Aspect, tense and modality: theory, typology, acquisition
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Chapter 10

Acquisition of TMA across Languages

10.1 INTRODUCTION

In Chapter 8 it was shown that FG makes relevant predictions for the acquisition of TMA forms in American English. Firstly, hypothesis 6 was supported (8.5-8.7):

H6: The acquisition order of TMA operators follows the order of the Scope Hierarchy, $\pi_1$-operator $\subseteq$ $\pi_2$-operator $\subseteq$ $\pi_3$-operator. Because of increasing complexity and decreasing communicative need, the acquisition order of TMA expressions is $\pi_1$-operators before or at the same time as $\pi_2$-operators, and $\pi_2$-operators before or at the same time as $\pi_3$-operators.

The qualitative and quantitative analyses of spontaneous speech showed that $\pi_1$-operators are acquired at the same time as or before $\pi_2$-operators and at a faster rate. $\pi_3$-Operators are acquired last. This means that English children do not go through a stage in which $\pi_2$-operators are present, but $\pi_1$-operators are not, or in which $\pi_3$-operators are present, but $\pi_2$- and $\pi_1$-operators are not. This is in accordance with the Scope Hierarchy which predicts that there is an implicational relation between the presence of operators, such that $\pi_1$-operators are implied by $\pi_2$-operators and that these in turn are implied by $\pi_3$-operators (H3, 5.4.3). As set out in 5.4.6 the rationale behind H6 is that modifying a smaller part of the clause is a less complex communicative function and semantically less abstract than modifying a large part of the clause. If children acquire least complex functions and most concrete semantics first, operators with scope over the predicate are acquired with more ease than operators with scope over the predication or over the proposition.

Secondly, some support was found for H7:

H7: At any stage in language acquisition, a single expression can only cover adjacent regions in semantic space. As a result, a polysemous or portmanteau expression will only have semantic functions with similar or adjacent scopes.
As argued in 5.4.3 it is to be expected that polysemous expressions reflect semantic relatedness of meanings. This should hold for adult languages (H3b) as well as for any stage of child language (H7). H7 boils down to the prediction that there will be no expression in any stage of child language that can function both as a $\pi_1$- and as a $\pi_3$-operator, without also functioning as a $\pi_2$-operator.

Although the data on English supported the hypotheses, an implicational hierarchy, such as the Scope Hierarchy, should not only account for the acquisition of one specific language, but for the acquisition of every language (see 1.4). Is the acquisition pattern of TMA expressions in English language-specific or is there a universal acquisition order of these expressions? Typologically different languages need to be compared in order to make generalizations possible. Therefore, in this chapter H6 and H7 will be tested across languages. The acquisition data of TMA expressions in 24 languages will be explored. In the discussion of the data, it is important to keep in mind the predicted acquisition order. In Figure 10-1 H6 is restated in terms of the acquisition order of semantic domains. Provided that grammatical markers of the distinguished domains are present in a specific language, the hypothesis predicts that one or more semantic functions of the leftmost domains should be acquired before one or more semantic functions of the domains in the middle, which in turn should be acquired before one or more semantic functions of the rightmost domains.

<table>
<thead>
<tr>
<th>$\pi_1$</th>
<th>$\pi_2$</th>
<th>$\pi_3$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspect</td>
<td>Property quantification</td>
<td>Tense</td>
</tr>
<tr>
<td>Property quantification</td>
<td>$&lt;$</td>
<td>Event quantification</td>
</tr>
<tr>
<td>Participant-oriented modality</td>
<td></td>
<td>Event-oriented modality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proposition-oriented modality</td>
</tr>
</tbody>
</table>

Figure 10-1. Predicted acquisition order for semantic domains

Children should not necessarily acquire all operators with narrow scope ($\pi_1$) before all operators with medial scope ($\pi_2$), or all operators with medial scope before all operators with wide scope ($\pi_3$), but they are expected to start out with $\pi_1$-operators, since they modify the smallest part of the clause. After children have found out how to modify the predicate, at least by one $\pi_1$-operator, they will learn to modify a larger part of the clause, the predication, and they will start acquiring $\pi_2$-operators. Finally, children will learn to modify the complete proposition by using $\pi_3$-operators.

