the Slavic group comes second. The Greek group does not seem to do so well in most variables. The Roman and Finnish-Ugric language groups come in between. These results do not seem to be a very strong support to the similarity hypothesis, possibly because variables like intelligence, SES, cultural differences (in a great number of respects) and other variables contribute as much as language group, thereby muddling the results. However, the explanatory value of language group is very low and the quantitative differences, though statistically significant, are almost negligible.

Socio-economic status as measured by "father's occupation in Sweden" yield small significant differences in the adjustment variables. Workers' children adjust slightly worse than others. They do slightly worse than others in the language variables, except in Pronunciation and Free oral production. In these two tests they do slightly better , but not significantly so. They are equivalent to others in the important R factor, which actually supports Toukomaa's conclusion of equal intelligence from his studies of Finnish migrant children in Sweden (1975). They do significantly worse in the other two tests, however. They also do slightly worse in the Oral Reading tests. However, the ω^2 values are so low that these results must not be given great weight.

Length of residence (LOR) does not yield significant differences in the adjustment variables, but does so in all the language variables. In the Oral Reading tests, "time used" and "errors" yield significant differences, but not "number of words read". Both "time and number of words" have strong "roof effects", however. "Errors" seems to be the most valid and most

discriminative measure. All these differences are in favor of longer stay. The ω^2:s are rather low, but highest for the six language variables. For Free oral production it is very high indeed, suggesting that actual interaction with natives and living in the new culture is important for the development of oral communication. The S factor test reveals an astonishing superiority for pupils with a short LOR. The small differences between short and long LOR and the rather high means may seem surprising. Some explanations will be offered in the Discussion part of this paper, but it might be mentioned here that many pupils received intense training upon arrival. In other words, time resources were concentrated to the first term. The concept of "preparatory classes", i.e. one kind of organization for intensive courses, were beginning to spread at the time of data collection.

Previous knowledge of Swedish yields significant differences in favor of those with the better knowledge, in all variables. The ω^2:s are fairly high for all the language variables: particularly so for the production variables (19-22) and satisfactory for the Oral Reading tests, "errors". Also the adjustment variables with a cognitive content yield acceptable ω^2:s. The intelligence variables, in contrast, yield very small values. The teachers were asked to rate "previous knowledge at start of semester". In order to study individuals with previous knowledge before migration, e.g. Finnish pupils with Swedish as the first foreign language in the Finnish primary school, the material must be broken down into subgroups according to arrival in Sweden and time for start of tuition. This has not yet been done. Meanwhile, this measure is in a way an evaluation of a combined number of variables, like LOR, amount of instruction, quality of instruction, language aptitude and possibly others. It is rather obvious, that a good previous knowledge in a language, whatever the way of acquisition, is very valuable.

Teaching materials used is an interesting variable. There are three categories: those who used "Learning Swedish", those who made their own teaching materials, and those who have used beginners' readers. "Learning Swedish" was not a complete course. It was a supporting material with tapes, lots of pictures and a little text and intended to stimulate oral exercises. It was constructed by the present author and the advicer at the National Board of Education, Margareta Ek after the latter having discovered the amount of silent exercises prevalent in the class-rooms. It turns out that the teachers who made their own materials have succeeded best. Apparently, teacher creativity and commitment are important factors. "Learning Swedish" users have succeeded second best in many variables and in Free oral production there is even a tendency that they have succeeded best of all. This seem to imply that our intentions of stimulating oral production met with some success. Those who have resorted to readers may seem to have succeeded less well. Before this conclusion can be drawn, however, it must be checked that a possible interaction with age does not explain part of this result.

In summary, we find the following similarities between data from two different kinds of motivational settings. In the migrant study, as well as in "English in grade 6", sex differences in favor of the girls appear. In both these studies, teacher competence appears to play a role. In the migrant study, age appears to be an important factor, in harmony with Burstall's (1975) findings. In agreement with findings from "English in grade 6" as well as other studies within both kinds of motivational setting, native language seems to play a significant, but surprisingly small role for L2 acquisition. SES differences exist, in harmony with other studies, but are small, probably due to a too narrow criterion obtained under extraordinary circumstances. It would seem, that, on the whole, the same factors are to a certain extent operating in L2 learning in different kinds of motivational situations.

