The Acquisition of Turkish

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INTRODUCTION

1. Brief Grammatical Sketch of Turkish

Turkish is an Altaic language, exhibiting in almost pure form the classic features of an object-verb language (Greenberg, 1966; Lehmann, 1978). The most accessible brief grammar in English is Lewis (1953), which can be supplemented by his extensive Turkish grammar (1967). A collection of linguistic studies of Turkish can be found in Slobin and Zimmer (in press).
The neutral word order is SOV, with concomitant features of suffixed inflections, postpositions, and preposed demonstratives, numerals, possessives, adjectives, and relative clauses. Word order in simple sentences and main clauses exhibits a high degree of variation for pragmatic purposes (Erguvanlı, 1979). Morphology is agglutinative and remarkably regular, with only a handful of exceptions to general principles.

Vowel harmony operates throughout all words of native origin and for all grammatical suffixes, which harmonize with the last vowel of the noun or verb stem. Suffixes follow one of two main alternations: (1) a front-back alteration of unrounded low vowels, el/a, represented here by the phonemic unit E, and (2) a front-back, rounded-unrounded alternation of high vowels, ili/i, represented by I. Compare, for example, the locative suffix -de, realized as İzmir-de ‘in İzmir’ and İstanbul-da ‘in Istanbul’, and the genitive-in, realized as İzmir-in, İstanbul-in, and Anıtkabir-in. Uninterrupted vowel sequences are avoided by the use of buffer consonants for vowel-initial suffixes, each such inflection carrying its own buffer, as, for example, the -(a)n of the genitive, resulting in such forms as Ankara-nun.

In strings of agglutinated morphemes, each element retains its phonological and semantic identity as well as its relative position in the string. For example, consider the order of noun suffixes: stem + (plural) + (possessive) + (case), as in el ‘hand’, el-ter ‘plural’, el-im ‘first person possessive’, el-de ‘locative’. The following combinations are possible:

- el ‘hand’
- el-im ‘my hand’
- el-de ‘in hand’
- el-in-de ‘in my hand’
- el-ter ‘hands’
- el-ter-im ‘my hands’
- el-ter-de ‘in hands’
- el-ter-in-de ‘in my hands’

With very few exceptions, the language avoids homophonous morphs. Each morph is syllabic and stress is fairly evenly distributed across syllables, with typical word-final stress.

Nouns are case-marked for genitive, accusative, dative-directional, locative, ablative, comitative-instrumental, and deprivative (‘without’). The same suffixes are also applied to pronouns, demonstratives, question words, and derived nouns. Consider, for example, the ablative forms of nouns (masa-DAN ‘from (the) table’), pronouns (sen-DEN ‘from you’), demonstratives (bun-DAN ‘from this’), question words (nerе-DEN ‘from where’, kim-DEN ‘from whom’), and derived nouns (yüz-mek-TEN ‘swim-NOML-ABL’ = ‘from swimming’). There is a variety of denominal and deverbal relational suffixes, as discussed in regard to typical errors below. There is no grammatical marking of gender.

Verbal affixes mark voice, negation, modality, aspect, tense, person, and number, with person and number affixes bearing much similarity with nominal suffixes for the same functions. For example, consider the plural -lar and first singular -an in the following verb examples, already familiar from the noun suffixes listed above:

<table>
<thead>
<tr>
<th>al</th>
<th>al -yor</th>
<th>al -yör -lar</th>
</tr>
</thead>
<tbody>
<tr>
<td>take</td>
<td>take PROG</td>
<td>take PROG PL</td>
</tr>
</tbody>
</table>

‘he/she/it is taking’ ‘they are taking’

<table>
<thead>
<tr>
<th>al -yör</th>
<th>al -yör -um</th>
</tr>
</thead>
<tbody>
<tr>
<td>take PROG</td>
<td>take PROG 1SG</td>
</tr>
</tbody>
</table>

‘I am taking’

Even at early ages fairly elaborated strings of verbal affixes are produced by children. Several examples, picked at random, show the character of Turkish verbal morphology (ages in parentheses):

| (2,1) getир -me -di -n |
|---|---|---|---|
| bring NEG PAST 2SG |
| ‘you didn’t bring’ |

| (2,2) ağır -di -lar |
|---|---|---|
| cry PAST PL |
| ‘they cried’ |

| (3,2) důz kon -al -ar -sa |
|---|---|---|---|
| straight put PASS AORIST COND |
| ‘if one puts (it) straight’ |

Roughly, the verb in Turkish allows for the following series of affixes (within the bounds of semantic plausibility, of course):

- stem—reflective—reciprocal—causative—
- passive—potential—negative—necessitative—
- tense—conditional—question—person—number

As this scheme shows, the particles affixed to the verb express notions of tense, aspect, mood, and modality and various combinations of such notions. In terms of tense, there is distinct marking of past (-dl or -ml), present (-yör or -lr), and future (-Ek). Within the past, a modal distinction is drawn between statements made on the basis of direct evidence (-dl) vs. indirect evidence such as inference or hearsay (-ml) (for detailed discussion of this distinction, see Soblin & Aksu,
9. The Acquisition of Turkish

Sentences are conjoined either by conjunctions or by verbal suffixes, the latter device being more natural to the language. A collection of verbal particles or "converbs" allow for various sorts of verb chaining to indicate temporal and causal relations. In such sentences, only the last verb is finite, as in the following example from a play monologue of a child of 4-5. The first verb, suffixed by -ip, indicates an action that is prior in the series of events:

Dent -e atley -op yet -cez -im.
sea DAT jump PTL swim PUT 1SG
'I'll jump into the sea and swim.'

Numerous postpositions are also available to encode interclausal relations. In the following example, a child of 3-0 uses the postposition için 'for, in order to' to explain why she has removed her doll's clothes:

Yoka -mak için çıkartım.
wash INF for removed+SG
'I took off (doll's clothing) in order to wash it.'

Further aspects of Turkish grammar relevant to acquisition are discussed in more detail at various points below.

2. Sources of Evidence

The first published work on Turkish child language is a report in Turkish by Özboysar (1970), briefly summarizing a longitudinal observation of one boy and one girl between the ages of 12-24 months. A detailed longitudinal study is presented in Elkemekji's (1979) dissertation, presenting the results of monthly hour-long recordings of a girl between the ages of 1:3 and 2:4. Elkemekji (in press) has recently published a detailed discussion of the development of word order in this child. In addition to these published reports, we have had access to diary observations gathered by Belma and Sabri Özbeyaz, Doğan Cicekolu, Özan Bağcan, and Naci Şahin and his students. To all of these investigators we express our thanks. Our own materials, gathered by Slobin in 1969-70 and 1972-73, and by Akso in 1977-78, include extensive speech corpora from about a dozen children, ranging in age from 1:10 to 5:11. These corpora consist primarily of child-investigator interactions, though mother-child and sibling interactions are also included.

In 1972-73, as part of the Berkeley Cross-Linguistic Acquisition Project, a project carried out with support from the William T. Grant Foundation to the Institute for Human Learning and from NIH to the Language-
cross-sectional and micro-longitudinal sample of 48 children was studied in depth. We worked with groups of six children—three boys and three girls—at each of eight age levels, spaced at 4-month intervals between the ages of 2;0 and 4;4. In addition to this cross-sectional design, each child was retested 4 months later, providing one longitudinal check, and giving an overall age range of 2;0 to 4;8. A large range of linguistic areas was examined, including locatives, causatives, agent-patient relations, temporal expressions, comparatives, relative clauses, question comprehension, and free speech samples. The overall study, comparing Turkish, Serbo-Croatian, Italian, and English, is summarized in Slobin (1982). The locative elicitation study is reported by Johnston and Slobin (1979); the causative study by Ammon and Slobin (1979); the agent-patient (word order) vs. (inflection) test by Slobin and Bever (1982), and Slobin (1982). Some aspects of input are summarized in Slobin (1975). Aksu (1975) examines the development of the type of cause-effect relations. Clancy, Jacobsen, and Silva (1976) compare the acquisition of conjunctions in Turkish, Italian, English, and German. Slobin and Talay (in press) study the development of pragmatic uses of subject pronouns.

Aksu’s (1978) dissertation is a detailed examination of aspect and modality in the child’s acquisition of the Turkish past tense. The order of emergence of past tense forms for direct and indirect experience is traced longitudinally across three children between the ages of 21 and 30 months, and experimental data from children between 3;0 and 6;4 are analyzed in regard to issues of aspect and modality. Savager’s (1983) Master’s Thesis explores the use of various forms of future expression in three 2-year-olds from the Berkeley sample.

All of the data listed above were consulted in the preparation of this chapter. Crucial gaps were filled in several places—especially in regard to earlier stages and the emergence of the inflectional system, and the nature of input in natural adult-child and child-child interaction. We also know little about the development of discourse skills. (Iskender Savager [1983] is beginning to study developmental relations between activity types and verb forms at Berkeley.) There are no systematic observations of the development of prosody or phonology in Turkish. There are few data on later ages, but Nai̇ Sahin at Middle East Technical University in Ankara is making an inventory of syntactic structures and lexicon of school-age children.