This chapter is organized as follows. In 10.2 the methodology of this study will be discussed. In 10.3 an extensive overview of the data on TMA acquisition
in different languages is presented. The first discussion is in general restricted to the acquisition of different TMA forms. An intermediate conclusion of these data is presented in 10.4. However, as already set out in 9.1, the Scope Hierarchy is relevant for the linguistic encoding of specific communicative functions: modification of the predicate, the predication or the proposition. It is therefore important to examine what the function is of TMA forms in child language, and not only whether the forms are used productively, for it can be the case that the forms are used productively but with non-adultlike meanings. In Chapter 9 it was argued that early tense aspect forms in English should not be interpreted as marking situation type (as claimed by the Aspect Before Tense Hypothesis and the Prototype Account). The development of discourse topics appeared to provide an adequate explanation for the different distributions in adult-adult language, input to the children and child language. However, if children’s tense and aspect forms do not mark situation type, this does not necessarily imply that they have adultlike meanings. For English, it was shown that the conversations of children are at first limited to the context of the here-and-now. Only if children’s TMA forms in this context function correspondingly to the adult stage, can we speak of adultlike use. Therefore, in 10.5, the focus will be on the function with which the early TMA forms are used across languages. This discussion will show that there are many crosslinguistic similarities in the acquisition order of TMA functions.

10.2 Methodology

10.2.1 Data collection

The crosslinguistic study of the acquisition of TMA systems is based on studies reported in the literature. Ideally, the same languages studied in Chapter 7 would have been further analyzed here, but for most of these languages, there are no studies on the acquisition of TMA. Information was found on the acquisition of TMA in 24 languages from 13 language families, including Altaic, Australian, Bantu, Eskimo-Aleut, Finn-Oegric, Indo-European, Japanese, Kartvelian, Korean, Mayan, Semitic, Sino-Tibetan and Trans-New Guinea. An overview of the languages is presented in Appendix F. The only two languages that overlap with the languages in Chapter 7 are West Greenlandic (or Inuit) and Cantonese. The sample in this chapter is biased towards Indo-European languages, because most studies on first language acquisition concern Indo-European languages. However, the different language

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\(^1\) I tried to include all languages for which information was available on the acquisition of TMA. Undoubtedly, I have missed some sources.
branches within the Indo-European family show quite different TMA systems (see 10.3.6).

The available information sources on the acquisition of the different languages are far from uniform. First of all, there is considerable variation in the amount of detail presented for each language ranging from a few remarks and restricted descriptions of the acquisition of TMA to in-depth investigations on a specific semantic domain or morphological form. The number of children studied for the different languages ranges from only one to more than 50. Furthermore, the data on which the acquisition order is based are very diverse. Most studies are based on spontaneous longitudinal data, but some studies are based on cross-sectional data or experimental findings.

Further important differences concern the productivity criteria used in the studies. As discussed in the introduction to Part III, establishing the order of acquisition depends largely on the criteria used to determine when a form or function is acquired. In Chapter 8 I applied several criteria for productivity: relative frequency, variation in use and contrastive use (see 8.2). For the crosslinguistic study, I had to use less strict criteria, since many studies do not explicitly discuss the productivity criteria applied. Language acquisition is very often described based on first emergence of forms or (absolute) frequency of use. The information that is based on these criteria is considered not very reliable, since the first forms and the most frequent forms are likely to be rote-learned and unproductive. Some authors of the literature studied, however, have applied stricter criteria. For example, a few authors use the criterion of Pizzuto & Caselli (1994: 156) who state that a morpheme is acquired ‘when (a) the same verb root appeared in at least two distinct inflected forms, and (b) the same inflection was used with at least two different verbs.’ This is considered a reliable criterion, at least in this strict form. Some authors changed the criterion to an either/or criterion, which of course substantially lowers the threshold for acquisition. The studies reported in Bittner, Dressler & Kilani-Schoch (2003b) all take the establishment of mini-paradigms as an important cue to productivity. A mini-paradigm is defined as ‘corresponding to a non-isolated set of minimally three phonologically unambiguous and inflectional forms of the same lemma produced spontaneously in contrasting syntactic or situative contexts’ (Bittner et al. 2003a: xvi). Gillis (2003: 192) in this same volume adds that the contrasting context should be interpreted as contrasting lexical contexts. As argued in 8.2, contrastive use of TMA expressions is also a reliable criterion for acquisition.