Table 3. Means, ω^2:s, F-ratios and probabilities for a number of individual and social frame factors, showing their relationship to measurements of psycho-linguistic and socio-emotional adjustment in migrant children. Simple analyses of variance.

	1. Progress in school	2. Social adjustment	3. Emotional adjustment	4. Progress in Swedish	5. Listening comprehen.	6. Reading comprehen.	7. RLS 1 Time	8. RLS 1 Words	9. RLS 1 Errors	10. RLS 2 Time	11. RLS 2 Words	12. RLS 2 Errors	13. RLS 3 Time	14. RLS 3 Words	15. RLS 3 Errors	16. DBA 4 R factor	17. DBA 7 N factor	18. DBA 8 S factor	19. Dictation	20. Free writter product.	21. Pronun-ciation	22. Free oral product.
1. Sex																						
a) Girls $\bar{X}$	3.00	3.71	3.59	3.[illegible]	44.2	40.7	75	57.3	3.57	63	49.4	2.80	96	60.7	6.86	17.0	6.71	34.5	57.9	5.33	189	37.5
b) Boys $\bar{X}$	2.91	3.77	3.46	3.12	43.5	38.7	80	56.3	5.00	69	48.9	3.58	105	59.9	8.06	15.1	6.45	33.3	52.7	4.34	182	36.3
F ratio	4.12	5.06	6.02	13.1	2.05	8.11	5.34	3.97	27.4	4.18	4.44	12.9	9.41	2.84	12.0	5.11	.901	2.10	24.4	71.1	.901	.342
p	.05	.05	.05	.001	NS	.01	.05	.05	.001	.05	.05	.001	.01	.10	.001	.05	NS	NS	.001	.001	NS	NS
100 x ω^2	.33	.38	.63	1.0	.16	.64	.44	.32	2.2	.34	.36	1.0	.80	.24	1.0	2.0	.36	.30	2.2	6.5	.31	.12
df within	1784	1[illegible]	956	1252	1301	1260	1220	1239	1229	1218	1225	1223	1168	1175	1174	245	251	689	1112	1016	291	291
2. Age																						
26 groups F	2.56	1.31	1.09	1.33	4.69	15.5	11.6	12.9	3.75	14.8	8.62	4.32	21.1	15.3	4.86	x)	1.36	4.44	11.0	7.23	1.88	1.29
p	.01	NS	NS	NS	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	x)	NS	.001	.001	.001	.05	NS
100 x ω^2	3.4	1.8	2.8	2.6	8.5	23.3	19.2	20.4	7.0	23.0	14.7	8.0	30.6	24.1	9.2	x)	12.4	13.5	19.5	14.9	14.0	10.0
