EDITOR

DAN ISAAC SLOBIN

# THE CROSSLINGUISTIC STUDY OF LANGUAGE ACQUISITION

## VOLUME 4

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*Volume 4*

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## *Volume 4*

**Edited by**

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The publisher has gone to great lengths to ensure the quality of this reprint but points out that some imperfections in the original may be apparent.

# Contents

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# Format and Abbreviations for Glosses[1]

All foreign language examples are given in Italics. (Small caps are used for emphasis and other usual functions of Italics.) In running text, English glosses and grammatical codes are given in single quotes, and optional free translations follow in parentheses, indicated by an equal sign. Grammatical codes are always given in capital letters (see list, below). For example:

*gel-me-di-n* 'come-NEG-PAST-2SG' (= you didn't come).

In interlinear format, translation equivalents appear below the foreign language example and the free translation is placed below in single quotes:

*gel-me-di-n*
come-NEG-PAST-2SG
'you didn't come'

Hyphens in a morphological gloss always correspond to hyphens in the foreign example. If part of a foreign example corresponds to more than one grammatical code, the collection of codes is joined by colons; e.g., *gel-medin* 'come-NEG:PAST:2SG', or even *gelmedin* 'come:NEG:PAST:2SG'. If it is relevant to indicate the possibility of segmentation, plus signs can be used in place of colons. The preceding example consists of segmentable morphemes, and could also be glossed, for example, as *gel-medin* 'come-NEG+PAST+2SG'. Use of colons is neutral with regard to the possibility of segmentation, and in most instances either colons or hyphens are used. (The degree of precision of segmentation and glossing of an example, of course, depends on the role it plays in the exposition.)

[1]The abbreviations are adapted from a list used by Bernard Comrie (*The languages of the Soviet Union*, Cambridge University Press, 1981, p. xv). The format is based on useful suggestions offered by Christian Lehmann in "Guidelines for interlinear morphemic translations: A proposal for a standardization" (Institut für Sprachwissenschaft, Universität Köln, Arbeitspapier Nr. 37, 1980). The system presented here is offered as a proposal for standardization in child language studies.

If a single lexical item in the original is expressed by several lexical items in a gloss, those items are separated by a period; e.g., *hipil* 'made.fall', *kalk* 'get.up'. A period is also used when the name of a grammatical element consists of more than one item; e.g., DEF.ART = definite article. Combining the principles for use of colons and periods in grammatical codes, consider the gloss for the German definite article in its masculine singular accusative form: *den* 'DEF.ART:MASC:SG:ACC'.

## LIST OF GRAMMATICAL CODES

1 First Person
2 Second Person
3 Third Person
ABESS Abessive ('without X')
ABL Ablative ('from X')
ABS Absolutive
ACC Accusative
ACT Active
ADESS Adessive ('towards X')
ADJ Adjective, Adjectival
ADMON Admonitive
ADV Adverb(ial)
AFFIRM Affirmative
AGR Agreement
AGENT Agent
ALLAT Allative ('to(wards) X')
AN Animate
ANTI Antipassive
AORIST Aorist
APL Applicative
ART Article
ASP Aspect
AUG Augmentative
AUX Auxiliary
BEN Benefactive
BT Baby Talk
C Consonant
CAUS Causative
CL Clitic
CLASS Classifier
CMPLR Complementizer
CNTR Contrastive
COMIT Comitative ('(together) with X')
COMM Common
COMPAR Comparative
COMPL Completive
CONC Concessive
COND Conditional
CONJ Conjunction
CONN Connective
CONSEC Consecutive
CONT Continuous, Continuative
CONTEMP Contemporative
COP Copula
DAT Dative
DECL Declarative
DEF Definite
DEICT Deictic
DEM Demonstrative
DER Derived, Derivation
DESID Desiderative
DIM Diminutive
DIREC Directional
DO Direct Object
DU Dual
DYN Dynamic (Nonstative)
ELAT Elative ('out of X')
EMPH Emphatic
EQU Equative
ERG Ergative
ESS Essive ('as X')
EVID Evidential
EXCL Exclusive
EXCLAM Exclamatory
EXIS Existential
EXP Experiential
EXT Extension
FACT Factive
FEM Feminine
FIN Finite

FOC Focus
FUT Future
GEN Genitive
HAB Habitual
HABITA Habitative
HON Honorific
HUM Human
ILL Illative ('into X')
IMP Imperative
INAN Inanimate
INCH Inchoative
INCL Inclusive
INCOMPL Incompletive
INDEF Indefinite
INDIC Indicative
INESS Inessive ('in X')
INF Infinitive
INFER Inferential
INSTR Instrumental
INT Interrogative
INTENT Intentive
INTERJ Interjection
INTRANS Intransitive
IO Indirect Object
IPFV Imperfective
IRR Irrealis
ITER Iterative
LOC Locative
MASC Masculine
MKR Marker
MOD Modal
N Noun
NEG Negative
NEUT Neuter
NEUTRAL Neutral
NOM Nominative
NOML Nominal
NONPAST Non-past
NONVIR Non-virile
NUM Numeral, Numeric
OBJ Object
OBL Oblique
OBLIG Obligatory
OPT Optative
PART Participle
PARTIT Partitive
PASS Passive
PAST Past
PAT Patient
PERF Perfect
PERS Personal
PFV Perfective
PL Plural
POL Polite
POSS Possessive
POST Postposition
POT Potential
PP Past Participle
PRE Prefix
PREP Preposition
PRES Present
PRESUM Presumptive
PRET Preterite
PRO Pronoun
PROG Progressive
PROL Prolative ('along X')
PROLOC Prolocative
PTL Particle
PURP Purposive
PVB Preverb
Q Question
QUANT Quantifier
QUOT Quotative
RC Relative Clause
RECENT Recent
RECIP Reciprocal
REFL Reflexive
REL Relative
REM Remote
REPET Repetition
REPORT Reportative
RES Resultative
SG Singular
SIMUL Simultaneous
STAT Stative
SUBJ Subject
SUBJV Subjunctive
SUBL Sublative ('onto X')
SUFF Suffix
SUPER Superessive ('on X')
SUPERL Superlative
TAGQ Tag Question
TAX Taxis
TEMP Temporal

TNS Tense
TOP Topic
TRANS Transitive
TRANSL Translative ('becoming X')
V Verb
VBLR Verbalizer
VIR Virile
VN Verbal Noun
VOC Vocative
VOL Volitional

# Preface

The fourth and fifth volumes of this series are being published simultaneously. The crosslinguistic endeavor has been growing steadily since the authors of the first two volumes met in Berkeley in 1980. In these five volumes we have brought together 36 authors, examining the acquisition of 28 languages from about 16 major language families (depending on how one counts), and raising a host of theoretical issues. At the same time, in these past 15 years there has been an accelerated growth of international and crosslinguistic conferences, journals, and books, bringing us closer to the goal that Clara and William Stern aimed at early in this century: "to formulate laws of formation that are operative in every child language" (Stern & Stern, 1907).

However, the work is far from done. As I noted in the introduction to Volume 3 (Slobin, 1992, p. 4), the language families missing from Volumes 1–4 are: Andean-Equatorial, Austro-Asiatic, Aztec-Tanoan, Dravidian, Ge-Pano-Carib, Hokan, Khoisan, Macro-Algonquian, Macro-Chibchan, Macro-Siouan, Na-Dene, Nilo-Saharan, Oto-Manguean, Paleosiberian, Salish, Wakashan, and the Isolates: Ainu, Basque, and Burushaski. (To be sure, there is acquisition research on a few languages from some of these groups, but far more is needed.) It is also still true that our work has been far more cross-LINGUISTIC than cross-CULTURAL. And it remains the case that most of the child discourse that has been analyzed consists of child–adult dialogue, in limited settings; much remains to be learned from child–child discourse. Furthermore, as Elena Lieven persuasively argues in Volume 5, we have only begun to explore what can be learned from the careful study of individual differences in development—both within and between languages.

This fourth volume presents survey chapters on the acquisition of three languages from three different groups: Finnish (Jorma Toivainen), Greek (Ursula Stephany), and Korean (Young-joo Kim), along with a typological and developmental overview of the Finno-Ugric languages in general (Lisa Dasinger). (Dasinger's chapter serves as a useful orientation to the issues of Finnish acquisition presented by Toivainen.) The fifth volume, subtitled "Expanding the Contexts," consists of chapters devoted to cross-cutting discussions of theory and method,

including typological comparisons (Dan Slobin), cognitive prerequisites (Soonja Choi), problems of speech segmentation (Ann Peters), individual differences (Elena Lieven), and a reanalysis of the origins of grammaticizable notions (Dan Slobin). Choi's chapter in Volume 5 presents additional data on Korean acquisition, considered in the light of language and cognition in development.

As in the other volumes, the chapters on individual languages are organized with a common framework in mind. Authors were given the following guidelines:

> The chapters are intended to be selective, critical reviews rather than exhaustive summaries of the course of development of each language. Authors are asked to approach the language in question as a case study in a potential crosslinguistic typology of acquisitional problems, considering those data that contribute to issues of general theoretical concern in developmental psycholinguistics and linguistic theory. Chapters should be organized according to the following headings:
>
> *Grammatical Sketch of the Language.* Brief grammatical sketch of the language or language group, presenting those linguistic facts that are relevant to the developmental analysis.
>
> *Sources of Evidence.* Summary of basic sources of evidence, characterizing methods of gathering data, and listing key references.
>
> *Overall Course of Development.* Brief summary of the overall course of development in the language or language group. This summary should give an idea of the general problems posed to the child in acquiring a language of this type, summarizing typical errors, domains of relatively error-free acquisition, and the timing of acquisition (i.e., areas of the grammar that show relatively precocious or delayed development in crosslinguistic perspective).
>
> *Data.* Specific developmental aspects of the language are examined in depth. The headings depend on each individual language and available acquisition data. Issues should be picked on the basis of available data and relevance to theoretical issues. Theoretical implications should be drawn where appropriate.
>
> *Conclusions.* An interpretive summary of the theoretical points raised above, attending to general principles of language development and linguistic organization that are suggested by the study of a language of this type. Comparisons with development of other languages. Issues that could be illuminated by further study of languages of this type, or in explicit comparison with other types of languages.

As in the previous volumes, adherence to these guidelines was based on available data and the theoretical predilections of the authors. There is no common theoretical framework across the presentations of the 28 languages in these volumes—and I think that is a strength. At this stage in the development of the science ("pre-Darwinian" if you will) we are desperately in need of a wide range of careful, descriptive data. Many of the phenomena described in these chapters do not yet fit into one of the several limited frameworks in which child language development has been interpreted. Some of the developmental patterns reported here are irrelevant to one or another current approach, as they may be to future approaches. But because we have no truly adequate or satisfactory theory of how

the child solves the many complex problems surveyed here, it is our responsibility to document the task and its attempted solutions in detail, across children and languages—and to theorize as we will. As it says in the Talmud: "It is not for you to complete the work, but neither are you free to desist from it." And so this is another interim report on children's attempts to learn what Plato called "the very greatest subject of all."[1]

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The authors of these chapters have worked long and hard, tolerating delays, and stimulating me and each other and our students with new facts, questions, and ideas. My work was facilitated by the Max Planck Institute for Psycholinguistics in Nijmegen, The Netherlands, where I spent a Sabbatical year in 1992–1993; and by my home institution, the University of California at Berkeley, which provided support in the Department of Psychology, the Institute of Cognitive Studies, and the Institute of Human Development. This volume—and indeed, the entire endeavor—rest on the continuing encouragement, assistance, and friendship of Larry Erlbaum and Judi Amsel. My thanks to one and all.