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2 It was impossible to consult all the available literature for each language. I concentrated mainly on studies that present an overview of the acquisition of a specific language (the chapters in Slobin) or that specifically deal with the acquisition of TMA or verbal morphology on the basis of longitudinal data.
The most important point of variation in the research studied was the main focus of the study. Some researchers concentrated on the acquisition of the adult forms, without discussing the functions of these forms in child language. Others not only described the acquisition of form, but also tried to interpret the functions of the forms in child language. In some cases, this leads to explicit claims that certain morphemes do or do not have adultlike semantics. For example, a claim that is often encountered in the literature is that early past tense forms do not yet mark past tense in an adultlike way, since past forms are only used to describe events in the immediate past. Instead of marking past time, the form is reported to mark ‘completedness’. In the discussion of the data, any information will be reported that the researchers present on the contexts of use of the forms or the semantic interpretation they give of the forms in child language. If there is no information on the function of the forms in child language, this will be explicitly reported. Although I have concluded in Chapter 9 that children do not use early tense and aspect forms to encode situation type, many researchers claim that there is an association between tense and aspect forms and situation type in child language. This will be reported for the relevant languages, not to create the impression that the forms would encode situation type, but rather as background information on the contexts of use of the tense and aspect forms in child language.

10.2.2 Classification of TMA

In order to be able to compare the acquisition order of TMA expressions across languages, these expressions have to be classified in a uniform way. As different researchers use different labels for similar functions, the forms had to be reanalyzed and classified with respect to their semantic function and scope according to the analysis of TMA discussed in Part I. The precise definitions of semantic domains and functions that are applied throughout this thesis were presented in Chapters 3 and 4 and also used in the classification of forms in Chapter 7. Here, I only present an overview of the semantic functions under consideration in Table 10-1, distinguished according to their scope.

For most languages, the classification of the TMA expressions in each language is based on the definitions and translations provided by the researcher(s) of the acquisitional data. I did not consult specific reference grammars on the languages. If the descriptions of the TMA expressions were insufficient to classify a marker in specific terms, such as progressive or permission, it was classified more generally, for example as an operator of aspect or an operator of event quantification.
Table 10-1. Classification of TMA domains and specific semantic functions according to scope

<table>
<thead>
<tr>
<th>TMA Domain + specific semantic functions</th>
<th>Scope over</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aspect</strong></td>
<td></td>
</tr>
<tr>
<td>prospective, ingressive (inchoative), continuative, progressive, egressive / completive, imperfective, perfective, perfect</td>
<td></td>
</tr>
<tr>
<td><strong>Property quantification</strong></td>
<td></td>
</tr>
<tr>
<td>iterative, intensity, semelfactive</td>
<td>Predicate (π1)</td>
</tr>
<tr>
<td><strong>Participant-oriented modality</strong></td>
<td></td>
</tr>
<tr>
<td>potentiality: ability, root-possibility, permission</td>
<td></td>
</tr>
<tr>
<td>disposition: volition, desirability</td>
<td></td>
</tr>
<tr>
<td>weak necessity: weak root-necessity, weak obligation</td>
<td></td>
</tr>
<tr>
<td>necessity: internal need, root-necessity, obligation</td>
<td></td>
</tr>
<tr>
<td><strong>Tense</strong></td>
<td></td>
</tr>
<tr>
<td>past, present, future, non-past, non-future, (± specification of temporal distance)</td>
<td></td>
</tr>
<tr>
<td><strong>Event quantification</strong></td>
<td></td>
</tr>
<tr>
<td>habitual, frequentative, repetitive, distributive</td>
<td></td>
</tr>
<tr>
<td><strong>Event-oriented modality</strong></td>
<td></td>
</tr>
<tr>
<td>potentiality: root-possibility, permission, epistemic possibility</td>
<td>Predicate (π2)</td>
</tr>
<tr>
<td>disposition: desirability, (future)</td>
<td></td>
</tr>
<tr>
<td>weak necessity: weak root-necessity, weak obligation, probability</td>
<td></td>
</tr>
<tr>
<td>necessity: root-necessity, obligation, epistemic necessity (negative)</td>
<td></td>
</tr>
<tr>
<td><strong>Irrealis</strong></td>
<td></td>
</tr>
<tr>
<td>hypothetical, counterfactual</td>
<td></td>
</tr>
<tr>
<td><strong>Proposition-oriented modality</strong></td>
<td></td>
</tr>
<tr>
<td>potentiality: uncertainty, permission</td>
<td>Proposition (π3)</td>
</tr>
<tr>
<td>disposition: prediction, desirability</td>
<td></td>
</tr>
<tr>
<td>weak necessity: weak certainty, weak obligation</td>
<td></td>
</tr>
<tr>
<td>necessity: certainty, obligation</td>
<td></td>
</tr>
<tr>
<td><strong>Evidentiality</strong></td>
<td></td>
</tr>
<tr>
<td>sensory evidence, inference, hearsay, etc.</td>
<td></td>
</tr>
</tbody>
</table>