df within	1756	1822	954	1254	1310	1275	1244	1254	1254	1243	1251	1249	1194	1201	1200	x)	240	710	1131	1034	289	289
3. Age																						
a) 12-16 years $\bar{X}$	2.82	3.44	3.49	3.14	45.7	44.7	64	59.6	2.97	48	50.0	2.14	78	62.9	5.67	17.4	6.97	36.2	6	5.44	186	36.9
b) 7-10 " $\bar{X}$	3.14	3.56	3.55	3.22	41.4	33.0	97	52.9	5.55	93	47.7	4.20	136	55.8	9.21	13.3	5.35	25.9	45.9	3.94	183	36.2
F ratio	56.3	6.71	.99	1.86	81.5	225	183	131	75.6	195	50.8	77.7	348	145	86.8	7.25	15.2	33.2	157	121	.169	.085
p <	.001	.01	NS	NS	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.01	.001	.001	.001	.001	NS	NS
100 x ω^2	2.8	.50	.14	.20	7.9	19.7	17.2	12.5	8.0	17.8	5.3	7.9	28.8	14.3	9.1	3.8	7.5	6.3	16.2	14.0	.08	.04
df within	1332	1350	714	939	953	918	906	914	914	904	910	909	862	869	689	182	188	495	813	741	225	225
4. Nationality a) Finnish $\bar{X}$	2.91	3.45	3.45	3.11	44.4	40.4	79	56.4	4.07	68	48.9	3.20	102	59.6	7.16	17.0	6.99	33.9	57.1	4.84	185	37.6
b) Yugoslav $\bar{X}$	2.95	3.51	3.57	3.33	41.9	37.1	76	57.0	4.52	64	49.5	3.42	101	61.4	8.33	13.5	5.75	33.4	50.0	4.57	186	34.3
c) Greek $\bar{X}$	2.80	3.51	3.56	3.35	40.7	34.6	77	57.6	5.52	68	49.2	3.89	112	61.4	9.63	14.3	5.63	28.9	46.0	3.80	154	20.2
d) Spanish $\bar{X}$	2.75	3.50	3.26	3.09	45.0	39.5	68	56.8	2.32	62	48.7	1.68	90	61.6	5.37	14.3	6.25	35.7	54.4	4.41	129	-
F ratio	.469	.451	1.65	2.04	11.2	7.48	.561	.521	4.60	.491	.998	1.73	1.05	3.10	6.08	3.55	6.75	2.99	14.3	6.07	2.24	7.46
p	NS	NS	NS	NS	.001	.001	NS	NS	.01	NS	NS	NS	NS	.05	.001	.05	.001	.05	.001	.001	.10	.001
100 x ω^2	.09	.09	.59	.55	2.8	1.9	.16	.14	1.2	.14	.27	.49	.30	.90	1.7	4.6	8.1	1.4	4.2	2.0	2.4	7.6
df within	1564	1578	831	1106	1165	1134	1091	1098	1098	1092	1096	1094	1043	1046	1045	221	230	624	992	916	273	273