3. Brief Summary of Overall Course of Linguistic Development in Turkish

The inflectional system appears early, and the entire set of noun inflections and much of the verbal paradigm is mastered by 24 months of age or earlier. By this age, Turkish children inflect nouns for case grammatical or interpersonal (possessive, instrumental) and number (plural), and verbs for tense-aspect (past result, ongoing process, intention), person, negation, and interrogation. Both noun and verb inflections are present in the one-word stage, and there is some evidence for productive use as young as 15 months. Early words typically include inflections, since stems tend to be mono- or bisyllabic, and inflections are stressed suffixes. For example, biti ‘all-gone’ or ‘all done’ is made up of the verb stem bit ‘finish’ and the past-tense suffix -i; negative imperatives are composed of the verb stem and the suffix -mek, as in gîme ‘don’t go’; and so forth. Such suffixes are quickly used with a wide variety of words. Evidence for productivity appears as early as age 15 months, when children fail to delete a stem-final -k before a suffix beginning with a vowel, thus indicating that the suffix is not simply part of a rote-learned amalgam. There are no errors in the order of agglutinated morphemes; however the very few available possibilities for grammatical variation in several places—especially in regard to case and number—are reflected in the child. Overall, morphological errors are remarkably rare, because the extreme regularity of the language precludes them. Morphophonological adjustments for vowel harmony and voicing assimilation are also correct at very early ages.

As a result of precocious acquisition of grammatical morphology and lack of overgeneralizations, Turkish child speech transcripts do not have the familiar “child language” look evidenced in most other languages. Early utterances are not telegraphic, since the stressed, suffixless inflections are present. Child utterances are short and simple, but rarely ungrammatical or incorrect. Children are able to construct utterances that correspond to the point of view of the adult language. Thus Turkish acquisition provides evidence that grammatically relevant notions are accessible to quite young children if the means of expression are sufficiently salient and analyzable.

Word order is used flexibly for pragmatic functions, as in the adult language. For example, children younger than 2 correctly place new information before the verb and presupposed or predictable information after the verb. All six orders of subject, verb, and object are comprehended in a reversible transitional sentence test at 24 months. Fixed word order is adhered to where required in the language (e.g. adjective + noun; noun + attribute; possessor + possessed).
Two- and 3-year-olds are engaged in mastering verb inflections for voice and modality (passive, nonwitnessed past tense, conditional, causative) and syntactic means for temporal and causal linking of clauses.

The tense-aspect system evolves from (1) a distinction between immediately completed changes of state ( verbs) and durational events ( -lyor), to (2) generalization of the meaning of the past-tense morpheme -d from completion to past tense, to (3) a distinction in the past between directly experienced events ( -d) and events inferred from their endstates ( -di), and finally to (4) a general past-tense distinction between witnessed ( -d) and nonwitnessed ( -di) events, including hearsay in the latter category.

The passive, which is agentless in Turkish, emerges early to focus on desired changes of state in objects. For example, a child of 2A, wanting to open a box, said: Boyle ac-i-tar 'thus open-PASS-AGENT' (= 'It is opened like this').

The conditional is a simple verb suffix, and is used by 2-year-olds to express contingencies. For example, a child of 2B, covering her doll's eyes, said: Karantik ol-su gor-mez-in 'dark be-COND see-NEG-AGENT-2SG' (= 'If it's dark you won't see'). (Counterfactual uses of the conditional are a much later acquisition.)

The causative morpheme is often extended from the meaning of instigation ('make someone do something') to causation generally, with inappropriate affixation to verbs that are already inherently causative. For example, a child of 2C intended to use the verb kes 'cut' as a simple transitive, using the causative morpheme -dir, to mark transitivity; however, the form kes-dir should mean 'have someone cut'. Thus although the general notion of 'cause' is marked early on, it takes a while for children to sort out different types of causality for grammatical marking.

Locative postpositions, question words, and temporal and causal clause relations emerge in the standard crosslinguistic order, presumably based on conceptual development. Locatives emerge in the order: in/ on/ under < beside < back with objects having back-front orientation < front with oriented objects < between < back with unoriented objects < front with unoriented objects. Early clausal conjoining expresses temporal and causal sequences; simultaneity and directed temporal relations (before/ after) develop later.

Late acquisitions (after age 4) are seen in a variety of complex constructions requiring the insertion of nominalized verb forms of various sorts into sentences (relative clauses and verb complements). Whereas the grammar of simple sentences and main clauses is quite transparent and easily acquired, the syntax and morphology of subordinate clauses pose considerable difficulty to the Turkish child. Means of combining clauses to express temporal and causal relations develop in the following sequence: (1) Until about 2B, simple juxtaposition of sentences predominates, without explicit grammatical markers of connection. (2) During the next year children begin to use connectives that don't require nominalizations (conjunctions and converses). (3) After age 4 children begin to more frequently use nominalizations for various subordinate clauses, but with prolonged confusion between the various forms, and syntactic errors.

Systematic data are not available beyond age 6.

THE DATA

4. Typical Errors

The discussion of typical morphological errors in this section is briefer than comparable chapter sections on the development of other languages, since the remarkable regularity and transparency of Turkish morphology precludes a high rate of error in the early phases of development. Where errors typically occur is in later phases, when the Turkish-speaking child encounters problems of complex syntax, as discussed in regard to nominalization errors and errors in verbal and nominal derivation, and late acquisition of relative clauses.

4.1. Morphological Overregularizations

The few possible morphological overgeneralizations do occur. One source of error is failure to delete a stem-final k preceding suffixes beginning with a vowel. For example, the corrcetive accusative of tabak 'plate' is tabağ, whereas it is not pronounced. Ekmeği's child practiced this accusative form at 15 months: daba, daba, daba, dabağ. Similarly, at the same age, she rendered the genitive of bebek 'baby' as bebeki (= bebeğin). These are common errors for this class of words, not often heard after age 28 months. Such analogical errors (compare the correct early accusative, as, for example, Ahmet), so abundant in Indo-European child language, also occur where possible in Turkish. They indicate that the child has carried out a segmentation of root and affix, and suggest that the early correct forms are probably also productive. The common explanation is applicable to the Turkish child—namely that the child is sensitive to patterned regularities in morphological paradigms, and applies a standard inflectional principle to all relevant members of a class.  

4.2. Meaningless Overmarking of Verbs

At early stages of development (below age 2;6 or so), verbs are sometimes pronounced with extra, meaningless syllables between the stem and the final person-number affixes. Early on, it seems that the child attempts to retain some rhythm picture of complex verbs, incomprehensively inserting morphemes that sound like passive and causative particles. Such errors are quite different from the errors considered below, where the added morphemes perform an interpretable semantic function in context. Whereas later errors of overmarking reveal a semantically motivated analysis of the morphological system, the early errors
4.3. Errors in Causative Marking

The causative morpheme can be inserted in intransitive verbs to make them transitive, as in öl ‘die’ and öl-dür ‘kill’. When this morpheme occurs with a verb which is already transitive, it renders an instigative meaning as in kir ‘break’ and kir-dir ‘have (someone) break’. The morpheme can be doubled in verbs of the first type, bringing about an instigative meaning (‘have (someone) kill’). Some children apparently abstract a general causative meaning from this morpheme, using it incorrectly with verbs which are already inherently causative-transitive. For example:

**Child:** technique -si onu?
Accordion cut PAST it+ACC
‘Who cut it?’

**Child (2;3):** Ben kes -dir -di -m.
I cut CAUS PAST 1SG
‘Intended meaning: I cut (it).’
Literal meaning: I had (someone) cut (it).’

Children also have difficulty in determining which verbs have lexical causative forms and which verbs allow for productive causative derivation. (The latter option is much more widely represented in the language.) For example, a girl of 3, pointing to her hurt eye, said:

*Bu -na -si -nu yan -dir -yer*
this LOC POSS ACC burn CAUS PROG
‘It’s making this point burn (hurt).’

Here, the intransitive verb yan ‘burn’ has been transitivized with the causative particle -dir, whereas it has a lexical causative counterpart yan ‘cause to burn’. (See Clark & Hecht, 1982, for children’s problems in distinguishing between conventional and productive parts of the lexicon.)

The other side of the coin is represented by errors of undermarking the causative, treating an intransitive verb as if it were lexically transitive, as shown in the following interchange, which arose when a child wanted the experimenter to remove a small plastic toy pasted to a cardboard mounting:

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Child: *Su -na kalk.
that ACC getup
Adult: Efendim?
Excuse me?
Child: *Su -na kalk -sana.
that ACC getup IMP

The child’s intended meaning was ‘lift that up’ (disconnect it), but he used the intransitive verb kalk ‘get up’. The grammatical form requires the causative particle: kai-dir-sana.