10.3 **The Data**

The languages included in the study will be discussed under the names of their language family, in alphabetical order. In the discussion of the acquisition of TMA in each individual language, first some general information is given on the language. A short overview of the TMA expressions in the adult stage of the
language is discussed in as far as these expressions are relevant to the data on acquisition. In order to make the approach to the different languages more uniform, the TMA expressions are classified according to the FG analysis of the TMA domain. Like in the crosslinguistic analysis in Chapter 7, the interpretation of the grams is based on the definition and translation presented by the authors (cf. 7.3.2). Secondly, the acquisition of the TMA system is discussed. The data on which the acquisition order is based and the productivity criteria applied are described. If the researchers have provided information about the semantics of the forms in child language, their view will also be presented. Note that in the first discussion of the data, I will strictly report the interpretation of the researcher, not my own interpretation. Thirdly, for each language the reported acquisition order will be compared to the predicted order in H6. If only the acquisition of forms is discussed, then the acquisition order of forms is compared to H6. If researchers have discussed the functions too and claim that specific forms have non-adultlike functions in child language, then H6 is tested on the functions described by the researcher. Since many studies have described the acquisition of tense and/or aspect, but rather few the acquisition of modality, evidentiality, quantification and irrealis, it will often be necessary to concentrate on the acquisition order of a restricted set of TMA expressions.

10.3.1 Altaic: Turkish

Turkish is a language of the Altaic family, spoken in Turkey. It is an agglutinative language with several suffixes for marking TMA. The relevant TMA expressions are presented in Table 10-2. The leftmost column presents the TMA expression; the middle column presents the definition or labels provided by the author and the rightmost column presents the FG classification according to the analysis of TMA as in Table 10-1. Turkish has markers for tense and aspect and also for participant-oriented modality and evidentiality. The different inflections can be combined for example to create a past progressive, V-Iyor-dI, or a future in the past, V-AcAk-dI.

The morpheme –mIş in Turkish is polysemous (Aksu-Koç 1988: 22-24): it functions as an aspectual, a temporal and an evidential marker. As an aspectual marker, it indicates a resultant state, and marks resultative or perfect aspect. It combines with past (V-mIş-DI) and future (V-mIş X-AcAk) to mark past and future perfect. Second, –mIş expresses past tense of indirect experience. The function of past tense marker is naturally related to the aspectual meaning: a process or event can only have a resultant state if it is in its entirety located earlier on the timeline. The past tense interpretation has an additional
Table 10-2. Relevant TMA expressions in Turkish (based on Aksu-Koç 1988: 17-21)

<table>
<thead>
<tr>
<th>Form</th>
<th>Author's definition</th>
<th>FG classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>-di</td>
<td>Past of direct experience</td>
<td>Past (π2) + evidentiality (π3)</td>
</tr>
<tr>
<td>-miş</td>
<td>Perfect</td>
<td>Perfect (π1)</td>
</tr>
<tr>
<td>-iyor</td>
<td>Progressive, ongoingness of event</td>
<td>Progressive (π1) / Present (π2)</td>
</tr>
<tr>
<td>-Ir</td>
<td>Indefinite present, habitual, generic</td>
<td>Habitual (π2)</td>
</tr>
<tr>
<td>-(y)AcAk</td>
<td>Future</td>
<td>Future (π2)</td>
</tr>
<tr>
<td>-ya</td>
<td>Optative; desire and intention</td>
<td>Participant-oriented modality (π1)</td>
</tr>
</tbody>
</table>

evidential feature in that it also indicates that the process is not witnessed, i.e., the past event is not consciously experienced by the speaker, but obtained by other information. It functions in opposition with the past marker –di, which implies that the speaker witnessed the past event.\(^3\) Finally, –miş can be used to express quotative or hearsay. This use is linked to the evidential function of a nonwitnessed event: the evidence for the occurrence of the event can be an observable poststate, but it can also be hearsay. In the quotative function, the end state is not observed and there are no temporal reference constraints anymore. It is possible to combine different functions of –miş, as in V-miş–miş, which is an evidential perfect. It is, however, impossible to combine the past of direct experience with the evidential marker, *V-di–miş.