x) Not computed, probably because of too few cases in one or more cells.

Table 3. Means, ω^2:s, F-ratios and probabilities for a number of individual and social frame factors, showing their relationship to measurements of psycho-linguistic and socio-emotional adjustment in migrant children. Simple analyses of variance.

	1. Progress in school	2. Social adjustment	3. Emotional adjustment	4. Progress in Swedish	5. Listening comprehen.	6. Reading comprehen.	7. RLS 1 Time in seconds	8. RLS 1 Words	9. RLS 1 Errors	10. RLS 2 Time in seconds	11. RLS 2 Words	12. RLS 2 Errors	13. RLS 3 Time in seconds	14. RLS 3 Words	15. RLS 3 Errors	16. DBA 4 R factor	17. DBA 7 N factor	18. DBA 8 S factor	19. Dictation	20. Free written product.	21. Pronunciation	22. Free oral product.
5. Language group:																						
a) Finnish-Ugric $\bar{X}$	2.97	3.51	3.59	3.35	42.4	37.9	76	57.3	4.81	64	49.6	3.34	101	61.5	8.26	14.7	5.88	33.7	51.1	4.63	185	34.6
b) Slavic $\bar{X}$	3.24	3.74	3.83	3.49	47.0	44.0	82	57.6	4.01	61	49.4	2.57	91	60.0	6.39	19.1	7.36	35.8	58.3	6.10	215	51.2
c) Germanic $\bar{X}$	3.10	3.39	3.38	3.20	45.5	40.8	72	57.9	2.75	54	49.6	1.79	85	62.4	5.26	16.6	6.38	37.2	56.7	5.04	195	46.1
d) Romanic $\bar{X}$	2.91	3.54	3.45	3.12	44.4	40.3	78	56.5	4.04	68	48.9	3.19	102	59.7	7.12	17.0	7.00	33.8	57.0	4.86	186	37.9
e) Greek $\bar{X}$	2.63	3.51	3.56	3.35	40.7	34.6	77	57.6	5.52	68	49.2	3.89	112	61.4	9.63	14.3	5.63	28.9	46.0	3.80	154	20.2
f) Other $\bar{X}$	2.84	3.90	3.50	3.55	43.5	41.9	65	58.7	4.59	48	49.3	2.45	78	61.2	6.50	10.7	5.60	35.7	61.0	5.78	201	34.8
F	3.87	4.66	3.57	4.51	9.54	5.76	1.09	1.01	3.43	1.63	1.22	2.81	3.03	2.88	5.39	2.35	4.28	2.97	9.00	11.7	2.54	7.08
P	.01	.001	.01	.001	.001	.001	NS	NS	.01	NS	NS	.05	.01	.05	.001	.05	.001	.05	.001	.001	.05	.001
$100 \times \omega^2$	1.0	1.2	1.8	1.7	3.3	2.1	.42	.38	1.3	.63	.47	1.1	1.2	1.2	2.1	4.4	7.6	2.0	3.7	5.1	3.8	10.0
df within	1883	1901	1600	1318	1383	1339	1290	1300	1300	1286	1296	1294	1239	1243	1242	256	261	742	1181	1083	318	318
6. Father's occupation in Sweden (9 categories) F	2.22	3.38	1.59	3.41	3.37	3.63	1.66	1.12	1.50	.614	.776	1.20	1.18	.668	2.93	1.44	2.10	2.71	3.18	3.80	1.58	1.38
P	.05	.001	NS	.001	.001	.001	NS	NS	NS	NS	NS	NS	NS	NS	.01	NS	.05	.01	.01	.001	NS	NS
$100 \times \omega^2$	1.0	1.5	1.4	2.3	2.2	2.4	1.2	.78	1.0	.43	.54	.84	.87	.49	2.1	4.9	6.8	3.2	2.4	3.1	4.3	3.8
df within	1691	1704	901	1172	1210	1173	1136	1144	1145	1133	1140	1140	1086	1092	1093	223	231	652	1034	950	280	280
7. Workers $\bar{X}$	2.94	3.49	3.51	3.19	43.6	39.3	78	56.9	4.35	66	49.1	3.20	101	60.4	7.53	15.9	6.47	33.3	54.5	4.75	187	37.6
Others $\bar{X}$	3.17	3.75	3.70	3.51	45.4	43.3	74	58.1	3.42	60	49.5	2.59	93	60.6	5.77	16.0	7.13	35.8	61.7	5.61	185	35.5
F	10.9	17.4	5.9	15.9	6.91	11.3	1.01	2.0	4.24	1.60	.894	2.92	2.41	.097	9.37	.005	2.72	3.37	16.9	17.4	.056	.371
P	.001	.001	.05	.001	.01	.001	NS	NS	.05	NS	NS	.10	NS	NS	.01	NS	.10	.10	.001	.001	NS	NS
$100 \times \omega^2$	.66	1.0	.67	1.4	.58	.98	.10	.18	.38	.15	.08	.26	.23	.01	.87	.00	1.2	.51	1.7	1.9	.02	.14