4.4. Simplification of the Negative System

Some children younger than 2 have been observed to make various attempts to simplify the system of negation. Verbal predicates are negated by the insertion of the negative particle -mE- immediately after the verb root or verb + vowel particles, but before the modal, tense, and person suffixes. Stress is shifted to the syllable preceding the negative particle (a clear exception to the usual pattern of word-final stress); for example, al-di ‘take-PAST:3SG’—al-ma-di ‘take-NEG-PAST:3SG’. Negation of nonverbal predicates, on the other hand, involves the use of lexical negatives yok ‘nonexistent’ and degil ‘is not’. Degil is the negative for substantive (adjectival and nominal) predicates, while yok negates existential predicates. For example: su degil ‘water NEG:BE’ (=‘it isn’t water’) vs. su yok ‘water NEG:EXIS’ (=‘there is no water’). The negative existential, yok, is also used for negative possessives, contrasting with the affirmative existential, var. Compare adam-in at-1 var ‘man-GEN horse-POSS EXIS’ (=‘the man has a horse’) and adam-in at-1 yok ‘man-GEN horse-POSS NEG:EXIS’ (=‘the man doesn’t have a horse’), along with the contrasting substantive negative adam at degil ‘man horse NEG:BE’ (=‘a man is not a horse’). (These examples are only relevant to timeless or nontensed statements. Both types of nonverbal predicates, substantive and existential, appear as the negation of the auxiliary verb el ‘be’ when they take tense-aspect-modality markers and when they are embedded.)

It appears that some children at first pick only one of these lexical forms, or a phonological variant of -mE- (mi mi), or t-ik (the sound accompanying gestural negation in Turkish) as a universal negative marker, applying it to all types of predications after the model for negation of nonverbal predicates. Thus the negation paradigm of nonverbal predicates is overgeneralized to verbal predicates. (Note that thereby the child adheres to a pattern of negation that is more widespread among the languages of the world, as well as being consistent with an early tendency in child speech for sentence external negation.) One child is reported to have used degil as a general negative marker until age 2;3, and
means of deriving such forms are complex, based on principles probably relatively abstract to the child, and often resulting in surface forms in which a clause is conflated in a nominalized verb. For example, statements of fact and statements of potentiality or activity require different nominalizations, using the participle -dik for factual clauses and -mE for potential clauses, as shown below:

Ahmet GEN swim FACT POSS ACC know+1SG.
'I know that Ahmet swam/is swimming.' [fact]

Ahmet GEN swim POT POSS ACC wait+1SG.
'I'm waiting for Ahmet to swim.' [potentiality]

Children tend to use the latter form for both types of constructions. It may be that the distinction between fact and potentiality is not accessible to children of this age. In addition, the use of a single form for these two closely-related complement constructions may reflect a common tendency of economy of means. But, in either case, why should the latter form, the -mE participle, be preferred? The avoidance of the -dik form may be due to morphological complexity. Note that in the above two examples the subject of the embedded clause, Ahmet, is in the genitive case, Ahmedin. The subject is thus treated as the "symbolic possessor" of the action attributed to him (literally 'Ahmet's fact-of-swimming I know' and 'Ahmet's potentiality-of-swimming I await'). The form is therefore doubly opaque, in that the subject is marked in a nonstandard way, and the verb has lost its characteristic verbal morphology. However, when the subject of the main clause is coreferential with the subject of the embedded clause the genitive is not required, allowing for the syntactically simpler forms:

Ahmet yüz -me -si -ni biliyor.
Ahmet swim POT POSS ACC know+3SG.

'Ahmet knows how to swim.'

This simpler nominal complement is acquired earlier than the two more complex forms presented above. When children begin to use the factive nominalization, they often tend to mention the embedded subject in the standard nominative (unmarked) case, as in the coreferential situation, rather than in the required genitive. As a general principle, there is probably a tendency to limit the range of functions carried out by a given case inflection, resulting here in the avoidance of using the genitive—normally the case of the possessor—to mark a subject. The

4.5. Nominalization Errors

Errors are made in various participial forms from age 3 on, increasing in frequency for 4- and 5-year-olds, as occasions to use such forms become more common, given increased complexity in the child's communicative intent. The
simpler option, thus, is to use the -mE participle with embedded nominative subject for both factives and potentials, and, upon emergence of the -dlE participle, still to avoid genitive marking of the embedded subject.

4.6. Errors in Deverbal Derivation

Other participle errors occur in the formation of deverbal attributions—another set in which similar forms are distinguished by fairly abstract formal criteria. The details are arcane for the general reader, but the general interpretation is that it takes children a while to sort out nuances of verbal aspect and a range of surface forms which all serve to convert actions into states (e.g., forms expressing such notions as ‘sleeping cat’, ‘sliced meat’, ‘fallen leaf’). The range of forms incorrectly chosen in particular instances all come from a class of verbal affixes which depict an event in a stative or timeless mode, but the particular choice is often incorrect. Several types of examples are given below. In all of these situations semantic motivation seems to take precedence over the acquisition of more formally motivated means of expression.

Aksu (1978) has experimentally studied two such affixes that form deverbal attributives, the present participle suffix -En and the past participle suffix -mlg. In describing stative representations of actions, 3-year-olds prefer either verbal predications in the present progressive or substantive and existential predications. Attributional descriptions with -En and -mlg show a significant increase after age 4, with constructions with -En reaching a comparable level of production about six months later than -mlg. The past participle, -mlg, is used to encode resultant states, such as pis-mlg elma ‘cook-mlg apple’ (=‘cooked apple’), whereas the present participle, -En, stativizes processes, such as kq-en gocak ‘run-En child’ (=‘running child’ / ‘child who is running’). As discussed in Section 5.3, below, the -mlg suffix is acquired earlier as a verbal inflection referring to present states resulting from past processes. At the point of acquiring the syntactic function of forming participial adjectives, the child may begin with -mlg, extending this already established form to a new function. Once this syntactic function has been established for past participials, it may be easier for the child to acquire a new form, -En, for deriving present participials. Here we may have a realization on the syntactic plane of the principle: “New forms first express old functions, and new functions are first expressed by old forms.”

Most common errors up to age 4 are attributives derived with the future participle -EcEk, the infinitive suffix -mEk, and the nominalizing suffix -mE, in contexts where the stative -mlg participle would be appropriate. The following examples are ungrammatical although the choice of -mE instead of -mlg is appropriate on semantic grounds since both suffixes derive adjectives with passive meaning. Typical responses in describing a picture of a cut or bitten apple were:

In both cases the passive notion has been marked twice, i.e., redundantly. The grammatically correct description of a picture of a cut apple would be:

In both cases the passive notion has been marked twice, i.e., redundantly. The grammatically correct description of a picture of a cut apple would be:

- kes -iI -me elma
  cut PASS NOMINAL apple

- *istur -iI -ma elma
  bite PASS NOMINAL apple

Using the -mE nominal, without the passive particle -iI, results in grammatically correct but frozen forms expressing potentiality:

- yar -ma gesfali
  split NOMINAL peach

- ‘peach that can be split’

These errors suggest some uncertainty in the range of meanings carried by the -mE nominal and the passive in situations where states are to be described with forms based on verbal stems.

Difficulty with such notions is also revealed in another typical error of derivational morphology—in this case, undermarking of the passive. Children often neglect to passivize transitive verbs in forming present participial adjectives. The result is an ungrammatical active participle modifying an inanimate patient noun, as in:

- *istur -an elma
  bite PRES.PART apple

- ‘apple that is biting’

- *yi -yen elma
  eat PRES.PART apple

- ‘apple that is eating’

Grammatical versions require the passive particle:

- *istur -iI -an elma
  bite PASS PRES.PART apple

- ‘bitten apple’
5. Error-Free Acquisition

5.1. Morphology

With the exception of the marginal early and late errors summarized above, Turkish child speech is almost entirely free of error. This is undoubtedly attributable to the extreme regularity of the morphological systems, resulting in a situation in which the language hardly provides opportunity for error. Most of the agglutinative morphology—nominal and verbal—is used productively at the two-word period, before the age of 2.

There are many interlocking reasons for the ease of acquisition of these systems. We can think of at least 12 factors which play a role in facilitating acquisition, and they cannot all be pulled apart in considering any single language. The morphemes are: (1) postposed, (2) syllabic, and (3) stressed, making them especially salient to perception and immediate memory. They are (4) obligatory, rather than optional. (For example, the optionality of the Japanese object particle delays its acquisition and its use in sentence comprehension, in relation to Turkish [Hakuta, 1977; Slobin, 1982].) (5) The inflections are tied to the content word, noun or verb, and are not conflated with other parts of speech.

(For example, the German case system, conflated with articles, is acquired much more slowly than the corresponding Slavic noun suffixes.) (6) The postposing of inflections is consistent with the verb-final typology of Turkish, and children may be sensitive to such typological consistencies. Semantically, the Turkish particles (7) seem to follow the stem in an order reflecting decreasing relevance (Bybee, 1985) to the inherent meaning of the stem (NOUN-PLURAL-POSSESSIVE-CASE and VERB-MODALITY-TENSE/ASPECT-PERSON-NUMBER), and (8) are generally nonsynthetic in their mapping of functions onto form. Clarity of semantic mapping probably facilitates acquisition. (By comparison, the fusional quality of Indo-European inflectional morphemes probably adds to their complexity; e.g. the typical conflations of number, gender, and case.) (9) Functionally, the morphemes express only grammatical roles, while other devices, such as contrasive word orders and focusing particles, are used for pragmatic functions. (By comparison, Japanese particles, which express both pragmatic and syntactic functions, seem to be more difficult to master.) In terms of distribution and diversity, the paradigms are (10) almost entirely regular (i.e. exceptionless), (11) consistently applied to all content words and pro-forms (nouns and pronouns, demonstratives, question words, nominalizations; main verbs and auxiliaries), and (12) relatively distinct (i.e. there are almost no homonymous functors). Whatever the relative strengths of all of these factors, it is clear that at least some of them greatly facilitate the acquisition of inflections in Turkish.