—Dan Isaac Slobin
Berkeley
1997

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Stern, C., & Stern, W. (1907). *Die Kindersprache: Eine psychologische und sprachtheoretische Untersuchung*. Leipzig: Barth.

[1]"Cratylus: Well, but surely, Hermogenes, you do not suppose that you can learn, or I can explain, any subject of importance all in a moment—at any rate, not such a subject as language, which is, perhaps, the very greatest of all" (Plato, c. 399 B.C./1961, p. 462).

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# 1 Issues in the Acquisition of Estonian, Finnish, and Hungarian: A Crosslinguistic Comparison

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## 1. INTRODUCTION

Estonian (*eesti keel*), Finnish (*suomi*), and Hungarian (*magyar*) are members of the Finno-Ugric family of languages. Estonian and Finnish belong to the Finnic branch, more specifically, Balto-Finnic, which also includes Ingrian, Karelian, Livonian, Ludian, Olonetsian, Vepsian, and Votian. The Permic and Volgaic branches consist of Zyryan (Komi) and Votyak (Udmurt) and Cheremis (Mari) and Mordvinian, respectively. Lappish (Saami) is taken to represent a separate branch of Finnic (see, e.g., Itkonen, 1955; Ravila, 1935). In the Ugric branch are Hungarian and the Ob-Ugric languages, Vogul (Mansi) and Ostyak (Khant), whose present status as sub-branches, rather than separate main branches of Finno-Ugric, has been disputed (Comrie, 1981). The Finno-Ugric languages form one part of the superordinate structure Uralic, with Samoyedic constituting the smaller branch.

Table 1 provides figures for the numbers of speakers and main areas of distribution of each language, as furnished by the Department of Finno-Ugrian Studies at the University of Helsinki (1993).[1] Estonian, Finnish, and Hungarian are not only the most highly represented languages, based on the number of people who speak them, but are also the only languages which constitute the primary tongue for the people in the countries in which they are spoken.[2] The people also claim the status of being the most highly incorporated into the European cultural and economic community. For the purposes of the present chapter, they are the only languages of the Finno-Ugric group, to the best of my knowledge, for which published acquisition studies are available.[3] Unfortunately, a handful of Finno-Ugric languages—namely Livonian, Votian, and Ingrian—are spoken by so few nowadays that they may never bear the fruits of acquisition research.

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[1]I thank Susan Ervin-Tripp and Dan Slobin for bringing this source to my attention.

[2]Most recently, Estonia, which had been forcibly incorporated into the USSR in 1940, declared its status as an independent nation on August 20, 1991. Despite the presence of Russian rule for 50 years, the language has not suffered the level of Russian assimilation witnessed by the other Finno-Ugric languages whose people occupy Russian soil (Comrie, 1981).

[3]Active steps toward broadening the present data base to include other languages of the Finnic branch, as well as promoting the study of the acquisition of Finnic languages in general, are being undertaken in the project "*Suomalaiskielten omaksumisen tutkimus*" (Research on the acquisition of Finnic languages) under the direction of Jorma and Kirsti Toivainen (see Toivainen & Toivainen, 1994).

TABLE 1
Number and Areal Distribution of Speakers of Finno-Ugric Languages

| *Language* | *Number of Speakers* | *Area of Distribution* |
|---|---|---|
| Finnic | | |
| *Balto-Finnic* | | |
| Livonian | very few[a] | Latvia |
| Estonian | 1,000,000 | Estonia and adjacent areas |
| Votian | very few | Russia |
| Finnish | 5,000,000 | Finland and adjacent areas |
| Ingrian | 300 | Russia |
| Karelian and Olonetsian | 70,000 | Russia, Finland |
| Ludian | 5,000 | Russia |
| Vepsian | 6,000 | Russia |
| *Lappish* | 34,900 | Norway, Sweden, Finland, Russia |
| *Permic* | | |
| Votyak | 500,000 | Russia |
| Zyryan | 350,000 | Russia |
| *Volgaic* | | |
| Cheremis | 550,000 | Russia |
| Mordvinian | 750,000 | Russia |
| Ugric | | |
| *Hungarian* | 14,000,000 | Hungary and adjacent areas |
| *Ob-Ugric* | | |
| Vogul | 3,000 | Russia (extinct), Siberia |
| Ostyak | 13,000 | Siberia |

[a] The number of Livonians and Votians is listed as 150 and 30, respectively, by Lehtinen (1990).

The genetic affinity of Hungarian with the Finnic languages was definitively established as early as 1799, with the publication *Affinitas linguae Hungaricae cum linguis fennicae originis* (Grammatical proof of the affinity of the Hungarian language with languages of fennic origin) by Sámuel Gyarmathi. Despite the genetic relationship, Estonian and Finnish on the one hand, and Hungarian on the other, are in many respects radically different from each other in phonology, syntax, morphology, and lexicon. This is not surprising, considering the fact that the split between Proto-Finnic and Proto-Ugric is postulated to have occurred sometime around the end of the third millennium B.C., or even earlier (see, e.g., Hajdú, 1972). In fact, we can say of the language group as a whole that it does not lend itself to typological pigeonholing; the languages which constitute it represent a rather heterogeneous set. A prime example of this lack of homogeneity is in the area of basic word order, some languages preferring verb-final order (e.g., the Ob-Ugric languages), others verb-medial (e.g., the Balto-Finnic languages), and yet a third group having two basic word orders (e.g., Hungarian).

Nevertheless, the lack of homogeneity does not preclude the making of interesting crosslinguistic comparisons between the languages of this group. As

we shall see, the relatively close relationship between Estonian and Finnish allows for comparisons in which small degrees of variation in the expression of grammatical categories present the researcher with a valuable research tool in unraveling similarities and differences in acquisition. Further, Hungarian's extensive case system evidences striking similarities to those of Estonian and Finnish in both the kinds of grammatical distinctions which are encoded and the general morphological means for expressing them, despite the fact that much of this system developed entirely independently, after the Finno-Ugric split (see, e.g., Abondolo, 1987; Comrie, 1988). Needless to say, each language presents relatively unique characteristic features which serve to expand our understanding of child language learning and development. These issues are taken up in the data section, which presents a group of strategically selected areas of acquisition as small comparative case studies. The language family as a whole will be returned to in the concluding section, where suggestions for further research are offered.

## 2. DESCRIPTIVE SKETCH OF ESTONIAN, FINNISH, AND HUNGARIAN

Descriptive sketches of Finnish and Hungarian are provided by the authors of the corresponding chapters in these volumes (see Toivainen, this volume, for Finnish, and MacWhinney, 1985, volume 2, for Hungarian). In order to illuminate the place of Estonian in relation to these languages, and the similarities and differences which constitute some of the core issues for their comparative acquisition, some grammatical features of Finnish and Hungarian already described in the aforementioned chapters are necessarily repeated, sometimes with magnification of the level of detail where close comparisons warrant this. The focus of this section is therefore on features which are directly relevant to issues of crosslinguistic research, some of which will be specifically addressed later in the light of available data. Although the focus of this section is on the main areas of contrast, I have endeavored to give a sense of the overall flavor of these languages, with a slant toward Estonian and Finnish, in order to illustrate some of the fine-grained comparisons possible with these two languages.

General overviews of the Finno-Ugric family and chapters on specific languages within the group can be found in Comrie (1981, 1987), Sinor (1988), and Tauli (1966). Comrie (1987), in his edited volume, presents an overview of the Finno-Ugric languages in his chapter "Uralic languages" (see also Comrie's contribution in Sinor, 1988), which includes individual chapters on Finnish (Branch, 1987) and Hungarian (Abondolo, 1987). The most complete monograph-length grammar of Finnish for the English reader is Karlsson (1983), which can be supplemented by Hakulinen (1961), who addresses both diachronic and synchronic aspects, and Sulkala and Karjalainen (1992), for a more typologically oriented perspective.

The availability of comprehensive Hungarian grammars in English is limited. MacWhinney's (1985) textbook suggestion of Bánhidi, Jókay, and Szabó (1965) can be substituted by Lotz's (1939) reference grammar for readers of German. Benkő and Imre (1972) provide an edited collection which contains a grammatical overview chapter by Károly (1972). More recently, the first volume of the four-volume series entitled *Approaches to Hungarian*, edited by Kenesei (1985), is a nontheoretical introduction to the major features of the language, the later volumes taking up topics within specific theoretical approaches (Kenesei, 1987, 1990; Kenesei & Pléh, 1993).

With regard to Estonian, Raun and Saareste's (1965) *Introduction to Estonian linguistics* is a general work with sections on grammar, aspects of the history of the language, its study, and dialectology. Tauli (1973, 1983) contributes a rather idiosyncratic two-volume work on Estonian; Part I covers the topics of phonology, morphology, and word formation, and Part II is devoted to syntax. I have also found the two Estonian textbooks, Oinas (1966) and Oser and Salasoo (1992), and Aavik's grammatical survey contained in the Estonian–English dictionary compiled by Saagpakk (1982) useful resources. Matthews (1954) is an article-length account of the major features of the Estonian language.

## 2.1. Phonology

### 2.1.1. *Phonemes*

The phoneme inventory for Hungarian is presented in MacWhinney (1985). Estonian and Finnish share some features with Hungarian, particularly in the vowel system (e.g., the presence of the front rounded vowels *ö* and *ü*), but present a rather different profile with respect to their consonantal inventories, which are much less extensive than that in Hungarian (e.g., Hungarian has four affricates and a system of voiced/voiceless oppositions). Estonian and Finnish also contain a large number of diphthongs (16 in Finnish and around 20 in Estonian), a feature which does not occur in standard Hungarian apart from its presence in some words of foreign origin, but which is found in many dialects. Tables 2 and 3 lay out the phoneme inventory of Estonian (from Raun & Saareste, 1965), which is so close to Finnish that we need only remark cursorily on the divergences (see below).[4] With respect to Estonian orthography, the palatalized series /t′ s′ n′ l′/ does not receive distinct representation, and the vowel /ë/ is signified by *õ*. The phonemes /f/ and /š/ entered the language through recent loanword borrowings, but have become fully integrated into the Estonian sound system, as evidenced by their participation in quantitative alternation (see section 2.3.1).

[4]Raun and Saareste (1965) also provide particularly detailed descriptions of each phoneme. The same can be found for the Finnish phoneme inventory in Sulkala and Karjalainen (1992).