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8. Length of residence (LOR)	0-8 month $\bar{x}$	2.09	3.47	3.56	3.16	42.0	37.0	80	56.9	4.84	68	49.2	3.60	106	60.3	8.35	15.7	6.38	35.5	51.8	4.41	176	32.2
	over 24 " $\bar{x}$	2.97	3.52	3.51	3.24	46.7	42.9	69	57.6	2.88	51	48.9	2.12	85	61.4	5.66	16.7	6.16	30.1	58.0	5.44	205	53.6
	F	1.06	.420	.417	.619	36.3	20.1	10,3	.520	16,6	12.2	252	13.2	14.2	1.37	16.9	.215	.16	11.4	9.5	24.1	5.52	40.6
	P	NS	NS	NS	NS	.001	.001	.01	NS	.001	.001	NS	.001	.001	NS	.001	NS	NS	.001	.01	.001	.05	.001
	$100 \times \omega^2$	.12	.05	.09	.11	5,6	3,3	1.2	.89	2,7	2.1	.04	2.2	2.5	.24	2.9	.22	.15	3.4	1.8	4.8	3.7	22,2
	df within	874	869	479	586	618	597	581	587	587	580	585	585	558	563	563	98	106	325	523	476	142	143
9. Previous knowledge of Swedish	a) None $\bar{x}$	2.81	3.43	3.43	3.05	41.0	35.0	84	55.6	5.74	75	48.8	4.27	113	58.6	9.11	16.4	6.36	34.8	47.8	3.90	153	27.4
	b) Passive only $\bar{x}$	2.82	3.43	3.45	3.12	43.8	39.0	79	56.5	4.41	70	48.7	3.28	104	60.1	8.02	15.4	5.43	33.7	54.2	4.66	187	33.4
	c) Some speech, fair comprehen. $\bar{x}$	3.03	3.54	3.54	3.30	45.7	43.5	73	58.1	3.26	58	49.8	2,39	92	61.9	6.10	17.0	6.97	33.6	59.4	5.25	203	44.4
	d) Fair speech, good comprehen. $\bar{x}$	3.43	3.76	3.81	3.61	47.5	45.6	68	58.2	2,38	49	49.7	1.82	79	61.8	4.36	16.8	6.83	33.7	63.7	6.28	208	47.9
	F	35.2	11.5	9.28	20.3	45.4	44.4	8.46	6.01	28.5	14.6	4.98	23.4	21	9.79	34.1	.735	.477	.489	40.8	71,5	16.4	22.1
	P	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001
	$100 \times \omega^2$	5.4	1.8	2.7	4.5	9.3	9.4	2.0	1.4	6.4	3.4	1.2	5.3	5.0	2.4	7.8	.87	.55	.20	9.7	17.0	13.8	17.7
10. Teaching materials used	1. Learning Swedish $\bar{x}$	2.85	3.45	3.50	3.16	43.5	38.4	80	56.6	4.76	67	49.1	3.40	104	60.5	8.23	15.4	6.44	33.6	52.6	4.50	186	38,3
	2. Teacher made mat. $\bar{x}$	3.06	3.52	3.67	3.26	44.7	42.5	73	57.5	3.55	62	49.5	2.73	94	61.1	6.39	16.4	6.84	34.3	58.0	5.23	193	35.6
	3. Beginners' reader $\bar{x}$	2.98	3.50	3.41	3.15	42.3	35.8	83	55.6	5.32	76	48.4	4.05	115	57.7	8.68	15.5	5.47	31.9	53.0	4.52	161	34.6
	F	7.04	1.15	.91	1.78	2.57	19.9	5.65	3.15	10.4	3.87	3.04	7.34	9.55	8.35	12.5	1)	1)	1)	8.02	12.7	1)	1)
	P	.001	.32	.41	.17	.08	.001	.004	.05	.001	.02	.05	.001	.001	.001	.001	1)	1)	1)	.001	.001	1)	1)
	$100 \times \omega^2$	2)	2)	2)	2)	2)	2)	2)	2)	2)	2)	2)	2)	2)	2)	2)	2)	2)	2)	2)	2)	2)	2)

1) Not computed because of too few cases in too many cells. 2) These data were computed with a program not yielding ω^2's or SSs from which ω^2 can be computed

DISCUSSION

Sex differences in language capacities seem to be proved beyond reasonable doubt. In addition to the well-known superiority for girls in verbal intelligence factors, the findings from two major studies reported in this paper seem to show a pervading superiority in L2 learning. These findings support those of Burstall (1975) and seem to remove the rest of uncertainty which seems to linger in Burstall's discussion.

The ω^2values, computed in the immigrant study suggest, however, that the explanatory value of sex is small. In one variable only, Free written production, does the ω^2 exceed the conventional value of .05, required to interpret differences, even if significant.

According to Burstall, sex may interact with age and SES, possibilities which will later be studied with the data from the immigrant study:

Recently, studies of attention and laterality have revealed interesting sex differences. According to Guinness (1976) studies of attention, females are more responsive to sounds and men to light as far as sensitivity to intensity of stimulus is concerned, in such a way as to trigger attention to the most discriminable parameters of the modality (p. 25). For instance, though males and females do not differ in pitch discrimination, they do so in phonemic recognition. "The cues of intensity(inflection) and phonemic variation combine in speach to hold the females' attention." (p. 25) Males are more sensitive to light and the world of objects, while females are more attentive towards people. E.g. faces are better recognised by females, possibly because faces "speak". Possibly, the results from "English in grade 6" may be an example of this interaction between language, perception and sex.