The acquisition of Turkish TMA expressions is studied by Aksu-Koç (1988; 1998) Aksu-Koç & Slobin (1985) and Aksu-Koç & Ketrez (2003). In all these studies contrastive use of forms is taken as the criterion for acquisition and the functions of forms in the child’s language are explicitly discussed. All studies sketch a similar pattern of development, so that they will be discussed together.

A child acquiring Turkish starts out with bare verbs, without any suffixes for TMA. Already in the one-word stage, children start using inflection to distinguish between modalized and nonmodalized utterances: modalized utterances are the imperative or infinitive forms, used as directives, and

\(^3\) A connection between a perfect and an inferential marker also occurs in Bulgarian, Georgian and Estonian (Comrie 1976), in Lhasa Tibetan (DeLancey 1986), Chinese Pidgin Russian (Nichols 1986) and West Greenlandic (Fortescue & Lennert Olsen 1992).
Aksu-Koç (1988: 74) argues that the meaning of –dI at this stage is ‘completion’ rather than deictic tense. It is mostly used in combination with change of state verbs referring to observable end states at the time of speech. In very few cases -dI was used with activity or stative verbs, for example in the context of playing, when the child acted out an activity in an instant, that would have duration in reality. For example, the child would take a toy pot to the mouth of the doll and back and comment, bu ye-di ‘this ate’. The use of –dI is not yet restricted to contexts of witnessed events and is also used to characterize non-witnessed changes of objects, where –mIş should be used, illustrated by example (1) (ex. 27 in Aksu-Koç 1988: 87):

(1) Situation: picture of apple fallen from a tree.
   ADL: Bu nasıl bir elma? 'what kind of an apple is this?'
   CHI: In-di Descend-PAST.DIREXP
   (child at 2;0) ‘(it) came down’

The marker –yA is in this stage used to indicate intention; it is used to plan immediate activity. The progressive marker –lyor is predominantly used in combination with activity verbs, and to a lesser extent with stative verbs. It is used to refer to ongoing activities or states in the immediate context. It is sometimes used with change of state verbs, mainly in negative statements, when the child meets resistance in carrying out an action, like taking out or inserting an object. The marker is comparable to the present progressive, but for the child it seems to mark ‘ongoingness’ only and not present tense. Aksu-Koç claims that in this first stage, –dI and –lyor mark ‘completed’ versus ‘ongoing’ events rather than past versus present tense, because the predominant contexts of reference are change of state in opposition to states and activities. Children’s utterances are all limited to the here-and-now, to immediate past and immediate future. There is no contrastive use yet: the progressive is not yet combined with past or future tense and there is no opposition between present, past and future tense for specific lemmas (1988: 178).

Around 2;0, children start using the future tense –AcAk spontaneously, although before this age a few instances are attested. The future tense is, just like –yA, initially restricted to refer to immediate intentions. About a month later, the inferential past marker –mIş becomes to be used spontaneously. The
first uses are with stative verbs, making reference to present states (rather than resultant states), whereas –dl is used in reference to completed dynamic actions. The opposition between –dl and –mls in this stage is the combination with dynamic or stative verbs, respectively; –mls is not restricted to nonwitnessed events, and –dl is not restricted to witnessed events. From age 2;0 onward, –dl, –Iyor and –AcAk gradually acquire deictic tense function. The past marker –dl is gradually used more frequently for non-immediate past, although immediate past reference prevails at least up to 2;6. For -Iyor, contrastive use arises with past and future tense and the present tense notion of this marker becomes part of the semantics. The different markers come to be used contrastively on the same lemmas. Finally, around 2;2, habitual –Ir is acquired. It expresses mainly normative or potential behavior. Unfortunately the acquisition of the modal markers –mAII (obligation), –AbI (possibility and ability) and conditional (–sI) is not discussed in the studies.