TABLE 2
Estonian Consonants

| | | | | | |
|---|---|---|---|---|---|
| Stops | p | t | t′ | k | |
| Spirants | f | s | s′ | š | h |
| Nasals | m | n | n′ | | |
| Laterals | | l | l′ | | |
| Trill | | r | | | |
| Semivowels | v | | | j | |

*Source:* Raun and Saareste (1965).

The differences between Estonian and Finnish lie in Finnish's lack of the palatalized series and the mid-central or back unrounded vowel /ë/ and the presence of the morphologically conditioned voiced stop /d/. Orthographic convention substitutes the Estonian letter *ü* for *y*. Thus, the word for the numeral 'one' is written *üks* in Estonian but *yksi* in Finnish. Estonian orthography, like that of Finnish and Hungarian, is close to phonemic, excluding only the indication of stress, palatalization, and some distinctions between the long and overlong duration.

### 2.1.2. *Word Stress*

In all three languages, main word stress falls on the first syllable, except in some loanwords in Estonian and certain emotive expressions, for example, Finnish *oho* 'oops' and Estonian *aitäh* /aitähh/ 'thanks', where primary stress falls on the second syllable. This prosodic feature may facilitate word segmentation (see Peters, 1981, 1983, 1985, 1997, for a treatment of this topic with respect to the acquisition of different languages).

### 2.1.3. *Phonological Alternations*

Of particular interest to the child language researcher are two phonological alternations which are among the main characteristic features of the three languages under study, namely quantity, or duration, and vowel harmony. A third alternation, gradation, will be discussed in section 2.3.1 in the section on morphophonology. The first phenomenon is present in all three languages to varying degrees, while vowel harmony is restricted to Finnish and Hungarian. Although we can easily label these languages as possessing the attributes in question, the

TABLE 3
Estonian Vowels

| | | | | |
|---|---|---|---|---|
| High | i | ü | | u |
| Middle | e | ö | ë | o |
| Low | ä | | a | a |

*Source:* Raun and Saareste (1965).

details of the systems vary, presenting slightly different acquisition problems for the child.

2.1.3.1. *Quantity.* Estonian, Finnish, and Hungarian have long and short phoneme values in both their vowel and consonant systems, which form minimal pairs serving to distinguish different words and, in some instances, different forms of the same word. In Finnish and Hungarian this is limited to two degrees of duration—short and long—the long version simply "doubling" the quantity of a given sound without altering its quality, in most instances.[5] Duration is marked orthographically in Finnish by one versus two letters. Hungarian uses a single accent as the diacritical symbol for long unrounded vowels (e.g., *ó, ú*) and a double accent for long rounded vowels (*ő* and *ű*). The representation of Hungarian consonants is somewhat more complicated (see MacWhinney, 1985, Table 14.1, p. 1071, for details).

Estonian has the curious feature of three degrees of duration—short, long, and overlong. The long and overlong durations are additionally associated with prosodic features—rising pitch on long syllables and rise/fall with extralong syllables (Liiv, 1961, cited in Vihman, 1971). Minimal triplets are not only possible in Estonian, they are not uncommon. Like Finnish, Estonian uses single and double letters to indicate short versus long duration in its orthography, although this system is not entirely followed in all words (e.g., the /l/ of *külma*:GEN is of long duration). Further, Estonian orthography fails to mark the difference between the long and overlong length, using two letters (or even one) for both. The only exception is for the stops *p, t,* and *k,* which receive the following orthographical representations, in order of increasing length: *b, p, pp; d, t, tt; g, k, kk.* Additionally, monosyllabic words in Estonian are always of the overlong duration (e.g., *külm* 'cold:NOM').[6] Example (1) illustrates the kinds of differences the system of quantity can indicate in the three languages.

| | Estonian | | | Finnish | |
|---|---|---|---|---|---|
| (1) a. | *vili* = /vili/ | 'crop:NOM' | b. | *muta* | 'mud:NOM' |
| | *villi* = /vil:i/ | 'blister:GEN' | | *mutaa* | 'mud:PARTIT' |
| | *villi* = /vil::i/ | 'blister:PARTIT' | | *mutta* | 'but' |

[5]The exception to the general rule of maintenance of quality between long and short phonemes occurs only in Hungarian, which contrasts *a*, a short low central vowel, with *á*, a long low middle back vowel, and *e*, a short low middle front vowel, with *é*, a long middle front vowel. Note also that although all vowels in both languages, and all consonants in Hungarian, have a short and a long counterpart, this is not true of all Finnish consonants: the consonants *d, h, j, v,* and non-Finnish phonemes found in some loan words appear only in the short duration. Further, as suggested by the use of the word *doubling* in double quotation marks, the ratio between short and long vowels and consonants is not exactly 1:2. For example, the *average* duration of short and long vowels in Hungarian is 1:1.8, for consonants in word medial position 1:2.2, and for consonants in word final position 1:1.5 (Kassai, 1979).

[6]See, for example, Aavik (1982) for a more complete description of Estonian orthography.

| | | | |
|---|---|---|---|
| *viili* = /vi:li/ | 'file:GEN' | *muuta* | 'other:PARTIT'; 'move:IMP' |
| *viili* = /vi::li/ | 'file:PARTIT' | *muuttaa* | 'to move' |
| | | *muutta* | 'other:ABESS' |

Hungarian

c. *kor* 'age:NOM'
*kór* 'disease:NOM'
*hal* 'fish:NOM'
*hall* 'hear:3SG'

2.1.3.2. *Vowel Harmony.* Vowel harmony in Finnish is palatal, that is, the system of vowels is bifurcated into two sets: the front vowels *ä, ö,* and *ü* and the back vowels *a, o,* and *u,* leaving *e* and *i* to occur with either group. Words which contain a front vowel in their first syllable may only contain front vowels in their subsequent syllables, and words with a back vowel in their first syllable are followed only by syllables with other back vowels. The only exceptions are compound words (e.g., *työ-paikka* 'work-place'), the vowels in each component retaining their palatal quality, and certain loanwords (e.g., *analysoida* 'to analyze'). Vowel harmony rules extend to the addition of case suffixes, some of which have a front and a back vowel allomorph, for example, the inessive *-ssA,* as in *talo-ssa* 'in (the) house' versus *käde-ssä* 'in (the) hand' (see Table 4 in section 2.2.1.1 for a list of the Finnish cases).

In Hungarian, vowel harmony is both palatal and labial, the latter feature referring to the presence of lip rounding. Like Finnish, phonetically front *e* and *i* are considered neutral vowels, capable of appearing in both front and back vowel environments. Although palatal harmony historically regulated the quality of vowels within the word, in the present-day language this assimilatory phenomenon has eroded, as contamination from loanwords has produced many exceptions to the general word-internal pattern (Abondolo, 1987). The pattern is strictly adhered to in the process of suffixation, however. Thus, the stem *szűr-* requires the front rounded vowel suffix *-tök* (*szűr-tök* 'strain-2PL'), while *szúr-* takes the back vowel variant *-tok* (*szúr-tok* 'pierce-2PL'). In the event of word compounds and loanwords which deviate from vowel harmony rules, the suffix vowel is determined by the vowel of the final syllable of the root, as in Finnish. For example, *sofőr* 'driver', with final front vowel *ő,* takes the dative front vowel allomorph *-nek* (*sofőr-nek* 'driver-DAT'). Labial harmony exclusively affects suffixal alternation, but only for certain suffixes. For example, the second person plural suffix in the above example is *-tëk* after stems with unrounded front vowels (e.g., *él-tëk* 'live-2PL').[7] Moreover, while the scope of palatal harmony extends from the last vowel of the stem through all suffixes which a word might take, labial harmony is restricted to the vowel of the first, sometimes including the second, suffix only. Clearly, the complexity of vowel harmony rules in Hungarian

[7]Examples are from Abondolo (1987) and Comrie (1988).

exceeds that found in the Finnish language, leading to the prediction of a longer course of development and/or more error-prone learning before this feature is fully mastered by the Hungarian child.

## 2.2. Morphology

Estonian, Finnish, and Hungarian all exhibit the profile of an agglutinative language in which grammatical and case relations are expressed primarily by the means of suffixes. Estonian, in comparison to the other two languages, tends more toward the fusional direction in its characteristic use of word-internal length contrasts in encoding certain grammatical cases. All three languages have postpositions, an isolating feature, and Estonian and Finnish have a few prepositions as well.

Overall, the languages display a striking level of transparency in their morphological systems as a result of the separate and distinctive encoding of grammatical relations. These characteristics mean two things: (1) semantic distinctions (e.g., number and case) are not usually conflated, as is commonly evidenced in Indo-European languages (e.g., the portmanteau case–number–gender forms in Polish), but receive expression by separate morphemes; and (2) in general, a single morpheme (or one of a set of vocalic alternatives in Finnish and Hungarian) stands for a given meaning, unlike the use of multiple forms which are dependent on the stem class of the word in question in other languages (e.g., the accusative case in Russian). Deviations from these characteristic clear-cut encodings of form and function will be shortly addressed below, especially with respect to the Hungarian conjugation system (see section 2.2.2) and morphophonemics (see section 2.3). In the following two sections, the grammatical categories expressed in each language are described, first for the nominal system and then for the verbal system.

### 2.2.1. *Nominal System*

The languages are characterized by extensive case systems, fixed order of nominal suffixes, strict word order within the noun phrase, and lack of grammatical gender. Only Hungarian has the definite article (*a* before a consonant and *az* before a vowel), a non-Uralic feature which developed after the language split apart from Proto-Ugric (Károly, 1972).

Every noun in each language can be conceptualized as a stem carrying with it a number of inflectional slots, each of which may or may not be filled. Putting aside the possibility of derivational morphology, which would be instantiated in the position(s) immediately following the stem in each language, the languages parallel one another in the positioning of number marking (denoted by zero in the singular) before case marking (denoted by zero in the nominative). The order of suffixes in Finnish and Hungarian differs with respect to the placement of the

possessive suffix, however.[8] In Finnish it appears after the case suffix, so that the order of morphemes is STEM + NUMBER + CASE + POSS, while in Hungarian the possessive suffix precedes the case marker. Since the possessive suffixes coalesce with plural marking in Hungarian, resulting in a distinct set of portmanteau forms, it is difficult to distinguish an order with respect to number and possessive marking. Examples (2a) and (2b) are concrete illustrations of the difference between Finnish and Hungarian, respectively. The Estonian equivalent for these expressions is found in (2c).

(2) a. *talo-i-ssa-ni*
house-PL-INESS-POSS:1SG
'in my houses'

b. *ház-aim-ban*
house-PL:POSS:1SG-INESS
'in my houses'

c. *minu maja-de-s*
my house-PL-INESS
'in my houses'

Estonian and Finnish noun phrases normally exhibit modifier–head concord as a function of the case and number of the head.[9] Agreement in Hungarian applies to demonstrative pronouns only. In all three languages modifiers precede their heads, except for finite relative clauses, which are postnominal.