5.2. Morpheme and Word Order

Order rules, where they apply, are also acquired free of error. The agglutinated morphemes occur in proper order. This seems remarkable given the range and complexity of possible combinations in both the nominal and verbal systems, as summarized in the grammatical sketch above. It is not uncommon, for example, to find verbs in 3-year-old speech containing particles of negation, voice, modality, tense-aspect, and person-number—all in the proper order. Obligatory word order within clauses is adhered to (e.g. adjective-noun, possessor-possessed, noun-predicate attribute, postposing of postpositions). On the other hand, varying word order within sentences for pragmatic effect is also easily mastered (e.g. using preverbal attribute for focus, resulting in postposed rood subjects for object focusing and postposed objects for subject focusing). There appears to be a sensitivity to the role of ordering at different linguistic levels. At the word level, where morphemes are bound by vowel harmony and word intonation, strict ordering is adhered to. Strict ordering is also adhered to within constituent phrases. At the sentence level, however, ordering of main sentence elements is free to vary in appropriate discourse contexts, as discussed in Section 6.1.2. below. General principles like ordering, therefore, do not apply across the board, but interact with definition of linguistic level.
6. Timing of Acquisition

6.1. Early Acquisition

6.1.1. Inflections. The agglutinative morphology is acquired strikingly early, parts of it apparently productive as early as 15 months. Explanations come from the consistency of the system, as discussed above.

In sentence comprehension experiments (Slobin & Bever, 1982), children rely on the accusative inflection, rather than word order, to identify agent and patient. From the youngest age group tested—2;0—children correctly act out reversible transitive sentences in all six orders of subject, verb, and object. Slobin and Bever also presented children with strings of two nouns and a verb, with no case inflection on either noun, in the orders NNV, NVN, and VNN. By and large, response to such strings was random, indicating that Turkish children rely on inflections rather than word order for the identification of grammatical relations.

6.1.2. Word Order. Ekmekeçi (in press) has documented early use of a variety of word orders in one child during the age range 1;7–2;4. Early control of the functions of word order is reflected in a number of contrastive uses, including the following: (1) Preposed adjectives are used in attributive expressions (e.g. soğuk su ‘cold water’, said at 1;7 when asking for cold water), whereas postposed adjectives are used in predicative expressions (e.g. gorba sarcak ‘soup hot’, said at 2;0 as a complaint). (2) Indefinite or nonreferential direct objects always directly precede the verb (e.g. kalem getir ‘bring (a) pencil’), whereas definite direct objects (marked by the accusative inflection) can also follow the verb (e.g. kalem-i getir ‘pencil-ACC bring’ and getir kalem-i ‘bring pen-cil-ACC’ = ‘bring the pencil’) [age 1;10]. (3) Such examples reflect a more general tendency to place new information before the verb and presupposed or predictable information after the verb. Consider, for example, the following narrative sequence, in which ‘three sisters’ are introduced as a sentence-initial topic in the first sentence, followed by postposing of ‘sister’ in a following sentence:

Üç kardes var -miş.
three sister EXIS PAST:REPORT
‘There were three sisters.’

Bir -i büyük -miş kardes -in.
one POSS big PAST:REPORT sister GEN
‘One of the sisters was big.’

The verb can be highlighted by verb initialization and postposing of all additional material, as in the following (2;0):

Say mi -ceğ-im onu daha.
love NEG FUT ISG ISG-ACC more
‘I won’t love her anymore.’

In reading through our own transcripts of Turkish child speech we have been struck by the extreme rarity of contextually inappropriate word orders, reinforcing the impression that pragmatic variation in word order is a precarious acquisition. (Support is given by discourse constraints of adult-child conversation, as pointed out in the discussion of input, below.)

Work by Slobin and Talay (in press) on children between 2;1 and 3;8 shows early control of the pragmatics of first-person pronoun placement. For example, utterances with ‘I’ in normal preverbal position are used when the subject is at issue, as in responses to ‘who’-questions or in drawing a contrast with the subject of a previous utterance, as well as in making a neutral report of past action. By contrast, postverbal ‘I’ is used when the verb or object is in focus, and the continuing subject is presupposed. Such uses of subject pronouns are standard for adult conversation as well; however, where young children may differ from adults is in overuse of pronouns. This issue is taken up in more detail below, in the discussion of reorganizations in development (Section 11.4).

In the Slobin and Bever (1982) sentence comprehension study reported above, there is suggestive evidence that children are sensitive to the fact that SOV is the standard word order of the language. Although most children responded randomly to strings containing two uninflected nouns and a verb, a small number of children did respond consistently to some of these strings, picking either the first or second noun as agent. Their responses reflected the frequency of occurrence of word order types in Turkish speech: 13 children responded consistently to NNV strings, which parallel the standard SOV order; 7 were consistent on NVN, which is the next most frequent order in speech samples; and only 2 were consistent on VNN, which is the least frequent order. Children’s imitations of sentences in the six orders of S, V, and O showed both great tolerance for word order variability and a degree of sensitivity to the standard SOV order. Overall, children tended to imitate sentences correctly, regardless of word order. Although reorderings in imitation were rare, when they did occur they again reflected a sensitivity to the frequency of occurrence of the order types in speech: (1) Verb-final sentences were almost never reordered; (2) verb-medial (NVN) sentences were reordered less frequently than verb-initial (VNN) sentences, and always into verb-final order (NNV); (3) verb initial sentences were reordered most frequently—generally into NNV order, but also into NVN. Younger children reordered most frequently (from 46% at age 3;0 to 11% by 3;8) and made more conversions into verb-final order in their imitations. Thus even though Turkish children vary word order freely in their speech, and are guided by inflectional cues in sentence comprehension, they are also cognizant of the basic verb-final character of their language.
6.1.3. Passive. The passive is an early acquisition in Turkish, where it is always agentless, and is indicated by a simple and regular verbal affix, as are other parts of the verbal system discussed above. The pragmatic function that it serves is one of focusing on the state of the patient, such as the English truncated passive (e.g. *it got broken*). The Turkish child does not have to face the complexities of forms like the full passive of English, since variations in word order, as discussed above, allow for shifts in focus. Savasgr (1983) has examined uses of the passive in three children from the Berkeley sample in the age range 2;3–2;4. He notes a preponderance of early use of passives in the negative, in situations in which the child fails to bring about a desired goal (e.g. *ac-il-m-yor* 'open-PASS-NEG-FROG' (= 'it is not being opened', uttered by a child of 2;4 who has not succeeded in opening a box). Savasgr suggests that the passive is used in third person present negative utterances, such as this one, to attribute a nonoccurrence of an event to an agent. "It would seem that the earliest occurrences of the passive in the present tense are used to report those instances in which the child's intentions or plans are inhibited due to a resistance from an object" (p. 39). He suggests that the next developmental advance involves a distinction between focus on the agent and a non-agentive focus on objects, as revealed in alternations between first person active and third person passive utterances, such as *böyle ac-ar-im* 'thus open-AORIST-1SG' (= 'I open (it) like this') and *böyle ac-t-r* 'thus open-PASS-AORIST' (= 'It is open like this'). In Savasgr's terms, children come to "use the passive voice to represent the changes that arise out of the properties of the object" (pp. 39–40). (He notes, as well, that the aorist, in distinction to the present progressive, is used in situations which are viewed "non-agentively." Thus the combination of aorist and passive allows children to talk about events per se.)

6.2. Late Acquisition

Relative clauses, verb complements, and some types of conjoined constructions are strikingly late, not fully mastered until age 5 or later. These are all constructions in which an embedded sentence is treated as a participle, as discussed above. Such clauses are relatively opaque—that is, they do not look like surface sentences, since the verbs appear in various nominal or participial forms and casemarking on nouns is often different than in the corresponding simple clauses. In all of the forms discussed below there is abundant morphological and syntactic complexity. Such constructions, which increase the distance between surface form and underlying meaning, pose special acquisitional problems to children.

6.2.1. Causal conjunction. The order of acquisition of the various syntactic structures for conjoining two clauses in a causal relation presents a control case, since the semantic complexity of the underlying notions can be assumed to be constant across various forms of conjunction. The connectives constituted of a demonstrative pronoun in the ablative case, *on-dan* 'that-ABL' (= 'from that'), or in the genitive case followed by a postposition, *on-un* 'that-GEN for' (= 'for that reason'), are quite transparent and are acquired first. These forms allow for conjoining of independent clauses, as in the following example from a child of 2;8:

*Onyancıklı gölldürün de ONUN İÇİN kah.*

*toy* + ACC *you + brought* PTL *got* + angry + 3SG

"You brought the toys, THAT'S WHY she got angry."

On the other hand, participial or finitival nominalizations of the verb followed by a postposition, *-dīg*i iç* in* 'NOM-L GEN-for' (= 'because of this ... ing'), and *-mEK iç* in 'INF for' (= 'in order to'), emerge much later in the expression of the same causal relation. In such constructions there is a clear distinction between main and subordinate clause, and only the main clause has a finite verb, as in the following example from a child of 3;8, representing the earliest appearance of such constructions in a cross-sectional sample from 2;1 to 5;0:

*Onyancık ol -dug -u iç* in* u smell.*

*to* be PRT GEN for *fly+NEG-AORIST*

"Because it's a toy it doesn't fly."