As the morpheme –mls can be used with different scopes, the acquisition order of its multiple functions is an excellent test of the hypothesis: the morphophonological complexity is equal, but the linguistic functions differ in complexity and the semantics in abstractness. From the longitudinal data in Aksu-Koç (1988: 103) it appears that first –mls is only used to express a state, not necessarily resultant. The next development is that –mls gets used as a marker of resultant state (both witnessed and nonwitnessed), with the focus on end state (in contrast to –dl that focuses on the process of an agent). From this use the more general perfect use develops. This use leads to the inferential past: the resultant state must follow from a past event. Since there already is a past tense marker, –dl, now direct and indirect evidence have to be acquired as part of semantics. This development is investigated by experiments: 60 children between 3;0 and 6;4 had to perform comprehension and production tests. Only between 3;6 and 4;6 children begin to grasp the evidential contrast between past tense markers –dl and –mls (Aksu-Koç 1988: 134). The hearsay function of -mls comes in last.

In conclusion, the acquisition of TMA in Turkish supports H6 and H7: first there is an opposition between completed events (–dl), ongoing states and events (progressive, –Iyor) and immediate intention (–y-A). This corresponds to an aspectual distinction (π1). Later, deictic tense (π2) and habituality (π2) also become marked consistently. Finally, evidential contrasts (π3) are acquired. The acquisition order of the different functions of –mls exactly reflects the predicted order: aspect (π1) appears before the meaning of tense (π2) which appears before the meaning of evidentiality (π3). In each stage of child Turkish, this expression has meanings with adjacent scope, as predicted by H7.
10.3.2 Australian: Warlpiri

Warlpiri is a Pama-Nyungan language, spoken in Central Australia. Pama-Nyungan languages form one of the largest families of the Australian languages. Warlpiri is an agglutinative language. It has a temporal distinction in past and non-past, in opposition to irrealis, which is expressed by inflection. The inflection can be used by itself, but further specification of TMA may be added in a clitic cluster, consisting of a propositional particle, a sentential particle, an aspect marker, a subject and/or an object/oblique marker, expressed in this order. The cluster is not obligatory and only expressed when (one or more of) the corresponding categories are present. It may appear before or after the verb, depending on the syllable-length of the cluster. The relevant TMA expressions are presented in Table 10-3.

The past tense suffix is, without further modification ‘synonymous with perfect aspect’ (Bavin 1992: 313). An imperfective auxiliary may be added to raise a past imperfective meaning, compare (2) and (3) from Bavin (1992: 314):

Table 10-3. Relevant TMA expressions in Warlpiri (based on Bavin 1992: 313-15, 18, 33)

<table>
<thead>
<tr>
<th>Form</th>
<th>Author’s definition or translation</th>
<th>FG classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-past inflection</td>
<td>Immediate future, ‘going to’</td>
<td>Prospective (( \pi_1 )) + future (( \pi_2 ))</td>
</tr>
<tr>
<td>+ ka</td>
<td>Imperfective present</td>
<td>Imperfective (( \pi_1 )) + present (( \pi_2 ))</td>
</tr>
<tr>
<td>+ kapi/kapu</td>
<td>Future</td>
<td>Future (( \pi_2 ))</td>
</tr>
<tr>
<td>+ kajika</td>
<td>Potential / ‘might’</td>
<td>Epistemic possibility (( \pi_2 )) / uncertainty (( \pi_3 ))</td>
</tr>
<tr>
<td>Past inflection</td>
<td>Past perfective</td>
<td>Perfective (( \pi_1 )) + past (( \pi_2 ))</td>
</tr>
<tr>
<td>+ lpa</td>
<td>Past imperfective</td>
<td>Imperfective (( \pi_1 )) + past (( \pi_2 ))</td>
</tr>
<tr>
<td>+ kala</td>
<td>Past habitual</td>
<td>Past (( \pi_2 )) + habitual (( \pi_2 ))</td>
</tr>
<tr>
<td>Irrealis inflection</td>
<td>Irrealis</td>
<td>Irrealis (( \pi_2 ))</td>
</tr>
<tr>
<td>Nganta</td>
<td>‘supposedly’, ‘reportedly’</td>
<td>Evidentiality (( \pi_3 ))</td>
</tr>
<tr>
<td>Kari</td>
<td>Direct evidence</td>
<td>Evidentiality (( \pi_3 ))</td>
</tr>
<tr>
<td>Wajta</td>
<td>‘certainly’</td>
<td>Certainty (( \pi_3 ))</td>
</tr>
</tbody>
</table>
The non-past inflection by itself marks ‘immediate future’, is glossed as ‘going to’ and therefore analyzed as future tense (π2) and prospective aspect (π1); non-past inflection in combination with the imperfective aspect auxiliary –ka marks present tense; in combination with the future auxiliary it marks future tense, etcetera. Warlpiri has a variety of particles: propositional particles indicate the speaker’s attitude or evidentiality such as nganta for ‘supposedly’, ‘reportedly’ or kari for direct evidence.