Comparison of adjectives is flectional across the three languages, as is the superlative in Finnish and Hungarian. Estonian superlative expressions take either the periphrastic form, *kõige* + adjective-COMPAR (e.g., *kõige suure-m* 'all-GEN big-COMPAR' [= the biggest]) or what is called the "*i*-superlative" (e.g., *suur-i-m* 'the biggest'). Emphatic clitic suffixes are also present in Estonian and Finnish (Estonian has one and Finnish has five), which serve various functions such as the indication of emphasis or surprise. One of these, Estonian *-ki* and Finnish *-kin*, is similar to Hungarian unstressed *is* 'also', which is pronounced as if it were a suffix of the word it qualifies.

2.2.1.1. *Nominal Cases.* The languages differ to some extent in the number and types of case distinctions which are marked. I will begin with a comparison of Estonian and Finnish, which, due to a remarkable number of shared similarities

[8]Estonian does not have possessive suffixes, expressing the same relations by possessive pronouns. This option is also available in Finnish, and the language appears to be moving in favor of the use of the separate possessive pronouns over possessive suffixes (Karlsson, 1975). In Hungarian the personal pronoun may be added before the possessed noun for emphasis.

[9]The exceptions in Estonian are the essive, terminative, abessive, and comitative cases, under which circumstances only the head noun is declined in these cases, while the modifier(s) decline in the genitive case.

in both form and function, can be more or less treated together as a contrast to Hungarian, a description of which then follows.

Estonian and Finnish each have 15 cases, of which 14 overlap. These are presented next to each other in Table 4, with an example of a fully declined nominal, Estonian *jalg* and Finnish *jalka* (both 'foot'), in the singular. Estonian also has two plural markers for the oblique cases, *-te-* (or *-de-*) or *-i-*.[10] Finnish uses the morpheme *-i-*, or its equivalent *-j-*, as the indicator of plurality with the oblique cases. It is easy to see by comparing the items in the "Form" columns that many of the Estonian case suffixes are eroded versions of their Finnish counterparts, a process which has affected the phonological shape of substantives as well. For purposes of simplicity, only the "main" function of each case is presented in the table. Many of the cases are multifunctional, being taken into use for different functions at different times. We will return to this issue shortly.

A few notes about the use of the cases bear mentioning at this time. Table 4 shows that nearly half of the cases serve in the expression of location (the inner and outer locative cases). As the cover terms for these two sets of cases imply, the inner locative cases are based on the notion of containment, either static location within an object bounded in three-dimensional space (or very close contact with an object) or movement to or from such a location, while the outer locative cases form a coherent set by virtue of their relation to the notion of support, surface, or proximity. Additionally, the members within each set share a common phonological core: *s* for the inner cases (apart from the Estonian short and most Finnish illatives), and *l* for the outer cases. The three by two-way locative case system is reinforced in the system of locative postpositions in each language, some of which inflect fully with the inner set (e.g., Fi. *edessä* 'in front of', *edestä* 'from the front of', *eteen* 'to the front of') and/or the outer set (e.g., Es. *peal* 'on', *pealt* 'off of', *peale* 'onto').[11]

Table 4 also indicates that Estonian and Finnish share the feature of having two object cases, namely the partitive and the accusative—the former having a much broader distributional scope—and two subject cases, the nominative and, under much more restricted circumstances, the partitive. In some contexts (e.g., in imperative sentences), the nominative singular substitutes for the accusative singular object. In brief, the partitive object appears in three contexts: (1) those in which the action or event is viewed as irresultative or incomplete (hence a marker of aspect), (2) those in which the object is an indefinite quantity (mass

[10]The *i*-plural is not permissible with every word. There is even a third, short plural, which involves other vowels (see, e.g., Aavik, 1982).

[11]In Estonian, the use of locative postpositions is regarded as old-fashioned, and the locative cases are currently the most prevalent (Tiiu Salasoo, personal communication). However, in the Estonian locative data considered in section 4.3.1, locative postpositions are to be found both in the input and in child speech. This may be due to the time at which the data were collected (over 20 years ago) and/or the fact that the data come from adult and child speakers living in areas outside of Estonia.

TABLE 4
Estonian and Finnish Case Systems

| *Case* | *Estonian Form* | *Finnish Form* | *Main Function* | *Estonian Example* | *Finnish Example* |
|---|---|---|---|---|---|
| Grammatical Cases | | | | | |
| Nominative | Ø (sg.), *-d* (pl.) | Ø (sg.), *-t* (pl.) | subject | *jalg* | *jalka* |
| Partitive | *-t, -d,* &[a] | *-a/-ä, -ta/-tä, -tta/-ttä*[b] | object/subject/predicative | *'jalga*[c] | *jalkaa* |
| Accusative[d] | &[e] | *-n* (sg.), *-t* (pl.) | object | *jala* | *jalan* |
| Genitive | & | *-n* | possession | *jala* | *jaian* |
| Inner Locative Cases | | | | | |
| Inessive | *-s* | *-ssa/-ssä* | 'in' | *jalas* | *jaiassa* |
| Elative | *-st* | *-sta/-stä* | 'out of' | *jalast* | *jalasta* |
| Illative | &, *-sse* | *-hVn, -Vn, -seen* | 'into' | *'jalga; jalasse*[f] | *jalkaan* |
| Outer Locative Cases | | | | | |
| Adessive | *-l* | *-lla/-llä* | 'at/on' | *jalal* | *jalalla* |
| Ablative | *-lt* | *-lta/-ltä* | 'from' | *jalalt* | *jalalta* |
| Allative | *-le* | *-lle* | 'to' | *jalale* | *jalalle* |

| | | | | | |
|---|---|---|---|---|---|
| Other Cases | | | | | |
| Essive | *-na* | *-na/-nä* | 'as' | *jalana* | *jalkana* |
| Translative | *-ks* | *-ksi* | 'to/becoming' | *jalaks* | *jalaksi* |
| Abessive | *-ta* | *-tta/-ttä* | 'without' | *jalata* | *jalatta* |
| Comitative | *-ga* | *-ne* | 'with' | *jalaga* | *jalkoineen*[g] |
| Terminative | *-ni* | N/A | 'as far as' | *jalani* | — |
| Instructive | N/A | *-n* | manner, means, instrument | — | *jalan* |

[a]The symbol (&) indicates the lack of marking of the case in question by a distinct, separable form, as displayed here for the partitive of *jalg* by the lengthening of a stem constructed on the basis of the nominative combined with the final vowel of the genitive. The formation of the partitive is very complex in Estonian. In addition to the discrete endings *-t* and *-d*, sometimes the partitive is the same as both the nominative and the genitive, sometimes just the nominative or the genitive, and sometimes it ends in a former vowel of the stem.

[b]Finnish endings separated by a slash (/) indicate back and front vowel allomorphs. From the point of view of traditional Finnish linguists, the ending *-tta/-ttä* in words like *huonetta* 'room:PARTIT' (from *huone* 'room:NOM') is not a marker of the partitive. Rather, for historical reasons, *huonetta* would be analyzed as *huonet-ta* 'room-PARTIT'. However, it is included here as one of the partitive allomorphs, since it very likely represents a psychologically real morpheme for the child language learner, who does not have access to the historical development of the inflection of *huone*-type words in the partitive case.

[c]The symbol (′) indicates lengthening of the following syllable and is used here to show that the partitive and short form of the illative case forms in this particular word paradigm differ from the nominative in more ways than the simple addition of the final vowel *a*.

[d]The accusative is not treated as a separate form in Estonian grammars, being homonymous with the genitive form in the singular and the nominative plural form in the plural. Thus, Estonian grammars state that Estonian has 14 cases rather than 15. Although the same state of affairs exists in Finnish, Finnish linguists tend to label and count these cases separately. The Finnish practice is adopted here for the sake of comparative purposes.

[e]The accusative/genitive in Estonian may be identical to the nominative form, but often differs from it in the shape of the root. Note how this differs from Finnish, where the nominative and genitive are always distinct.

[f]The illative has two potential forms, one ending in *-sse* and the other, the "short illative"—which exists for certain frequently used nouns—often taking the form of the lengthened-stem partitive, as is the case here (Vihman, 1982).

[g]The Finnish comitative case always appears in plural form with a possessive suffix.

nouns and plural count nouns only), and (3) when the sentence is negative. The semantic feature linking these apparent divergent uses of the partitive has been termed "non-entirety" (see, e.g., Toivainen, 1986). This leaves the accusative (or nominative) case to function only in affirmative sentences, in contexts of resultative or completed action, where a singular count noun or definite quantity of a mass or plural count noun entity is involved.

The languages interestingly diverge, however, with respect to the kinds of events which are included in context (1) above. Each language treats certain verbs as inherently resultative or irresultative, and hence the object is almost always found in the corresponding case. For example, verbs of emotion or state of mind (e.g., Fi. *rakastaa*, Es. *armastama* 'to love', Fi. *vihata*, Es. *vihkama* 'to hate', and Fi. *häiritä*, Es. *ärritama* 'to irritate') usually have their objects in the partitive case unless there is specific mention of a result (e.g., Es. *See ärritas venna vihale* 'This agitated the brother:ACC/GEN into a rage'). At least one noteworthy difference, however, lies in the treatment of verbs of perception. While Estonian classes verbs such as *nägema* 'to see', *kuulma* 'to hear', *märkama* 'to notice' with those usually taking a partitive object, the corresponding Finnish verbs (*nähdä*, *kuulla*, *huomata*) usually have objects in the accusative case.

This highly condensed discussion does not do justice to the intricacies and subtleties involved in the choice of the object case in Estonian and Finnish. It is an area which deserves detailed investigation in each language, with potentially interesting crosslinguistic comparisons.

A couple of further points with respect to dissimilarities in the use of the cases are important to note. The cases in common are not necessarily used with equal frequency across the two languages, and some important differences exist in the functions they fulfill. The Finnish abessive and comitative, for example, are rarely used productively in the spoken language, their functions having been replaced by other forms: the preposition *ilman* 'without' occurring in place of the abessive case, and the postposition *kanssa* 'with' serving as the everyday alternative for the comitative case. Colloquial Estonian, however, makes frequent use of both suffixes, the abessive often accompanied by the preposition *ilma* 'without' for emphasis (e.g., *ilma piletita* 'without ticket:ABESS'). Furthermore, the Estonian comitative exhibits a greater breadth of function, indicating accompanying presence (*tule minu-ga* 'come with me'), the instrument with which an action is carried out (*ma söön kahvli-ga* 'I eat with a fork'), and means of transport (*ma sõidan auto-ga* 'I travel by car'). In Finnish, the expression of the latter two functions is accomplished by means of the adessive case.