It has become more or less a convention to place speech functions in the left hemisphere. This convention is now being challenged by a number of investigators. For instance, Kimura (1976) suggests that speech difficulties are generally accompanied by other motor disturbances, e.g. nonverbal motor movements. She suggests that an analysis of left-hemispheric function along the lines of verbal-nonverbal processes is less likely to be profitable than an analysis along the lines of motor complexity. Gazzaniga (1976), after accounting for studies of abstraction and conceptual-cognitive capacities by means of comparing natural an artificial language learning after left hemispheric damage, concludes: " s a result, we believe that the capacity for symbolization and for analytical thought is not exclusively dependent upon the integrity of the traditional speech areas of the dominant hemispheres " (p. 147).

British Medical Journal (1972) in a review of literature, called "Speech on both sides", calls attention to the fact that a number of studies of brain patients, using different techniques and studying various types of lesions and disturbances, all indicate that the nondominant hemisphere serves some aspects of speech. Smith (1972) and Smith and Sugar (1975) report case studies of patients who after left hemispherectomy have developed normally and show normal, even superior verbal and non-verbal intelligence, allowing them to conduct advanced studies (university level) and to fulfill intellectual occupations.

Recent studies indicate that females have a lesser degree of hemispheric specialization (Berlucchi et. al. 1976). They found that normal males showed a superiority of the left visual field on certain discrimination tasks, indicating a right hemisphere dominance on such tasks. Normal female subjects did not show such field differences. These data are supported by results with patients with lateralized brain damage and by dichotic tests on normals. For instance, McGlone (1976) found that men show impaired verbal abilities after left-sided lesions and impaired spatial abilities following right-sided lesions, while in women, language deficiences are less common and less severe and spatial disturbances occur equally often after left or right-sided lesions.

All the evidence cited suggests that differences in L2-learning capacity between boys and girls found in psycho-educational or psycho-linguistic studies may be due to sex differences in brain functions. The practical consequences of such differences should not be overrated, however, and no immediate implications for practical teaching situations seem to follow, with one exception: male and female pupils should be allowed to practice language in settings which appeal to the specific interests of the sexes. Thus, advicing teacher trainees to concretesize their teaching by for instance introducing automobile journals for the boys and fashion journals for the girls should not be condemned as a reactionary view on sex roles but a means of increasing motivation by using the biological prerequisites of the sexes.

Many theories concerning age and foreign language learning have been proposed: neurophysiological, biological, psychological, linguistic and educational. All but Toukomaa´s L1 - L2 developmental theory predict an optimum before puberty, some at very early ages, some at a later age. As shown in this paper, in agreement with a number of studies, L2 -learning ability increases with age. As shown elsewhere (Ekstrand, 1976 c) L2-learning ability seems to follow a developmental trend, similar to that of cognitive and also other development. L2-learning ability was shown to increase approximately linearly in all language variables, without any trace of an opimum. The slope is less for Pronunciation than for other variables and very small for Free oral production. No developmental theory seems to have been formulated as yet, but there is a monography on this subject under work by the present author.

Toukomaa (1975) claims that the age effects in his migrant material is due to the better development of L1. He further argues that children, "especially before school age" (p. 3), relatively fast learn a second language, but that "language development soon slows down and full understanding of the deeper meaning of concepts cannot be attained unless the native language develops to an abstract level" (p. 3).

The low correlations between L1 and L2 as well as the small differences between pupils from different language groups presented in this paper do not seem to warrant such a reasoning. Furthermore, part of the correlation between L1 and L2 variables is almost certainly due to cognitive factors which L1 and L2 have in common.