(The order of development of conjunction types is discussed in Section 7.2, below.)

6.2.2. Relative Clauses. Difficulties in dealing with nontransparent embedded clauses are most evident in the acquisition of relative clauses, clearly a very late acquisition for Turkish children. Slobin (in press) has compared the use of relative clauses in 57 matched English and Turkish child speech samples between the ages of 1;0 and 4;8, extracting all of the relative clauses spoken by the children and the adult investigators who interacted with them in standard settings (playing with toys and discussing everyday events). In both languages, relative clauses are quite rare, and none are found before age 2;4; however, they are twice as frequent in English as in Turkish. Overall, there are 96 relative clauses in the English transcripts and only 42 in Turkish (based on over 40 hours of interaction). The same asymmetry is reflected in the investigators' speech to the children, with 40 relative clauses in English and 22 in Turkish. As shown in Fig. 9.1, the development of relative clauses is much faster in English, with a major spurt around age 3;6, while the mastery of relative clauses in Turkish must take place later than 4;8, the oldest age in our sample. (Similar evidence comes from experiments on the comprehension of relative clauses, discussed in Section 12.1.3, below. Turkish children of 4;8 are able to extract only the main clause for acting out.)
7. Cognitive F ace-setting of Language Development

7.1. Locative Development

The course of development of locative notions follows a standard order, presumably based on language-free conceptual development, even though the principles of locative suffixation and postpositions are acquired early. The first locative expressions are simple nominal suffixes: -E 'moving towards', -DE ‘located at’, -DEN ‘moving away from’. These suffixes do not require encoding of specific object and locational features, expressing the simple oppositions between location and movement, and movement towards and away from a referent point. These basic notions are accessible at a fairly early stage of cognitive development.

The locative postpositions are possessed names of locations, with the locative suffixes appended, e.g.:  

\[
\begin{align*}
\text{masa} & \quad \text{min} & \quad \text{list} & \quad \text{inan} & \quad \text{den} \\
\text{table} & \quad \text{GEN} & \quad \text{top} & \quad \text{POSS} & \quad \text{LOC} \\
\text{'on the table'} & \quad \text{(literally: \text{'at the table's top'}}
\end{align*}
\]

\[
\begin{align*}
\text{masa} & \quad \text{min} & \quad \text{list} & \quad \text{inan} & \quad \text{den} \\
\text{table} & \quad \text{GEN} & \quad \text{top} & \quad \text{POSS} & \quad \text{ABL} \\
\text{'off of the table'} & \quad \text{(literally: \text{'from the table's top'}}
\end{align*}
\]

It can be seen that the nominal suffixes, originally mastered in relation to nouns (e.g. ev-de ‘in the house’ [literally: ‘house-at’], ev-den ‘from the house’ [‘house-front’]), can be simply extended to postpositions, which are formally nouns.

These locative postpositions are easily analyzable and semantically transparent; that is, each one is the name of a familiar location (e.g. arka ‘back’, yan ‘side’, alt ‘bottom’, etc.). One might predict, then, on formal grounds, that the entire set would be quickly and easily mastered.

However, the underlying spatial-relational notions differ in complexity and have their own developmental history. The order of emergence of locative postpositions in a production test follows a developmental history roughly similar to child speech in Indo-European languages, and matches perfectly an order of acquisition based on cognitive grounds proposed by Johnston and Slobin (1979): ‘in’/’on’/’under’ < ‘beside’ < ‘back with objects having back-front orientation’ < ‘front with objects having back-front orientation’ < ‘between’ < ‘back with unoriented objects’ < ‘front with unoriented objects’. Thus early acquisition of a formal expression can only facilitate language development within limits set by cognitive development upon the content which can be encoded by the child.
7.2. Conjunctions

Clancy, Jacobsen, and Silva (1976) studied longitudinal and cross-sectional speech data between the ages of 1;2 and 4;8 in Turkish, English, Italian, and German, tracking the order of acquisition of conjunction types. They found very similar crosslinguistic orders of acquisition, which they summarize in the following terms, appealing to cognitive pacesetting as the underlying explanation (pp. 79–80):

The very earliest conjoint sentences express notions of symmetric coordination, antithesis, sequence, and causality. Soon after the early causal statements, the first conditional notions emerge, appended to simple directives. At the next stage we find early "when" statements, which are both conditional and temporal. In all cases, the use of "when" expressing sequences of states and events precedes notions of simultaneity, which describe two overlapping actions or states. The last development we find is the use of "before" and "after" in subordinate clauses. The consistency of these findings across the four languages suggests an underlying cognitive basis for the order of emergence we have discussed.

The cognitively-based sequence of development, however, interacts with surface complexity of the corresponding structures. We find the following developmental series in our data: (1) The earliest means for temporal and causal relations between clauses (from about 2;0 to 2;6) is simple juxtaposition of two propositions without the use of any explicit grammatical means of connection. Often one proposition is provided by the adult, the child responding with an addition. Verb inflections indicate tense and modality in each clause. (2) During the next year (about 2;6 to 3;6) we find the use of connectives which do not require nominalization of the verb, either in the form of separate conjunctions between full clauses, such as the equivalents of 'then' and 'so that', or in the form of converbs, in which a suffix on the first, nonfinite verb indicates its temporal relation to the subsequent, finite verb, as in the following examples from children of 3;0 and 3;4:

Ben **gel** -ince **okuyalım**.
I come CONVERB (="when") read+OPT+1PL

'Let's read when I come (back).'

**Bunu** **ben** **gd** -erken **gittiyorum**.
this+ACC I go CONVERB (="while") wear+PRES+1SG

'I wear this while walking.'

(3) After age 4;0 one finds the use of connectives which involve nominalization of the verb for subordination, such as examples discussed above in regard to causal subordination. At this stage, temporal relations can be expressed by relative clauses modifying the word **saman** "time", as in the following example, in which a child of 4;8 explains when it is that his mother does the housecleaning:

**Hamile olduğunu** **gel** -me **diş** -i **saman** **anne**
our+maid come NEG OBJ.REL.PART POSS time my+mother

*yapyor.
do+PRES+3SG

'When our maid doesn't come, my mother does (it).'
(literally, 'at the time of our maid's not coming')

Thus, although there is evidence of cognitive pacesetting of the interclausal relations that can be expressed, development of the various means of expression is clearly tied to psycholinguistic constraints on formal acquisition. Again, we find an early preference for distinctly identifiable separate clauses, and late acquisition of participial forms. It is interesting that the gerund-like verbs seem to be easier than the noun-like participials. The gerunds, more clearly maintaining their verbal identity, may form a bridge towards the eventual recognition of more opaque nonfinite and deverbal constructions.

7.3. Tense-Aspect-Modality

The adult language provides a three-way split between past, present, and future, with further subdivision of present into progressive and habitual, and of past into witnessed and nonwitnessed. The child, however, begins with a simpler set of distinctions, similar to those formed by children speaking a variety of other types of languages. The course of development goes from a cognitively-based framework of distinguishing between punctual vs. ongoing, dynamic events, to the later marking of states, and eventually to the set of linguistically-based distinctions encoded in the language.

Aksu (1978) has documented a developmental sequence of tense forms in a longitudinal study of three children beginning at 1;9. Two verb inflections were present by 21 months, used to mark aspectual (event characteristics) rather than tense distinctions. The past tense, -**di**, encoded punctual changes of state resulting in immediately observable end states at the time of speech (completeresultant aspect); the progressive -**fyar** marked durational events. The -**d** suffix evolved into a general past tense, as the child became cognizant of the fact that a current state is the result of a past process. This process is suggestive of Piaget's early observation (1927; transl. 1969, p. 284) that temporal thought for the very small child is characterized by "living purely in the present and assessing the past exclusively by its results."

A further development in the Turkish past tense system is the distinction between witnessed (-**di**l) and nonwitnessed (-**ml**l) modalities (for psycholinguistic details, see Slobin & Aksu, 1982). The -**ml** inflection is used in the adult language to encode inference from physical evidence of a past state of
affairs, as well as hearsay—i.e. to distinguish directly-experienced events (\(-df\)) from indirect experience (\(-mdg\)). In child speech, the \(-mdg\) inflection emerges later, first being limited to picture descriptions and story-telling (among its standard uses), and for the encoding of states with some stative verbs. For example, a child of 2;3, looking at a picture book, said of a stative condition: \(o\text{d}ur\text{-}m\text{sg}\/\text{y}r\text{a}\) 'it stand-mdg (=stood there)', using \(-mdg\), followed by a description of a dynamic event with \(-dl\): \(\text{ad}am\text{-}v\text{ar}\text{-}du \text{e}g\text{a}\) 'the (man) hit-dl (the) donkey'. Thus the first use of \(-mdg\) simply refers to a stative event without carrying any inferential connotation. At this stage there is a distinction between ongoing event (\(-lyor\)), past event (\(-dl\)), and state (\(-mdg\)). Later, \(-mdg\) evolves into a past-tense marker of indirect experience. The cognitive link in development is apparently from a current state to inference of the preceding process, just as the \(-df\) past tense evolved from immediate changes of state to past processes generally. Thus, at first, the cognitive processes underlying the development of both past-tense forms are similar, with the \(-mdg\) form emerging about three months later than the \(-df\) form. This lag may be due to the added complexity of the act of making an inference about a past process as compared to that of reconstructing the process from memory on the basis of its observable end results. Both forms gradually extend to refer to events of the nonimmediate past, but clear differentiation of the two forms is not stabilized until about 4;0. The nonwitnessed modality clearly requires some advanced cognitive skills, including the abilities: (1) to distinguish between different kinds of knowledge on the basis of their source, i.e. direct versus indirect, (2) the construction of an information-speaker relationship, i.e. the informational perspective of a speaker, and (3) the ability to recognize what constitutes justifiable evidence for the assertion of indirectly acquired information in the language. As suggested in Section 8, below, formal marking of this modality may even play some role in drawing children's attention to the relevant distinctions.