For the sake of brevity, the Hungarian case system will be compared to the Estonian–Finnish one by simply reviewing what's lacking and what's added. The interested reader can consult MacWhinney (1985) and/or Hungarian grammars for more detailed descriptions. The most significant departures from the Estonian–Finnish model are a single object case (the accusative), greater differentiation in the locative system (the set of outer locative cases being

expanded into two sets, one based on proximity, the other based on position on a horizontal or planar surface), a separate dative (fulfilled by the allative case in Es.–Fi.), a causal-final, and lack of a distinct genitive. Hungarian also has a separate instrumental-comitative case, the function of which is fulfilled by the comitative in Estonian and the adessive in Finnish. Estonian and Hungarian share the existence of the terminative case. Again, the traditional labels do not reveal the full extent of the functions to which each case is put, and moreover, they obscure the existence of differences between the languages. In Hungarian, for example, the dative case is also used in the genitive function. Unlike Estonian and Finnish, the cases are without exception represented by a single form or a set of parallel forms differing only in the suffix-internal or final vowel, which is chosen in accordance with the rules of vowel harmony.

### 2.2.2. *Verbal System*

Estonian and Finnish have a simple system of subject–verb agreement, according to which finite verbs are inflected with one of six person–number suffixes. These are illustrated with the personal pronouns for both languages for the verb 'to speak' (Es. *rääkima*, Fi. *puhua*) in the present affirmative indicative in Table 5. Neither language distinguishes gender in its pronoun system (like Hungarian), although Finnish has separate forms for humans (*hän* 'he, she', *he* 'they') and nonhumans (*se* 'it', *ne* 'they'). The nonhuman forms often replace the human forms in colloquial speech, however. As shown in the table, Estonian has both long and short forms of the personal pronouns, the long forms serving an emphasizing function. One noteworthy difference in person–number marking is the lack of a distinct marker for the third person singular in Finnish, the ending assimilating to the final vowel of the stem in most cases (e.g., *hän puhu-u* 'he/she speak-3SG'). For verbs whose stem ends in a diphthong or long vowel there is no ending at all in Finnish (e.g., *syö-* = stem 'to eat', *hän syö* 'he/she eats'). The third person singular form in Finnish can also replace the third person plural form in colloquial speech (e.g., *he puhuu* 'they speak:3SG'), and the impersonal passive is a substitute for the first person plural (e.g., *me puhutaan* 'we speak:PASS'). In Estonian, like Finnish, there is no separate third person singular marker in the past tense.

In Hungarian, agreement is a two-way relation: (1) between subject and verbal predicate, according to the same six person–number combinations found in Estonian and Finnish, and (2) between verbal predicate and object, based on the (in)definiteness of the object. This entails the existence of two sets of personal verb endings in transitive verb frames, one set of six for definite object contexts and another set for indefinite objects, the latter of which are taken into use in intransitive verb frames. An additional ending encodes the combination of a first person singular subject and a second person object. Otherwise, second person object pronouns, as well as first person object pronouns, follow the indefinite

TABLE 5
Pronouns and Personal Verb Endings in Estonian and Finnish

| | | Estonian *rääkima* 'to speak' | Finnish *puhua* 'to speak' |
|---|---|---|---|
| Singular | 1st person | *mina/ma räägi-n* | *minä puhu-n* |
| | 2nd person | *sina/sa räägi-d* | *sinä puhu-t* |
| | 3rd person | *tema/ta räägi-b* | *hän/se puhu-u* |
| Plural | 1st person | *meie/me räägi-me* | *me puhu-mme; me puhutaan* |
| | 2nd person | *teie/te räägi-te* | *te puhu-tte* |
| | 3rd person | *nemad/nad räägi-vad* | *he/ne puhu-vat* |

conjugation. The distinction between the definite and indefinite conjugation is therefore a matter of the definiteness of the third person object. Hungarian also has a set of mainly intransitive verbs, called *ik*-verbs (based on their third person singular forms, e.g., *eszik* 'eats', *iszik* 'drinks', *játszik* 'plays'), which undergo yet a different indefinite conjugation in the singular, although the regular indefinite conjugation forms are often substituted in colloquial speech in the first and second person. The number of forms the child has to learn increases even more in that there are two distinct second person singular forms in the indefinite conjugation, the choice of which depends on phonological properties of the stem. The complexity of the system for the child is (at least) fourfold: (1) lack of morphological transparency due to the merging of person–number and object agreement marking into single, unanalyzable wholes, (2) different person–number forms for the indefinite conjugation of some verbs, (3) different allomorphs for different stem classes, and (3) the anomalous linking of person–number marking with the notion of definiteness. The number of forms possible is much too great to list here. It should be clear that the Hungarian verbal conjugation system is obviously remarkably less perspicuous and more intricate than that found in Es.–Fi., all of the forms for which are listed in Table 5.

In addition to the person–number markings, verbal morphology for finite verbs in Estonian and Finnish can express tense (past and non-past), voice (active and passive), and mood (indicative, imperative, conditional[12]). The non-past, active, and indicative are the unmarked members of these sets. Every other meaning is encoded by a distinct, separable form, apart from the second person singular imperative form, which in Finnish is identical to the weak grade of the verb stem. Verbs in the passive mode are impersonal and do not inflect for person and number.

Negative sentences in Finnish make use of a negative auxiliary which is conjugated for person and number in the manner of the person–number conjugation of the verb. The main verb retains the tense–mood marking only. Estonian uses a single negative marker, resulting in the loss of the verbal encoding of person and

[12]The potential mood, although rare in the spoken language, is also found in Finnish, and the relative or oblique mood (e.g., I am supposed or said to be . . .) still survives in Estonian.

number in negative contexts. The marker of negation in imperative contexts is encoded by a different set of forms in both languages. Here the distinction between person/number negation forms is maintained in Estonian, as it is in Finnish. Both also have a system for marking perfect aspect, or compound tense, in the present and the past, which is built up from the verb 'to be' (Es. *olema*, Fi. *olla*) in conjunction with participle forms of verbs. In noncompound tenses the order of morphemes is as follows: STEM + TENSE/MOOD + PERSON:NUMBER.

Hungarian does not depart significantly from Es.–Fi. in its ability to mark simple relations such as tense (past and non-past) and mood (indicative, imperative, conditional, subjunctive), and parallels the aforementioned order of suffixes, STEM + TENSE/MOOD + PERSON:NUMBER:DEF, with the added complication of the person–number marking additionally encoding object definiteness. However, it lacks a grammatically-encoded passive and perfect aspect. Future tense, which is not explicitly marked in Es.–Fi., is a compound tense in Hungarian.

One of the most vexing features of Hungarian is an extensive system of verbal prefixes, or preverbs, akin to adverbs, which are closely linked to the verbs they modify, expressing such concepts as aspect (e.g., completive, instantaneous) and direction of action (e.g., 'into', 'out of', 'away'), or changing the meaning of the verb to which they are attached (e.g., from *ad* 'give': *el-ad* 'sell', *fel-ad* 'give up', *meg-ad* 'grant, repay').[13] There is some overlap between this system and the derivational and case marking of verbal aspect in Estonian and Finnish.

Negation in Hungarian is marked by the unbound morpheme *nem* in most nonimperative contexts. Deviations from coding transparency arise in the existence of portmanteau forms which conflate negation with the verb of existence (singular or plural) in the third person, resulting in the two forms *nincs* 'is not' and *nincsenek* 'are.not'. The negative particle in imperative sentences is simply *ne*, unlike the multiple person–number forms in Estonian and Finnish.

## 2.3. Morphophonemics

Two important areas of morphophonological processes will be covered here: gradation and the rather broad topic of morphophonological classes. Vowel harmony, another phonological alternation entering into the process of word formation, has already been dealt with in section 2.1.3.2.

### 2.3.1. *Gradation*

Gradation is a phenomenon particular to Estonian and Finnish and is intimately linked with the system of quantity or duration. The system is most clearly illustrated in Finnish, which possesses a relatively straightforward picture in

[13]See Pléh, Ackerman, and Komlósy (1989) for experimental evidence on the psychological reality of preverbal modifiers (including preverbs, article-less objects, and other forms) as a class and their privileged preverbal position in the speech of both adults and children.

comparison to the somewhat mindboggling complexities of Estonian. In Finnish, gradation refers to a morphologically conditioned alternation between the strong and weak grade of a phoneme, the strong grade occurring in open syllables (those ending in a vowel) and the weak grade in closed syllables (those ending in a consonant). This system is limited to words which have the stop consonants *p*, *t*, and *k* in their final syllables. For example, the nominative form *matto* 'rug' has the strong grade *tt*, but when a case inflection is added which "closes off" the final syllable, we see the weaker grade *t*, as in *maton* 'rug:GEN'. Similarly, *mato* 'worm:NOM' becomes *madon* 'worm:GEN'; *jalka* 'foot:NOM', *jalan* 'foot:GEN'; and *puku* 'clothing:NOM' changes to *puvun* 'clothing:GEN'.[14] These examples illustrate the three general kinds of transformations possible: (1) a long consonant alternates with its short counterpart; (2) a short consonant alternates with another consonant; (3) a short consonant alternates with zero. Consonant gradation is a common feature of the Finnish language, as many of the forms for declension and conjugation contain consonants which form closed syllables.

Estonian is more complicated, as gradation occurs with other consonants and even vowels and diphthongs. In fact, the source of the overlong length in Estonian derives from the reinterpretation of original geminate consonants and vowels in closed syllables to instances of triple length in their corresponding open syllables. This has resulted in the use of word-internal consonant or vowel length as a distinctive feature for marking some cases, for example, an overlong consonant in the illative *majja* /maj:ja/ versus short consonants in the nominative, genitive, or partitive form *maja* 'house'; an overlong vowel in the partitive *kaalu* /ka:alu/ versus a long vowel in the genitive *kaalu* /ka:lu/ 'weight'.[15] The acquisition of the length contrasts by Estonian language learners is therefore necessary for even the most basic grammatical oppositions.

Evidence of some of the differences between the Estonian and Finnish gradation systems can be seen by examining the forms presented in Table 4 for the declension of Es. *jalg* /jalk/ and Fi. *jalka* 'foot'. It is clear that the Estonian genitive/accusative form *jala* is identical to the corresponding Finnish form *jalan*, except for the absence of the final *-n*. Due to the loss of the consonantal genitive/accusative marker in the language, the grade alternation between short and zero now occurs without the accompanying closure of the syllable found in Finnish. One can also note that the inflectional forms which cause gradation in each of the languages differ (e.g., compare Es. vs. Fi. essive forms).

### 2.3.2. *Other Morphophonological Rules and Classes*

The relatively transparent nature of the morphological structure of each of the three languages stands in striking contrast to the somewhat extreme opacity of

[14]See Karlsson (1983) for a complete list of grade alternations in Finnish.

[15]Raun and Saareste (1965) and Tauli (1973) describe length alternation in detail, providing numerous examples of short versus overlong and long versus overlong contrasts, which are the only productive grade contrasts in the language.

form at the juncture between stem and affix. This phenomenon has already been discussed above in terms of the Estonian and Finnish gradation systems, which constitute just a subset of the phonological transformations possible. It is further augmented by the existence of word classes in the languages which form paradigms for inflection numbering in the tens or even hundreds of types, depending on the level of specificity given in the source consulted. These classes are defined as a function of the qualitative and quantitative alternations that occur in stems when affixes are added, and in the affixes themselves (e.g., as a result of vowel harmony), usually according to the phonological nature of the stem. Thus, the mastery of word formation in these languages requires both the learning of the morphological forms themselves and the morphophonemic changes associated with certain word classes.