The acquisition of Warlpiri is examined by Bavin (1992), based on cross-sectional data between 2;0 and 4;11. Bavin does not explicitly state the criteria used for establishing the acquisition order. She provides clear information about the contexts of use of the forms by the children. At age 2;0, about 50% of the verbs used has imperative inflection. Past and non-past inflection are also used, without errors, ‘to mark viewpoint aspect’: the past inflection for marking ‘the end point of an action’, the non-past inflection for showing ‘ongoing activity in the immediate context’ (1992: 327, 32). Up to 3;0, this is the predominant function of past and non-past inflection.

In the recordings at 2;8, the non-past imperfective auxiliary -ka is used a few times, but not yet consistently. It is for example used in initial position, which is not correct in adult Warlpiri, consider (4) (Bavin 1992: 330):

(4)  ka-rna    nga-rni
     IPFV-1SG.SUBJ eat-NONPAST
     ‘I am eating’.

The distinction between past versus non-past inflection still expresses the distinction between immediately completed events and ongoing activities. Past tense inflection primarily combines with telic verbs, like ‘died’, ‘found’, ‘dropped’, ‘broke’ and ‘shot’; non-past inflection mainly occurs with atelic verbs, like ‘stand’, ‘kiss’, ‘run’. Children use the forms contrastively: for example, one of the children uses ‘carry-NONPAST’ for describing an ongoing act of carrying and ‘carry-PAST’ to refer to this same act at the moment it is completed. Furthermore, the particle nganta is used frequently; this is an
evidential marker, but it is apparently not used with the same semantic load as in adult language (Bavin, personal communication).

Around 2;11 children seem to contrast the non-past verb with and without *ka* for creating the distinction between present imperfective (*π2/π1*) and prospective / immediate future (*π1/π2*) for intended events. By 3;0, the future tense (*π2*) auxiliary *kapi*/*kapu* comes in and from about this age tense is marked consistently. It is only at 3;5 that spontaneous talk about (remote) past events is evidenced, but Bavin warns that this does not imply 'that the child has not developed time concepts before that age' (1992: 326).

From 3;10, the past imperfective form *lpa* is used and it becomes more frequently between 4;0 and 5;0, indicating that the child is now capable of taking an internal perspective on an event with a reference time other than speech time. At about age 6 the past imperfective clauses are used for backgrounding. The past habitual form *kala* appears much later. Unfortunately, there is no information on the acquisition of the potential marker *kajika* and the other particles.

The acquisition of Warlpiri supports the predicted acquisition order. The past and non-past inflections are used aspectually (*π1*) up to 3;0, to distinguish between completed and ongoing events. Around 2;11, the difference with immediate intention (prospective/immediate future) is also marked consistently. Only after 3;0 is tense (*π2*) marked consistently and after 4;0 aspectual distinctions in the past are acquired. Although one of the evidential markers is attested early (before consistent tense marking), it does not yet express evidentiality (*π3*).

### 10.3.3 Bantu: Sesotho

Sesotho is a southern Bantu language that belongs to the Sotho language group; it is mainly spoken in Lesotho and South Africa. Sesotho has a complex system of TMA, with optional tense/aspect prefixes (auxiliaries) and an optional perfect suffix. Each tense/aspect has its own negative form. There are only preliminary findings available on the acquisition of TMA in Sesotho. Demuth (1992) examined tense and aspect marking in one child between 2 and 3 years. She presents no information on the acquisition criteria nor on the contexts of use of the forms. Table 10-4 immediately presents the acquisition of TMA forms.