The latest phase in the acquisition of these forms is the emergence of the hearsay function of the \(-mdg\) form. Marking information for its source seems to be the most complex function cognitively, in that it requires the child to consider different informational perspectives at the same time. The overall sequence of past-tense development, analyzed in detail by Aksu (1978), shows a subtle interaction between cognitive and linguistic abilities in regard to notions of temporality, evidentiality, and communication.

Savajar (1983) and Savajar and Gee (1982) have recently developed the notion of “activity type” to situate patterned use of language forms in a framework of interaction and interaction as well as cognitive factors. Sava?ar has explored the development of future reference in Turkish from this point of view. He finds an early level in which the future tense morpheme \(-E\text{ek}\) is used to express both the child’s own intentions to act, and the consequences or results of her actions. Later, distinctions emerge between these future perspectives. By 2;4 some children distinguish intentions and consequences, using the following forms in different types of activities: (1) The optative is used in joint play, in which child and adult plan future actions. Savajar considers the optative to express a consequence of the child’s own desires with collective motivation or sanction for carrying out these desires. “The optative seems to identify an action as belonging to a conventionally coded and intersubjectively motivated activity, ...” (She uses the optative whenever she regards her actions as being dependent upon the approval of her (adult) interlocutor) (1983, p. 49). (2) Person future tense \(-E\text{ek}\text{-}lm\) is used to express actions the child intends to carry out on her own. (3) The assistive \(-ir\) is used to describe the results of the child’s actions, without focusing on the child as actor.

Any discussion of cognitive pacesetting of linguistic development, accordingly, must be embedded in a conception of the communicative and social activities in which particular forms are used. A similar discussion of activity types in regard to the past tense, for example, could add depth to the finding that the hearsay use of \(-mdg\) is a late development. The form is undoubtedly conceptually complex; however, at the same time, we need to know more about the kinds of discourse situations in which children are called upon to make distinction in regard to source of information. Looked at most broadly, “cognitive” pacesetting of language acquisition embraces not only the concepts underlying particular grammatical and semantic distinctions, but also the child’s conceptualizations of the contexts and goals of talk.

8. Linguistic Pacesetting of Cognitive Development

There is no evidence that aspects of Turkish acquisition influence the cognitive development of Turkish children. The precocious acquisition of inflectional morphology has no obvious effects on other aspects of development, though this may be an interesting topic for future research. An intriguing research task would be to investigate the possibility that marking of the distinction between direct experience and inference/hearsay might make Turkish children more sensitive at an earlier age to issues of evidence, point of view, and source of information.

It is also worth considering the possible influence that certain distinctions may have on social cognition. Such evidence can be obtained from studies of the acquisition of different social functions of language which require control over an interacting set of social variables and roles (e.g., forms of address, polite requests, honorifics, verbal argumentation). In a developmental study of requests, Aksu (1973, 1974) found the politeness requirements underlying differently early age to issues of evidence, point of view, and source of information. The order and age of acquisition of the different surface realizations were found to be similar in the two languages. The most polite forms expressed in the interrogative (embedded imperatives) were acquired latest. This
is despite the fact that question formation is an early acquisition in Turkish, due to morphosyntactic simplicity. Given that the syntactic means in question is used much earlier for different functions (in this case, asking information questions or making declarative statements with the sorist or optative tense-aspect-modality inflections), though not for the pragmatic function, the reason for late emergence of polite forms must be either (a) some underlying cognitive ability, or (b) the underlying knowledge of the relevant social-conventional rules for that function, or both. To the extent that making polite requests rests on the cognitive ability for taking the point of view of the other—recognizing that s/he has an option for noncompliance, and the like—we have another instance of cognitive patterning of linguistic development. On the other hand, evidence shows that children acquire the polite forms as a result of overt verbal socialization by adults (as discussed in Section 9.4 below). That is, the linguistic options that the child is trained to utilize in different contexts bring about learning of the critical social differentiations regarding status relationships, and thus influence the acquisition of knowledge of social conventional rules. As such, we have an instance of linguistic patterning of cognitive development. Indeed, Halliday (1973) has stressed this dependence, pointing to the reciprocal interaction between the semantic system of a language and the learning of the social system.

In Turkish, there is the additional marking of status relationships with a sen-siz ‘tu-vous’ distinction which children are explicitly taught to observe. The presence of such a distinction in the language might facilitate the discovery of rules of social interaction prevalent in the culture. Comparative studies between languages making such distinctions might reveal interesting facts about the facilitative effects of language on social development.

Similarly, use of the linguistic medium in the teaching of culturally effective modes of negotiation has been observed by Schieffelin (1979, 1985) in a Kaluli-speaking New Guinea tribe, suggesting the value of comparative developmental study of discourse functions of language. Clancy’s observations (1985) on the early acquisition of the pragmatics of Japanese sentence-final particles also point to linguistically-mediated learning of norms of social interaction.

9. Input and Adult-Child Interaction

9.1. Word Order

The input is characterized by variable word order, employed in normal pragmatic fashion by adults in speaking to children (see Slobin, 1975, for crosslinguistic comparisons and Turkish examples). Although SOV is the dominant order, it represents only 48% of adult speech in a broad sample of input to preschoolers. In a sample of 500 adult utterances to a child of 3;2, the first noun in the sentence was the subject only 47% of the time. (Consequently, over half the sentences addressed to the child began with a case-inflected noun.) In addi-

tion, adults change word order in the face of noncomprehension or noncompliance on the part of a child, often resulting in extensions and elaborations of the child’s utterance in a different order than that initially used by the child. Consider, for example, the following interchange between an adult and a girl of 2;4, in which the child’s OV utterances are first responded to in VO order (confirming the child’s request), and then responded to in VO order (foregrounding the adult’s insistence that the act be carried out):

Child: Ben onu koyayım mı?
1sg ACC put OPT Q
‘Should I put it (in)?’

Adult: forest Onu da key bakalım,
put it+ACC too put let’s see
‘Put it (in)! Let’s see you put that one in too.’

Child: Onu da koyayım mı?
it+ACC too put+OPT Q
‘Should I put that one (in) too?’

Adult: key bakalım onu da,
put let’s see it+ACC too
‘Let’s see you put that one in too.’

The input, therefore, provides little basis for the induction of word-order rules to identify basic grammatical relations, while providing ample basis for the induction of pragmatic word-order rules. Indeed, this is consistent with the findings reported above in regard to early and appropriate use of pragmatic variations in word order. Furthermore, as discussed in Section 12.1.2, below, Turkish children do not use word-order strategies in sentence comprehension tests (Slobin & Bever, 1993), relying instead on case inflections as signals of grammatical relations. Data of production and comprehension thus demonstrate that Turkish children have accurately induced the roles of both word order and inflection in the input language.

9.2. Inflection

The input does provide ample opportunities for the discovery of inflectional principles. At an early period, as pointed out above, unanalyzed forms (onomatopoids) picked up from parental speech often contain the equivalents of English function words, since these tend to be suffixed morphemes, usually bearing stress, and therefore part of imitated lexical material. Roots are generally mono- or bisyllabic, so that most words will be imitated along with grammatical morphemes, providing the very young child with a rich data base for the induction of
grammatical elements. As a consequence of this sort of morphological structure, the input precludes telegraphic imitation. Even short imitated sentences tend to contain the requisite grammatical morphology.

Question-answer sequences clearly exemplify the grammatical morphology, since the same affixes appear on questions and corresponding answers. The common adult-child interaction routines may thus function to direct attention to suffixes, since they remain constant across question and answer. For example, a parent asks a 2-year-old, "Kimi gördün?" (Whom did you see?) (with the accusative inflection on the question word, kim) and the reply is "Ahmedi ot Murado" (Ahmedi or Murado), providing a name with the same accusative inflection. Similar grammatical parallelism is seen in all question-answer pairs.

In addition, such correspondence between the affixes of question-answer pairs might be functional for the differentiation of the various "wh-words" from one another and the discovery of conjonction or adverbal structures that would be semantically appropriate in their answers. For example, the three forms of the question "why", ne-DEN, n-ICIN, and n-YE, share the same affixes with three different causal connectives, on-DAN 'that-ABL' (= "from that", i.e. "because of that"), o-nun ICIN 'that-GEN for' (= "for that", i.e. "for that reason"), and di-YE 'say-DAT' (= "for"), among a set of others. This might be why children up to 3;0 years can produce a response which is semantically empty or irrelevant but contains some kind of causal connective indicating the correct recognition of the question type (Aksu, 1975). Thus, input is significant in leading the child to linguistic structures from surface cues, but the conceptual content of language is dependent on the child's cognitive developmental level.