Hungarian descriptions are often presented as lists of somewhat regular morphophonological rules which apply according to phonological features of the base word. These changes most often involve the syncopation or shortening of word-internal vowels in close proximity to a flectional morpheme, or the addition of a vowel at the word terminus before certain endings in certain phonological environments. Some of the more commonly occurring alternations are displayed in Table 6, as a function of the relationship between the nominative singular (unmarked) forms of nouns and their corresponding nominative plurals (ending in *-k*).

A close examination of the examples in the table reveals that some stems are subjected to more than one kind of morphophonemic modification. For example, the forms which undergo internal vowel shortening also exhibit linking vowel insertion, as do the forms listed as examples of internal vowel deletion. Morphophonological rules can thus apply singly or in combination, or need not apply at all (e.g., *kapu* 'gate', *kapuk* 'gate:PL'). Moreover, words can be grouped together according to regularities between rule application and stem features. For example, the form of the linking vowel as determined by the palatal nature of

TABLE 6
Hungarian Morphophonological Alternations

| *Morphophonological Alternations* | *Examples* |
|---|---|
| Final vowel lengthening: *a* to *á* and *e* to *é* | *alma* 'apple', *almák* 'apples'<br>*fecske* 'swallow', *fecskék* 'swallows' |
| Linking vowel insertion (words ending in a consonant): according to vowel harmony rules | *kabát* 'coat', *kabátok* 'coats'<br>*ez* 'this', *ezek* 'these'<br>*gyümölcs* 'fruit', *gyümölcsök* 'fruits' |
| Internal vowel shortening | *madár* 'bird', *madarak* 'birds'<br>*híd* 'bridge', *hidak* 'bridges'<br>*egér* 'mouse', *egerek* 'mice' |
| Internal vowel deletion | *torony* 'tower', *tornyok* 'towers'<br>*bokor* 'bush', *bokrok* 'bushes' |
| *V*-insertion (monosyllabic words ending in *-ó, -ő,* or *-ű*) | *ló* 'horse', *lovak* 'horses'<br>*fű* 'grass', *fűvek* 'grasses' |

the stem entails that back vowel nouns usually have *-o-* as the linking vowel and front vowel noun stems generally use *-e-*. Words with a front rounded vowel in the last syllable, however, require the linking vowel *-ö-* instead of *-e-*.

The Hungarian system results in some words having at most two stems, the nominative and the oblique. For nominals, only words which terminate in a vowel are eligible for single-stem status (e.g., *kapu* 'gate'), since at least some of the nominal suffixes require a linking vowel for stems which terminate in a consonant. For example, the accusative, dative, instrumental, and a number of other case forms attach directly to the nominative form *mókus* 'squirrel', but the superessive and the plural case suffixes require the oblique stem *mókuso-* (with linking vowel *-o-*). In the system of nominal inflection, only the accusative and superessive cases and the plural marker may require a linking vowel.

The Hungarian system is riddled with exceptions, however, which blur the already complicated nature of morphophonemic alternations even further. With respect to the aforementioned linking vowel rules, there are around 70 single-syllable words with back vowels which use the linking vowel *-a-* instead of *-o-* (e.g., *ház* 'house', *házak* 'houses'), and some words (around 20) which contain a front rounded vowel in their final syllable take *-e-* as the linking vowel rather than the expected *-ö-* (e.g., *könyv* 'book', *könyvek* 'books'). Deviations from regularity are at their utmost when forms of nearly identical phonological shape inflect according to different paradigms. For example, the accusative of *fal* 'wall' is *falat*, with the linking vowel *-a-* preceding the accusative marker *-t*, but the seemingly parallel form *dal* 'song' bears no linking vowel in its accusative form *dalt*. Further, while *bokor* 'bush' becomes *bokrok* (see Table 6), *motor* 'motor' follows a different pattern, retaining the internal vowel in its plural form *motorok*. As a final example of opacity is the change in applicability of morphophonemic alternations when parts of speech boundaries are crossed. A prime example of this is the use of *-a-* as the regular linking vowel in back vowel adjectives, in opposition to the *-o-* used by most nouns of this type.

Estonian and Finnish exhibit morphophonemic complexity which at least equals, if not exceeds, that encountered in Hungarian.[16] In their grammatical descriptions are found lists of declensional and conjugational paradigms grouped according to the phonological shape of the basic form, although some stems exhibiting common features nevertheless inflect according to different patterns in all or part of their paradigms. The presence of this kind of irregularity is an added complexity found only to a much more limited degree in Hungarian. In the following I will review a set of closely related inflectional paradigms in Finnish, those pertaining to nominals which terminate in the vowel *-i* in their basic form, since these will specifically be returned to in a later section. Many of the kinds of regularities and inconsistencies to be described below are also characteristic of Estonian.

[16]See Karlsson (1983) for a clear explication of morphophonological alternations in Finnish. Most of the details of the alternations discussed here and later in section 4.3.2.1 are based on this source.

TABLE 7
Stems of *vesi*-type Nominals

| *Stem* | *Stem Name* | *Example* |
|---|---|---|
| *vete-* | strong vowel stem | *veteen* 'water:ILL' |
| *vede-* | weak vowel stem | *veden* 'water:GEN' |
| *vet-* | consonant stem | *vettä* 'water:PARTIT' |

Finnish nominals can be divided into two major groups: (1) those whose basic form (nominative singular) also serves as the inflectional stem in all cases, and (2) those whose basic form is supplemented by one or more inflectional stems to which specific cases are attached. The former group consists of nouns like *talo* 'house', which terminate in a single vowel (akin to the single-stem types of Hungarian) and which do not contain elements which can be subjected to consonant gradation. In the latter group are nominals which have a nominative form terminating in either a vowel or a consonant and which possess up to three oblique stems. A few concrete examples will serve to illustrate some of the alternations that occur in nominals of the second group.

Of the nominals from the second group that end in *-i*, there is a rather distinct subclass of two-syllable words whose final syllable is *-si* (e.g., *vesi* 'water', *käsi* 'hand'). These words form an inflectional paradigm which is based on three inflectional stems, two of which end in a vowel and the third of which ends in a consonant. The vowel stems are distinguished according to the grade (strong or weak) of the word internal consonant. Table 7 gives the three inflectional stems for the noun *vesi* 'water'. A fourth stem, equivalent to the nominative singular form, serves as the base for most plural forms (e.g., *vesiä* 'water:PL:PARTIT', the word-final *-i* functioning as the plural marker).

A significant point, and a bonus to the child learner, is that the cases associated with each stem do not change. In other words, all *vesi*-type nominals use the strong vowel stem in the illative, the weak vowel stem in the genitive, and so on. A further important regularity with respect to nominals is that the genitive stem serves as the inflectional stem for almost all of the other cases. Thus, apart from the illative, partitive, essive, and comitative, the remaining 10 oblique cases take the same stem as the genitive (see items in Table 4 for the noun *jalka* 'foot'). The realization of this regularity can greatly facilitate nominal inflection.[17]

There are three other sets of nominals ending in *-i* which follow an inflectional pattern different from the *vesi*-type nominals described above. These can be identified by the characteristics of their genitive and partitive singular forms (see Table 8). The important difference is that in *tunneli-* and *tunti*-type words the genitive and partitive singular morphemes attach directly to the basic form.

[17]The genitive stem also serves as the root for all cases in Estonian, apart from the partitive and the short illative.

TABLE 8
Inflection of Other *i*-type Nominals

| *Nominative Sg.* | *Genitive Sg.* | *Partitive Sg.* | *Partitive Pl.* |
|---|---|---|---|
| 1a. *tunneli* 'tunnel' | *tunnelin* | *tunnelia* | *tunneleita* |
| 1b. *tunti* 'hour; lesson' | *tunnin* | *tuntia* | *tunteja* |
| 2. *kivi* 'stone' | *kiven* | *kiveä* | *kiviä* |
| 3. *kieli* 'language; tongue' | *kielen* | *kieltä* | *kieliä* |

However, these items have different partitive plural forms (*-ita* vs. *-ja*). In contrast, the nouns *kivi* and *kieli* have a genitive stem ending in *-e* (*kive-* and *kiele-*). *Kivi* retains this *e*-stem in its partitive singular form, while *kieli* uses the consonant stem *kiel-*, to which the partitive morpheme *-tä* is appended. Note also how the similarity between partitive singular *tunneli-* and *tunti*-type nominals, on the one hand, and the partitive plural forms of *kivi-* and *kieli*-type nominals, on the other, results in inconsistencies between form/function relations.

For the *i*-nominals, it should be clear that the confusions which can arise are numerous, as it is nearly impossible to predict which declension class a word belongs to on the basis of its nominative singular form. Rather, knowledge of key parts of an item's inflectional paradigm is required in order to gain success in word formation. This is especially true of the items presented in Table 8 and less so of *vesi*-type words, which form a fairly consistent class, although there are a few exceptions (namely *lasi* 'glass' and *kuusi* 'spruce', the former inflecting like *tunneli* and the latter belonging to the *kieli* class of nominals). Membership in the *kieli*-type class is not entirely haphazard either, but the rather obscure phonological features tying these words together in opposition to the *kivi*-types—the presence of a penultimate *r, l, n,* or *t* after these or a vowel—obviously do not unequivocally define the class in opposition to *tunneli-* and *tunti*-type nominals.

Although the individual morphophonological alternations in Es.–Fi. and Hungarian are different, the overall nature of the systems exhibit considerable parallelism. In each language some lexical items have more than one stem to which suffixes are added, and some of these stems are characterizable by the operation of more than one morphophonemic alternation (e.g., linking vowel insertion and internal vowel shortening in Hungarian, and the combination of the alternation between *-si* and *-te* and consonant gradation in forms like *veden* 'water:GEN' from *vesi* in Finnish). Moreover, the rules for word formation are not without exception. A consideration of the intricacies and irregularities of these systems leads to the logical expectation of numerous errors on the part of the child.

## 2.4. Word Order

Neutral word order in Estonian and Finnish is SVO, but, as mentioned above, Hungarian fits the mold of a language having not one basic word order but two: SVO and SOV, the former associated with definite objects, the latter linked with

indefinite objects.[18] The primacy of these two orders in Hungarian is a reflection of the role played by sentential focus, the position of which is immediately preverbal and stressed, and the kinds of sentence constituents obligatorily or normally associated with it in the language, one of these being indefinite objects, but also, for example, preverbs, the negative particle, and question words. With respect to the latter, this results in a fundamental difference in the order of elements in *wh*-questions in Estonian and Finnish versus Hungarian, the former languages positioning the question word sentence-initially (e.g., Fi. *mitä poika syö?* 'what boy eats'), the latter placing the question word before the verb (e.g., *a fiú mit eszik?* 'the boy what eats'). If a Hungarian sentence contains more than one constituent which is inherently connected with preverbal position (e.g., a preverb and an indefinite direct object), one of these elements must be demoted, since only one item is permitted in focus position in a single sentence (e.g., the preverb is placed after the verb in this case).