For instance, Clark (1976) has pointed out that language activities always involve a good deal of problem-solving, i.e. logical processes. For instance, the listener must infer the referents to many of the words and also the speaker´s intended meaning and why he speaks the way he does. Furthermore, logical processes appear to be involved in syntactic processes. Glucksberg (1967) showed experimentally that referential communication develops with age, from 3-year-olds to adults (actual data are given for grade 3 - grade 9 pupils). As many writers have pointed out, not all concept forming is of a verbal nature. In summary, the native language seems to be only one of a number of variables, each contributing to create the prerequisites for L2-learning.

The SES differences in this paper are not very great. At least the following circumstances seem to explain this. In the first place, Father´s occupation in Sweden was used as SES index. Probably Father´s occupation in native country would have beeen a more adequate index, as there is a shift of occupational structure at migration (Ekstrand, 1976, a, b). The amount of missing data in this variable was too great, however. The teachers have not known occupation in native country for more than 64.5 per cent of the pupils as compared to 92.8 per cent for occupation in Sweden. Secondly, Mother´s occupation in native country and in Sweden might be an additional useful index. These data were known for 77.6 per cent and 53.4 per cent of the pupils, respectively. It may be possible to study this further later on. Thirdly, more variables, like Father´s education and Family income are usually needed to obtain a good, combined index of SES. In fact, Mother´s education may be an even more important index, as the mothers´ intelligence are almost completely

decisive for the childrens' intelligence development (Heber et. al. 1972) Fourthly, the occupational range among migrants is rather restricted as compared to the whole population (see data for this study in Ekstrand, 1976, a, b). All these circumstances have probably contributed to the unexpectedly weak influence of SES in this study, as compared to the great bulk of evidence in the international literature.

An interesting observation is the fact that many pupils with a LOR of a few month only, score rather well on many tests. There are many possible reasons for this fact. These reasons will be listed here as hypotheses, which will be further explored and reported separately later on. The first reason is the degree of previous knowledge of Swedish. At the time of the data collection, Swedish was the first foreign language in Finland. Many of the Finnish pupils should have had at least a passive knowledge of Swedish, while others had little or no such knowledge. In fact, the teacher ratings of previous knowledge are strongly related to all test variables. The amount of teaching is known to have effect on the results (Burstall, 1975 a, 1975 b, Carroll, 1975, Lewis and Massad, 1975). Some pupils have been given intensive tuition immediately upon arrival, with a large number of hours per week. Such pupils no doubt affect the means for pupils with a rather short LOR. Thirdly,in some tests there may be possibilities of getting a score that does not reflect completely the right level of language command. For instance, in the multiple choice tests, pure guessing will produce at least some correct answers. Also, cognitive factors may contribute to tests overestimating actual language proficiency. Language activities always include problem-solving, i.e. logical processes involved in the linguistic processes (Clark, 1976). Such logical processes may enable a person to make roughly correct inferences about the contents of a sentence without having understood more than some of the words or without having comprehended the full significance of the contents. Observations of test results exaggerating the actual language command have recently been made by Jauho and Loikkanen (1974) and Skutnabb-Kangas and Toukomaa (1976). Fourthly, besides multiple choice tests, a number of other test types may give over-estimations of second language command, like reading aloud, dictation and others. The reason may be the obvious similarities in task between two languages. A Finnish pupil who can read his native language may read aloud quite well from a Swedish text with little or no comprehension. Some test types, like conversation, answering questions, free oral production and possibly free written production may be less sensitive to factors mentioned here. Fifthly, the factors listed here may combine and act in the same direction. Sixthly, there may be other factors explaining the over-estimation than those discussed here. A separate report will be prepared, exploring this very interesting phenomenon further.

Reyes-Lagunes et. al. (1976) made some subcultural and crosscultural comparisons of cognitive development. They compared sex, age, degree of urbanization, SES and the USA and Mexican cultures. All these variables produced significant differences and a number of very interesting interactions, but age proved to be the most important variable, in various tests. These findings seem to agree with the findings of the present study: age is a more important variable than SES, cultural background as measured by nationality, and sex when we compare the ω^2:s for the intelligence variables. The same conclusions seem to be true also for the language variables. These results seem to suggest that foreign language learning follows the general cognitive development.

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