9.3. Discourse Scaffolding

Adult-child discourse provides a (a) skeletal structure or frame which constitutes a base for the construction of the child's utterances, (b) the context in which the child can simultaneously exploit and master the means for establishing cohesive relations in his or her language, and (c) the linguistic content to be acquired. Clear examples of the interactive role of discourse can be seen in the use of anaphoric reference and ellipsis, which allow for the communication of intentions in "grammatically incomplete but contextually appropriate and interpretable sentence fragments" (Lyons, 1977, p. 589). A relevant Turkish example is the acquisition of causal connectives (Aksu, 1975), which were found to emerge first in response to adult questions and only later in spontaneous utterances. Furthermore, forms that were acquired first were those which can make deictic or anaphoric reference within the situational or verbal context (namely, iste, a deictic adverb; onden and onun için, demonstrative pronouns marked for the ablative and genitive cases, respectively). These forms thus allow the child to build on the prior adult utterance, freeing him/her of the necessity of constructing an entire conjoined cause-effect statement. As discussed above, structures which conjoin two clauses in complex syntactic interdependence emerge later (finalizers -diĘ için and -mEK için). The possibility of ellipsis between speakers, however, facilitates the acquisition of both types of connectives, with the parent providing a portion that the child can build on.

9.4. Politeness Norms

Rules that underlie the different social functions of speech are implicitly or explicitly presented to the child in the course of social interaction. Middle-class Turkish children go through an explicit socialization process for polite requests in which they are repeatedly prompted by adults to "talk nicely." Request forms expressing degrees of politeness are acquired in a progressive sequence between the ages of 2 and 4: (1) ver 'give' (bare imperative); (2) ver-sene 'give' (imperative + "softener"); (3) ver-ir-mi-siniz 'will you familiar give' ('give-AORIST-Q-2SG'); (4) ver-ir-mi-siniz 'will you polite give' ('give-AORIST-Q-2PL'). Most explicit adult attention is paid to the use of the more polite forms marked by the second person plural, lexical forms like 'please', and polite vocatives. This is one aspect of language development in which one observes conscious modeling and reinforcement on the part of adults.

10. Individual Differences

Turkish developmental data have not yet been analyzed in terms of individual differences.

CONCLUSIONS

11. Reorganizations in Development

Under this heading we suggest some development periods in the acquisition of Turkish during which the child has to carry out a reorganization of the underlying principles of some domain of the language in order to move on towards a more mature system.

11.1. Simple and Complex Sentences

Inflectional strategies for comprehending simple sentences develop early in Turkish—by 2;0 in the Slobin and Bever (1982) experimental study. Case inflections clearly identify grammatical roles of nouns, and are used consistently and productively in speech well before 2;0. At some point, however, Turkish children must come to terms with the fact that matters are not so direct in embedded clauses of various types, with nonfinite or participle verbs and noncanonical casemarking. As discussed in Section 12.1.3, below, children as old as 4;8 fail to identify relative clauses in an experimental task, acting out only main clauses according to strategies for simple sentences. We have noted numerous problems
in mastering relative clauses and complement structures in child speech. A major
reorganization for Turkish children is the need to recognize that not all verb
eadings are part of the finite conjunctional patterns, followed by a period of
protracted sorting out of the functions of the various means of indicating clause
type on the verb. As we suggested above, in the discussion of cognitive pace-set-
ting and the development of connectives (Section 7.2), adverbial converters may
provide the child with the first clue to this necessary reorganization in sentence
structure. Eventually, the child must realize a clear distinction between simple
sentences and main clauses, on the one hand, and all subordinated and embedded
clauses on the other.

11.2. Lexical Reorganization

The errors of overmarking and undermarking observed with regard to passive
and causative particles strongly suggest that a reorganizational process is respon-
sible for the final correct organization of the verbal lexicon. At some point there
must be a reanalysis of the underlying semantic structure of certain verbs, such as
lexical causatives and inherently passive or reflexive verbs, resulting in the
abstraction of a subcategory for which a given rule does not apply (e.g., verbs
which cannot be transitivized by addition of the causative particle). In these
domains the child must come to realize what Clark and Hecht (1982, p. 6) have
called the “principle of conventionality”: “For certain meanings, there is a con-
vventional word or word-form device that should be used in the language
community.” Conventionality must come to override productive word-formation
principles for particular verbs.

In addition, the verb lexicon eventually be organized to take account of the
valences required by individual verbs and classes of verbs. It appears that all
acquisitions of verbal predicates involve a process of analysis of the underlying
semantic configuration inherent in the verb. As part of the Berkeley Cross-
Linguistic Acquisition Study, children between the ages of 2:0 and 4:0 were asked
why-questions involving four different verbs (‘run’, ‘bite’, ‘drink’, and ‘scratch’), such as ‘Why do dogs bite?’ Developmental changes in response to
these questions suggest that such a process of forming predicate configurations
proceeds through the following phases: (1) a global understanding of the predi-
cate only in terms of the general nature of the action involved; (2) analysis of the
predicate into its different underlying components, with differential focus or
value attached to each, depending on the nature of the verb (e.g., focus on the
patient of transitive verbs, on the manner of activity for intransitive verbs, etc.),
verbalizing all of the associated arguments (e.g. Agent-Action-Patient).

11.3. Tense-Aspect Reorganization

The eventual acquisition of the semantic functions of marking the past of
direct experience (‘-d’) versus the past of indirect experience (‘-md’), also seems to
be the result of a reorganization of the underlying semantic domain, as discussed
in Section 7.3, above. The child must come to realize the range of notions—
temporal, modal, and aspectual—that control the use of verb inflections.

11.4. Referential and Pragmatic Use of Pronouns

As discussed in Section 6.1.2, above, Slobin and Talay have found that
children appropriately prepose and postpose subject pronouns in response to
pragmatic issues of information and focus. However, it seems that, overall,
subject pronouns appear more frequently in the child transcripts than they would
in adult speech. That is, although the pragmatic functions of pronoun placement
appear to have been mastered, children also hold onto pronouns for their strictly
referential value, overusing pronouns where adults would more normally delete
them. Thus children have to reorganize their rules for language use at some
point, realizing that the semantic information carried by a pronoun can be con-
veyed by the corresponding verb inflection, while overt use of the pronoun itself
conveys specifically discourse-marked information. Similar overmarking is
noted in regard to the acquisition of other languages in this volume, suggesting a
general developmental transition from explicit surface marking of underlying
semantic notions to more flexible use of elaborated and condensed expression of
a particular notion in relation to broader discourse needs than simply referential
communication.

12. Operating Principles

The notion of “Operating Principles” for language acquisition comes from
Slobin (1973), and has been elaborated by MacWhinney (1978, 1985) and Peters
(1983, 1985). Operating principles are strategies for the perception, production,
and analysis of speech. They are part of the initial equipment of language
acquisition, and are phrased as “self-instructions” to the language acquisition
device. (The phrasing, however, is simply for clarity; equivalent formulations in
third-person passives or in invented symbolic notations would not change the
status of Operating Principles as initial strategies of processing and structuring
language.) The principles suggested in this chapter build on principles suggested
in Slobin (1973, 1982), but precede the reformulations presented in Slobin’s
chapter in this series (1985).

The Operating Principles suggested below are presented in three groups: (1)
receptive principles, which guide processes of perceptual segmentation, analy-
sis, and interpretation of speech; (2) speech production principles, which play a
role in the child’s own speech; and (3) rule formulation principles, which guide
the child in the construction of grammatical systems.

12.1. Receptive Principles

12.1.1. Ends of Units. Slobin’s (1973) Operating Principle, “Pay attention
to the ends of words,” is probably at play in the precocious acquisition of
suffixed morphology and postpositions. Virtually all grammatical morphemes
are of this sort in Turkish; in addition, they are always syllabic and generally receive stress. These factors make grammatical morphemes perceptually salient and available to immediate memory. Most of these morphemes are joined to the preceding word by vowel harmony. Since roots are generally short, with a high proportion of monosyllables, even very early imitated words will be stored with their associated grammatical markers, thus providing a stock of useful "amalgams" (MacWhinney, 1978) for later grammatical analysis.

12.1.2. Local Cues. A number of phenomena, summarized by Slobin (1982), point to the role of surface cues to underlying structure in facilitating children’s sentence processing in Turkish (as reflected in the Operating Principle: "Underlying semantic relations should be marked overtly and clearly"). Ammon and Slobin (1979) introduced the notion of "local cue" to explain the facilitatory role of case inflections and verb participles in sentence comprehension tests. On the level of simple sentences (Slobin & Bever, 1982), Turkish children as young as 2;0 correctly interpret all six possible orders of subject, verb, and object when asked to act out reversible transitive sentences with toy animals (e.g. ‘the horse kicks the cow’), whereas children acquiring a fixed word-order language like English do not correctly interpret noun-verb-noun sequences until about 2;6. Interpretation of the Turkish sentences can be based simply upon noticing which noun has an accusative inflection, whereas the word-order pattern of the entire English sentence must be taken into account in identifying subject and object. The accusative inflection is a local cue in that it operates on a localized sentence element. It applies to a particular noun, regardless of its position, and can be processed without taking the entire sentence into account. (Thus word-order languages may impose a greater burden on short-term processing capacity, with a correspondingly later emergence of word-order strategies in sentence comprehension.)