Word order in these three languages is by no means fixed, however, but can be varied for pragmatic reasons. This means that all possible orders of subject, verb, and object are possible, as long as they are associated with the correct stress pattern and are consistent with discourse contextual cues. The major difference between Estonian–Finnish and Hungarian, as alluded to above, is in the relative placement of the focused or contrasted material and what constitutes the topic. In simple sentences, the focus position (if there is one) is sentence-initial in Estonian and Finnish, while in Hungarian it is more specifically preverbal, and topic is sentence-initial.

## 2.5. Summary: Convergences and Divergences

The similarities and differences among the three languages can now be summarized. All three are agglutinating languages (although Estonian is much less so) with a large number of nominal suffixes, complex morphophonemic systems, phonemic vowel and consonant length contrasts, main word stress on the initial syllable, and variable word order. Major differences obtain between Estonian and Finnish on the one hand and Hungarian on the other. Hungarian exhibits SVO and SOV basic word order, verb–object agreement, a single object case, and the definite article, while the other two languages have mainly SVO word order, subject–verb agreement, two or more object cases (as well as two subject cases), and no formal definite article. The languages can also be placed along a continuum of complexity with respect to the features in common. While vowel harmony is a characteristic feature of both Finnish and Hungarian (Estonian has lost it), its realization in Hungarian requires attention to both the front/back and

[18]See Kálmán (1985a, 1985b) and É. Kiss (1981) for a discussion of word order in Hungarian; Hakulinen (1961), Heinämäki (1982), Karttunen and Kay (1985) and Vilkuna (1989) for Finnish; and Tael (1990) for Estonian.

rounded/unrounded contrast, with somewhat irregular consequences for some items. Estonian contrasts with Finnish and Hungarian in the greater number of length contrasts encoded, and Hungarian stands alone in the division of the locative case system into three "ground" relations of point, plane, and enclosure. These slight differences provide points of leverage to the child language researcher for determining their effect(s) on the language acquisition process. While this rough schematization hardly does justice to the nuances and complexities of each language, it nevertheless serves as a useful starting point from which points of comparison are potentially useful and illuminating. With this valuable research tool in mind, a comparison of Estonian, Finnish, and Hungarian acquisition was undertaken.

## 3. SOURCES OF EVIDENCE

The sources consulted and ultimately utilized in the preparation of this chapter have to a large extent been guided by the possibility of making detailed or semidetailed comparisons between at least two of the three languages.[19] As the reader may notice, the overall presentation is biased in favor of Finnish and Hungarian. This is simply because of the relatively greater extensiveness of material on the acquisition of these two languages. I will here summarize some of the details of the relevant sources which serve as material in the following data section, as background for the interpretation of the results presented. Nearly all materials consulted focused on production, with very little mention of comprehension.

The study of the acquisition of Estonian as a first language is in its infancy. Only recently have researchers begun to carry out studies of children growing up in Estonia, parts of which are just beginning to be published, but not yet generally available (e.g., Salo, 1994; Vesker, 1987). Prior to that point, a number of studies of children growing up in other countries, but nevertheless learning Estonian as their first language or among their first languages, have been carried out. Oksaar (1971, 1972) reports on various aspects of her son Sven's language development, who lived nearly the first four years of his life in Stockholm, with Estonian as the primary home language, after which point the family moved to Hamburg, and Estonian and Swedish were spoken at home while German was learned through other sources. Topics covered in these two articles are in the areas of phonology, derivation, and morphology. Data on the child's mastery of the length contrast are supplemented by material from five other Stockholm children of the same age.

Vihman followed the language development of her two children Raivo and Virve, who grew up in the United States, initially by way of daily notetaking

[19]To this end some potential sources of information on individual languages have been omitted.

and later supplemented by monthly tape recordings from age 1;7 to 2;10 (Raivo) and 1;3 to 2;9 (Virve). Vihman (1976) is a report of Virve's early word learning and phonological development, and Vihman (1982) is focused on the particular language learning strategy of her son Raivo, but also contains information on Virve's morphological development which is not directly addressed in the earlier article. The home language of these children was Estonian, but Raivo was exposed to and learned English from age 1;2 by attending a daycare center. Vihman (1971) reports on the phonological, and, to a lesser extent, morphological development of a third child, Linda, also growing up in the United States at the time of study, who was followed with bi-monthly visits of two hours in length from age 1;5 to 2;5 (see also Vihman, 1982, for further details of this child's development). This child had minimal exposure to English; both parents are Estonian and always addressed the child in their native tongue.

Osterreich (1977) is an unpublished dissertation on the development of locatives in the speech of six children living in Canada who were learning Estonian as their first language. The children were followed from four to six months each at three- to seven-week intervals starting at ages ranging from 1;10 to 2;6. Recordings of one and a half to two hours duration were made at each visit of the children interacting with the researcher, parents, siblings, and/or others. The family backgrounds of the children were varied, as was the amount of exposure to English.

The final study consulted is a short article by Lipp (1977) addressing the order of acquisition of inflectional morphemes by three Estonian children growing up in the United States. The fact that all of these studies deal with the acquisition of Estonian by children growing up in places where another language dominates in the surrounding community makes it difficult to evaluate the representativeness of these samples.[20] Nevertheless, they are virtually the only material available to date on the acquisition of Estonian.

For Finnish, in addition to Toivainen's contribution to this volume, I also consulted his earlier work, Toivainen (1961), which details the language of a Finnish girl at age 1;11; Toivainen (1980), which is the most comprehensive picture of the Finnish child's acquisition of inflectional morphology; and Toivainen (1994a), which in part addresses the acquisition of duration. The material reported on in the 1980 book has a base of 25 subjects and is an excellent source of detailed information on the acquisition of specific inflectional morphemes as well as for determining general trends in development. The children's speech was recorded generally at three-month intervals in sessions averaging 15 minutes over an age range of 1;0 to 4;4 years, using a spontaneous interview format.

[20]Bowerman's (1973) study of two Finnish children who were living in the United States is testimony to the possible influence of the community-dominant language as evidenced by delays and/or a slower course of acquisition compared to children reared in Finland (Argoff, 1976; Toivainen, 1980).

Argoff's (1976) dissertation is a longitudinal study of two Helsinki boys with a focus on morphology and syntax. The speech of Tuomas, who was visited from age 1;2 to 2;2 at two- to three-week intervals on two separate days, is the main child reported on in this study. Diary studies carried out by Finnish linguists on their own children are Itkonen (1977b), a general work covering all aspects of the development of his son's speech from around one to four years of age; Itkonen (1977a), chronicling the same child's phonological development; Iivonen (1993, 1994), which focuses on the phonological development of his two sons; and Lieko (1994a, 1994c), Niemi and Niemi (1985, 1987), and Räisänen (1975), who present information on their children's acquisition of morphophonology. Bowerman's (1973) study of two Finnish children's emerging syntax and the experimental studies of Lyytinen (1978, 1984, 1987, 1989), on the acquisition of morphology, and Weist and Lyytinen (1991), on children's comprehension of locatives, were also consulted. On occasion I have made use of my own naturalistic and experimental data, which are presently in the process of being analyzed, as support for the findings of others.

For Hungarian data I have relied most heavily on MacWhinney's (1974) dissertation, which contains an extensive section detailing the observations of Hungarian diarists as well as a longitudinal study of a child studied by the author, from age 1;5 to 2;2. Some of this information is presented in a summarized format in MacWhinney (1976, 1985). MacWhinney (1975, 1978) and Réger (1979) are experimental studies of Hungarian children's acquisition of morphophonology. Whenever possible I have endeavored to locate material by Hungarian researchers (e.g., Réger, 1979), but the availability of material in English is severely restricted. Information on phonological issues can be found in Gósy (1989) and Kassai (1990), the latter of which is a short contribution in an unpublished compilation of Hungarian child language research conducted between 1970 and 1990 (Pléh, 1990).

## 4. DATA

The following acquisition topics are taken under consideration in this section, as guided by the characteristic features of the languages, the interesting differences obtaining between them, and the availability of evidence: (1) quantity or duration, (2) vowel harmony, (3) word segmentation, (4) morpheme ordering, (5) locatives, and (6) morphophonemics. In some areas the comparison is limited to two languages, a consequence of either language-inherent features (e.g., vowel harmony is present only in Finnish and Hungarian) or the availability of data (e.g., not enough or no data on segmentation, morpheme ordering, or morphophonemics could be located for Estonian). These topics are pursued under three distinct headings: (1) early acquisition, (2) error-free acquisition, and (3) prolonged acquisition.

## 4.1. Early Acquisition

### 4.1.1. *Quantity*

Since the quantity or duration of vowels and consonants is phonemic in all three languages, being expressly linked with morphophonological processes and functioning at the word level as well, the need for control of phoneme length early on is critical. The available evidence indicates that Finnish children come to master this feature of their language before or around the beginning of their third year. Amazingly, the Estonian child, being faced with a three-way contrast, appears to gain control of this feature only slightly later than Finnish children differentiate the more simple two-way contrast in their language. Interestingly, the Hungarian child seems to be the last to gain control of this phonological feature. The possible reasons behind this differential rate of development will be explored below.

During the time when the child is producing his or her first words, and throughout the one-word utterance period in general, data from all three languages show that the child's productions do not necessarily correspond to the adult length contour of the words attempted. For example, Vihman (1976) reports on her daughter Virve's third word *see* 'this, that' at 0;11, which was pronounced [se], thus failing to conform to the adult model, which has an overlong vowel. Argoff (1976, p. 115) relates the instability of vowel and consonant length in the speech of his subject Tuomas from age 1;4 to 1;5. However, the fact that during this time the child was engaging in verbal play in which he varied the length of individual sounds suggests a beginning awareness of the importance of length in his language. As Kassai (1988, cited in Kassai, 1990) states in reference to the Hungarian child, who also exhibits the same kinds of difficulties early on, the reason for omitting required length information is phonological rather than physiological, since during the babbling period there is evidence of the varied timing of phonological segments (see also Iivonen, 1993, on Finnish). During the incipient stage of communicative utterances, the Hungarian child shows little evidence of control over the short/long vowel opposition, and the control of the contrast for consonants is even less apparent.

Despite the initial falterings, the Finnish child learns the contrast between long and short consonants and vowels extremely early. Argoff (1976) says of his subject Tuomas that by 1;7 the extraneous length of final vowels had nearly disappeared from his speech. He states, "Tuomas now is aware that when he does something to lengthen the end of a word he is making overt something he knows about his language" (p. 153). Both Itkonen (1977b) and Lieko (personal communication) found of their children that the acquisition of the basic contrast between short and long became established at the beginning of the third year, although some half-long quantities (between the short and long duration) persisted in the speech of Lieko's (1994c) daughter until 3;0. Itkonen (1977b) points out that the control of the basic consonants and at least three basic vowels is a prerequisite to this learning.