Ammon and Slobin (1979) have made a similar argument in regard to a comprehension test of causative-instigative sentences (e.g. 'the horse makes the camel run'). In Turkish, the instigated animal (the camel) is marked with the accusative inflection, and the verb contains an infixed causative particle, as discussed above. For example, the Turkish version of this particular test item was:

\[
\text{At deve -i koq -tur -run}\]

horse camel ACC run CAUS OPT

Both of these cues (ACC and CAUS) seem to facilitate comprehension of such sentences in comparison with the Indo-European periphrastic means of expression (make ... run).

Another sort of local cue may play a role in facilitating comprehension of constructions with 'before' (Slobin, 1982). Turkish grammar honors the fact that the consequent clause in a before-construction may encode an event which has not occurred (e.g. 'I caught the glass before it broke'). This notion is reflected in the presence of a negative particle in the subordinate clause (something like, 'the glass not-having-broken first, I caught'). This particle may well function as a local cue, making the meaning of such constructions more accessible to the young child.

12.1.3. Transfer of Processing Strategies. There seems to be a processing principle: 'Attempt to apply the strategies for processing simple sentences to complex sentences.' We have noted that 2-year-olds use an inflectional strategy to identify the object in reversible transitive sentences, and that slightly older children use the same strategy to identify the object in causative sentences in comprehension tests. The same strategy is used by 4-year-olds in attempting to interpret complex relative clause sentences in tests. In this test (Slobin, 1982; following Sheldon, 1974), children were asked to act out relations between three animals (e.g., 'The donkey that the sheep touches rubs the camel'). The four sentences and the relevant results are presented in Table 9.1. None of the children tested (up to age 4;8) correctly performed a single one of these instructions (although English-speaking children of a comparable age can correctly interpret some of these forms). Generally a single action was carried out, and the nature of such partial responses reveals the use of an inflectional strategy. As one would expect, the children consistently ignored the embedded verb, which is always a nominalized form (perhaps even unrecognizable as a verb) and performed the action of the final verb, which appears in the normal position for Turkish. The patient was always the accusative noun in its normal preverbal position at the end.

<table>
<thead>
<tr>
<th>TABLE 9.1</th>
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<tbody>
<tr>
<td>Schematic Descriptions of Turkish Relative Clause Constructions*</td>
</tr>
<tr>
<td>(1) subject embedded, object focus:</td>
</tr>
<tr>
<td>Sheep-GEN touch-OBJ.REL-PART-POSS DONKEY camel-ACC rubs.</td>
</tr>
<tr>
<td>(2) subject embedded, subject focus:</td>
</tr>
<tr>
<td>Sheep-ACC touch-SUBJ.REL-PART DONKEY camel-ACC rubs.</td>
</tr>
<tr>
<td>(3) object embedded, object focus:</td>
</tr>
<tr>
<td>DONKEY camel-GEN rub-OBJ.REL-PART-POSS sheep-ACC touches.</td>
</tr>
<tr>
<td>(4) object embedded, subject focus:</td>
</tr>
<tr>
<td>DONKEY camel-ACC rub-SUBJ.REL-PART sheep-ACC touches.</td>
</tr>
</tbody>
</table>

*Animal name in capital letters indicates participant most frequently selected as agent of single action. (Patient was always the third animal, given in the accusative before the final, finite verb.)
of the sentence. Local cues play their role in the choice of agent. Turkish children do not pick the first noun as agent, which one would expect in the case of word-order strategy, just as they do not pick the first noun as agent in the transitive sentence comprehension test (unless it is in the uninflected, subject case). Their procedure seems to be to scan the sentence for the first uninflected noun (i.e., subject noun), as indicated by the animal name in capital letters in Table 9.1. If the initial noun is marked as nonsubject (by the accusative or genitive inflection) it is passed over, as in the transitive task. Thus, several years after the acquisition of simple sentences Turkish children employ the same strategies in encountering complex sentences. In the case of sentences with relative clauses, this strategy results in isolation of the main clause (which may eventually facilitate the comprehension of such constructions, along with the necessary reorganization in comprehension of verbmarking discussed above).

12.2. Speech Production Principles

12.2.1. Analysis Reflected in Enunciation. There is some evidence for a speech production interpretation of Slobin’s Operating Principle (1973), “Underlying semantic relations should be marked overtly and clearly.” Shortly after the emergence of the agglutinated inflectional systems in the second year of life, there seems to be an exaggerated tendency to clearly mark morpheme boundaries in some utterances, especially those containing long strings of agglutinated mor-
phemes. Some children have been observed to put heavy stress on each mor-
pheme, with a slight pause between morphemes. This is especially evident in verbs containing particles such as negative, ablative, and tense-aspect.

12.2.2. Reliance on Situational Support. A speech production principle that would apply at the level of discourse can be suggested. As was discussed above, production of question responses and complex spontaneous utterances appears to be facilitated by the presence of some of the elements of the proposition in the preceding adult or child utterance, which can then be presupposed through anaphoric reference and ellipsis. That is, the context of discourse provides some global cues that trigger the use of cohesive mechanisms that operate either on the whole of a sentence or on an element of it. To the extent that procedures of cohesion allow for economy of expression, their use can be said to facilitate production. Thus, there may be an Operating Principle which states: “Presuppose as much relevant propositional content as possible, either from the situational or the linguistic context; proceed onwards using local cues you may have picked from the presupposed material.”

12.3. Rule Formation Principles

12.3.1. Semantic Transparency. On the rule-formation side, the Operating Principle to mark semantic relations overtly and clearly plays a role in facilitating the early acquisition of the morphological system. Each morpheme tends to express a single element of meaning, without fusion (e.g., noun + plural + possessive + case), and there are almost no homonymous suffixes. The system is close to a 1:1 mapping of semantic elements and surface forms. Many of the results suggested above for error-free acquisition of this system undoubtedly relate to the ease with which rule systems of this sort can be acquired by young children.

Some of the errors discussed above also reveal a tendency to prefer uniform, 1:1 mappings of form and meaning. The insertion of redundant or erroneous causative particles is one example. It can also be argued that one of the reasons for late acquisition of relative clause and verb complement constructions is that they involve embedded sentences which no longer look like sentences, thus posing difficulty for a rule-formational system oriented to clear mapping from underlying to surface form.

12.3.2. Limited Plurifunctionality. There may be an Operating Principle to the effect that: “Grammatical functors should have limited and consistent sem-

tic functions.” In regard to the case-infl ective system, diversity of func-
tions of a given surface form should pose difficulties. This may be one reason why children avoid interpreting a noun marked by the genitive case as the subject of a relative clause, in sentence-comprehension experiments. Similarly, we have noted above that children avoid marking the subject with the genitive case in some verb complement constructions.

12.3.3. Direct Order of Mention. Although Turkish word order is quite free within sentences, there is evidence for a preference to order conjoined clauses on semantic grounds. Evidence from free speech and response to why-

questions (Âkau, 1975) indicates a preference for order of mention to mirror the order of occurrence of referent events, as attested in numerous studies in English (e.g., Clark, 1973). The Turkish child has several options in conjoining causally related clauses. The simplest option, on formal grounds, is the use of the con-
junction â€œbecause”, which joins two full sentences, as in English. Howev-
er, this option requires reversed order of mention (e.g., “I woke up because the clock rang”). In order to maintain direct order of mention, Turkish requires that the cause be expressed as a nominalized participle followed by a postposition indicating causal relationship (something like, “the clock’s ringing therefore, I woke up”). These are the sorts of constructions, as we have pointed out, which children tend to avoid. However, avoidance of morphological and syntactic complexity in this instance would lead the child to the cognitive problems of reversed order of mention. The solution is to attempt the more complex morpho-
syntactic forms and fail to be fully grammatical, maintaining direct order of mention. Thus children as old as 4:8 will incorrectly use these forms, making errors in participle formation or replacing the participle with the finite verb, rather than using the formally simpler because-construction.
13. Suggestions for Further Study

The set of 12 proposed factors facilitating morphological acquisition in Turkish can be examined by studying the acquisition of other inflectional languages, making it possible to pull apart some of the factors.

Faced with difficulties in forming relative clause and verb complement constructions, the Turkish child is driven to devise various sorts of circumlocutions and periphrastic constructions. It would be valuable to study such forms in order to better understand the range of expressive options available to children. Comparisons with pidgin and creole languages may be instructive in this regard (Slobin, 1977), as well as examination of historical changes in Turkic relative clause constructions, both under internal pressures and in response to language-contact situations with languages using more transparent relative clause constructions (Slobin, in press).

The distinction between witnessed and nonwitnessed modalities in the past tense may have effects on cognitive abilities to attend to sources of evidence and draw inferences. A comparative cognitive study between Turkish children and children in languages lacking this distinction would be informative.

We need to have much more data on a number of issues: earliest stages of productive grammar; adult input; individual differences; coordination of the large set of verbal affixes for modality, aspect, and tense; pragmatic uses of word order and particles; relations between grammar and discourse in various genres; development of prosody and its interaction with semantics and pragmatics.

REFERENCES