Toivainen's (1980) observations also support the acquisition of the length contrast by the Finnish child around this time. This is evidenced, for example, in the child's ability to distinguish between *tällä* 'this:ADESS' and *täällä* 'here:ADESS' in his or her early productions, two items which were present in the first quarter of Toivainen's (1980) speech samples in the age range between 1;8 and 2;4. Further, in an examination of Finnish children's productions of inflectional categories which terminate in an unstressed long vowel, namely the partitive singular of nouns ending in *a* or *ä*, the third person singular present, the illative of nouns and verbs, and the first person plural passive, Toivainen (1994a) found very few errors in length in children's productions during the ages between 1;3 and 1;11. For example, out of nine children who spontaneously produced a total of 17 illative forms during this time in their recorded speech, only one child produced incorrect short vowel forms, such as **kaappin* for *kaappiin* 'closet:ILL' and **kotti* for *kottiin* 'home:ILL'. Further, out of 14 partitive instances, only 1 was incorrectly rendered with a final short vowel.

Notwithstanding the early acquisition of the short/long contrast in many Finnish children, there are rather large individual differences. Although Iivonen's (1993, 1994) son J. followed the adult pattern of vowel quantity at 1;8 (e.g., *sika* 'pig:NOM' — *siika* 'whitefish:NOM'), his son E. did not control this contrast until 2;6. The developmental progression up to that point shows early command of long vowels in one-syllable words (e.g., *puu* 'tree:NOM' and *pää* 'head:NOM' at 1;11), followed by control of the long vowel in words beginning with a vowel (e.g., *uutu* for *uutiset* 'news:PL' at 2;3 and *miia* 'Miia', a girl's name, at 2;5). However, long vowels in initial syllables beginning with a consonant caused difficulty up until the age of 2;6 (e.g., *peppiauto* for *jeeppiauto* 'jeep.car:NOM' and *pippu* for *piippu* 'pipe:NOM, chimney:NOM' at 2;6). Similarly, J. distinguished consonant quantity in his speech at 1;7 (e.g., *palo* 'fire:NOM' — *pallo* 'ball:NOM'), but in E.'s speech this was delayed until 2;7, with some instability still apparent at this age. Despite the age differences in the overall acquisition of quantity, these data suggest that there is no appreciable difference in the age at which the feature is learned for vowels and consonants.

More detailed attention has been paid to the development of the relatively unique tertiary length contrast which is characteristic of Estonian. Oksaar (1971, 1972) reports on data from six Estonian-speaking children growing up in Stockholm. The system of quantity was completely developed in the speech of all six children between the ages of 2;1 and 2;3, fully in advance of the sound system. The author's son Sven, for example, distinguished the three degrees of the vowel *i* and the consonant *l* at age 2;4, as shown in the examples in (3). Before this time the second and third degrees were confused with one another to some extent. The distinction between short and long reached mastery between the ages of 1;4 and 1;6.

| | | | |
|---|---|---|---|
| (3) 1st degree | *pime* 'dark:NOM' | *pala* 'hot:NOM' (adult form: *palav*) |
| 2nd degree | *piima* 'milk:GEN' | *kolla* 'yellow:NOM' (adult form: *kollane*) |
| 3rd degree | *piima* 'milk:PARTIT' | *alla* 'down' |

Vihman (1971) presents a case study of the development of phonology in an Estonian girl, Linda, growing up in the United States, who had minimal to negligible contact with English during the period reported on (1;5 to nearly 2;0). Initially, Linda exhibited some fluctuation between short and non-short phonemes, the latter substituting for the former for some phonemes. In the consonant domain, this tendency was strongest for medial obstruents, which at age 1;7 were produced as non-short in 25% of the recorded cases, decreasing to 13% at 1;10. A similar trend was found for the vowel /e/. Errors exhibited for nasals and /l/, as well as the vowels /a, ä, o, õ/, were negligible to nonexistent. For vowels the predominant tendency was rather in the opposite direction; the child failed to render almost all vowels as long in some instances, although by age 1;9 this inclination had dropped to 0% for /e:/ and /u:/. Vihman concludes on the basis of these data that the production of the length contrast poses more difficulties for vowels than for consonants.

Age 1;9 appears to be a turning point for Linda. At this time there is clear evidence of the accurate reproduction of both the second and third degrees of length. Errors occur in the erroneous lengthening of the second syllable in items with a long or overlong first syllable, for example, /tup:a:/ for /tup::a/. The fact that Linda superimposes the appropriate intonation contours on long and overlong segments at this time indicates she is "well on her way to mastery of the long/overlong contrast" (Vihman, 1971, p. 73).

The findings from naturalistic studies of Estonian children are supported by the experimental investigation of the production of duration in children growing up in Estonia. Vesker (1987) elicited 160 words from 325 Estonian children aged 2 to 7 years by having the children name toys and objects in pictures. The percentage of children who made errors in the rendering of length ranged from 60% of 2-year-olds to 1% of 7-year-olds. By age 4 only 12% of children evidenced replacements of one length for another. Most importantly, even though some children made errors, the percentage of words with incorrect length was extremely low, around 2% or less of all words.

In comparison to Estonian and Finnish, duration is the last acquired phonological contrast in Hungarian. According to Kassai (personal communication), although evidence of the contrast begins to emerge at the end of the second year, it undergoes a considerable period of stabilization, with some oppositions, especially between short and long consonants, still missing after age 3. The reason behind the developmental delay in Hungarian children is most likely attributable to at least three factors: (1) the low functional load carried by the length contrast for some vowels, (2) the irregular paradigmatic alternation of vowel length in some words, and (3) the variability in the production of length information for both vowels and consonants across adult speakers.

In terms of the first factor, the distinctive value of length for the high vowels, *i, u,* and *ü,* and their long counterparts *í, ú,* and *ű,* is marginal. These vowels also participate in irregular morphological paradigms. For example, while the

nominative and instrumental forms of 'water' contain the long vowel *í*, its short counterpart appears in the accusative and plural forms: *víz* 'water:NOM', *vízzel* 'water:INSTR', but *vizet* 'water:ACC', *vizek* 'water:PL'. Further, the actual pronunciation of high vowels in both final and non-final position by adult speakers is currently in a state of confusion (Kassai, 1989; Nádasdy, 1985). In a series of pronunciation and length judgment tasks administered to Hungarian middle-aged teachers and 16-year-old vocational students by Kassai (1989), at normal speed speech teachers pronounced the majority of long high vowels as long, whereas the students pronounced most of them as short. In rapid speech, however, teachers also showed a shortening tendency. When asked to indicate which of two different pronunciations of words were correct, the response often conflicted with the subject's own pronunciation of the word. The high degree of uncertainty with respect to quantity in certain words was also indicated in self-corrections and comments concerning the difficulty of the task.

With these kinds of complications and inconsistencies operating, it is no wonder that the Hungarian child is slower to pick up on the feature of length as a meaningful phonological feature than the Estonian or Finnish child. This is even evidenced in the spelling errors of third grade Hungarian children, in which the letter for long high vowels is substituted by its short equivalent (Kassai, personal communication). However, where the functional load of duration is the greatest—for the low vowels, *e/é* and *a/á* (Nádasdy, 1985)—the Hungarian child shows control of length earlier on, as indicated by the acquisition of the rule of final vowel lengthening (see Table 6) before age 2 (see MacWhinney, 1974, and section 4.3.2.2). However, these contrasts also involve a marked difference in quality in comparison to short/long contrasts for other vowels (see footnote 5).

We can conclude from these findings that length contrasts are acquired early by child speakers of languages in which the difference between short and long (and overlong) phonemes is consistently manifested and carries a high functional load, their perceptual and productive components being well within the capacities of the 2-year-old.[21] Their acquisition is not immediate, however, undergoing some degree of variation before full control is established. The finding that the added complexity imposed by a three-way contrast in Estonian does not appear to cause a significantly more protracted period of acquisition, in contrast to the simpler system of Finnish, may well be due to the concomitant presence of distinct intonation patterns in the second and third degrees. In this connection Vihman (1971) notes the well-recognized fact of the salience of suprasegmental patterns to very young children. In fact, the even greater functional load of length in Estonian may alert the child to its significance earlier on, which seems to be the case for Osterreich's six subjects who learned the contrast between short and

[21]Interestingly, this finding is not applicable to at least some mentally disabled children. Argoff (1976) discovered the lack of consistent control of length in three Finnish children with Down's Syndrome aged 10 to 12 years.

long by 1;6, a full six months earlier than the average Finnish child comes to master the short/long distinction.

In any case, these results clearly show that duration, being a frequently marked distinction with a high functional load in Estonian and Finnish, is learned early by children. Oksaar (1971) takes this as evidence against Jakobson's (1968) formulation that "oppositions which occur in the languages of the world comparatively rarely are among the latest phonological acquisitions of the child" (p. 57). Where the data diverge, however, is in the comparative acquisition of quantity for vowels versus consonants. While the data point to a later development of the contrast for consonants among Hungarian children, Finnish children seem to control vowel and consonant length at about the same time. On the other hand, Vihman (1971) reports greater difficulty with vowels in the speech of one Estonian child. Whether these differences are attributable to individual predilections, features of the language being learned, or other factors remains to be investigated, as well as the consistency of these reports across child speakers of the same language.

### 4.1.2. *Vowel Harmony*

Empirical and experimental data alike support the early availability to both Finnish and Hungarian children of the phonological pattern which maintains vowel harmony both morpheme-internally (i.e., within stems) and across morpheme boundaries. In Finnish, vowel harmony errors are scarce. Toivainen (1997) mentions only a single error made by a child at age 2;1, in which the polar question particle *-ko/-kö* is incorrectly rendered in its back vowel form. The lack of vowel harmony for this particular morpheme is interesting, as it may indicate the child's treatment of the question particle as an independent morpheme which is not subject to regular phonological principles. The only other error I have located in the literature is by Niemi and Niemi's (1985, 1987) son at age 1;9, who rendered **säkseta* 'scissor:PARTIT' for either *saksea* 'scissor:PARTIT' or *saksia* 'scissor:PL:PARTIT'. The fact that the vowels in the child's form are in the order incorrect *ä* followed by correct *a* suggests an initial slip with recovery of the correct palatal value for this item in the last syllable, rather than a true violation of vowel harmony principles. Lieko (personal communication) reports the rarity of vowel harmony errors in the speech of her daughter as well. While some are bona fide errors of the type *hypita* for *hyppiä* 'to jump' (2;2), others occur as a result of an incompletely developed vowel system (e.g., *ukkää* for *yskää* 'cough:PARTIT' at 1;8 and *guuma* for *kylmää* 'cold:PARTIT' or *kuumaa* 'hot:PARTIT' at 2;0, where *u* is a mid-vowel, between *u* and *y*). Still other instances appear motivated by the child's inability to remember the correct palatal value for vowels in words containing the neutral vowels *e* and *i* (e.g., *listeus* for *risteys* 'intersection:NOM' at 3;4, and *meltä* for *merta* 'sea:PARTIT' at 3;7, the latter being irregular with respect to the rest of its inflectional paradigm, e.g., *meressä* 'sea:INESS', which has front vowel *ä*).