The first (adult) TMA expressions are used from 2;1, for aspect (*π1*) and tense (*π2*). In the data at 2;2 and 2;4, no new TMA expressions are used, but at 2;5 some new TMA expressions have emerged for tense, aspect and participant-oriented modality (*π1*), see Table 10-4. From 2;6, the narrative past
Table 10-4. Acquisition of TMA expressions in Sesotho by one child (based on Demuth 1992: 620, personal communication)

<table>
<thead>
<tr>
<th>Age</th>
<th>Form</th>
<th>Author's definition or translation</th>
<th>FG classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>2;1</td>
<td>(a)-</td>
<td>Simple present/present progressive</td>
<td>Present (π2)</td>
</tr>
<tr>
<td></td>
<td>ilo-</td>
<td>Future I: ‘will’</td>
<td>Future (π2)</td>
</tr>
<tr>
<td>2;5</td>
<td>ilu/tilo-</td>
<td>Future II: ‘coming to’</td>
<td>Prospective (π1)</td>
</tr>
<tr>
<td></td>
<td>il'o-</td>
<td>Future III: ‘going to’ / ‘about to’</td>
<td>Prospective (π1) / immediate future (π2)</td>
</tr>
<tr>
<td></td>
<td>-il-</td>
<td>Perfect: ‘have –ed’, ‘-ed’</td>
<td>Perfective (π1) / past (π2)</td>
</tr>
<tr>
<td>2;6</td>
<td>-a</td>
<td>Narrative past</td>
<td>Past (π2)</td>
</tr>
<tr>
<td>3;0</td>
<td>ili</td>
<td>Punctual past</td>
<td>Past (π2)</td>
</tr>
</tbody>
</table>

marker –a is used, a form that occurs in narrative contexts once the tense has been set. Finally, from 3;0 the punctual past tense marker ili is used. Up to age 3;0 the past perfect (ne + ili) is not yet used.

In short, these findings show that at least from 2;1, both aspect and tense expressions are used. It is unknown whether the functions of these forms are adultlike in the child’s language. Aspectual distinctions in the past occur later: the past progressive occurs fairly early, whereas the past perfect is acquired late. The data are not in conflict with the predicted acquisition order, but they are also not detailed enough to count as hard evidence in support of the hypothesis.

10.3.4 Eskimo-Aleut: West Greenlandic

West Greenlandic (or Inuktitut) is an Inuit language of the Eskimo-Aleut family. It is mainly spoken in Greenland. West Greenlandic is a polysynthetic language that is extremely productive in applying bound affixes. Over 400 derivational and over 300 inflectional morphemes are productively used in adult
Table 10-5. Acquisition of TMA expressions in West Greenlandic (based on Fortescue & Lennert Olsen 1992)

<table>
<thead>
<tr>
<th>Age</th>
<th>Form</th>
<th>Author’s definition or translation</th>
<th>FG classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>2;2</td>
<td>ler</td>
<td>Prospective, ‘be about to’</td>
<td>Prospective (π1)</td>
</tr>
<tr>
<td>3;1</td>
<td>nikk</td>
<td>Experiential perfect, ‘have done’</td>
<td>Perfect (π1)</td>
</tr>
<tr>
<td></td>
<td>ssa</td>
<td>Obligation, ‘should’</td>
<td>Weak obligation (π1)</td>
</tr>
<tr>
<td></td>
<td>rør</td>
<td>Perfective, ‘already’</td>
<td>Perfective (π1)</td>
</tr>
<tr>
<td></td>
<td>niar</td>
<td>‘be going to’</td>
<td>Prospective (π1)</td>
</tr>
<tr>
<td></td>
<td>ssa</td>
<td>1s.Future, intention</td>
<td>Disposition (π1)</td>
</tr>
<tr>
<td></td>
<td>sær / tar</td>
<td>Habitual / repetitive</td>
<td>Habitual / frequentative (π2)</td>
</tr>
<tr>
<td>3;4</td>
<td>nikk</td>
<td>Experiential perfect, ‘have done’,</td>
<td>Past (π2)</td>
</tr>
<tr>
<td></td>
<td>niar</td>
<td>Intended / inevitable future, ‘be going to’</td>
<td>Future (π2)</td>
</tr>
<tr>
<td></td>
<td>ssa</td>
<td>Future, intention</td>
<td>Future (π2)</td>
</tr>
<tr>
<td></td>
<td>qqqg</td>
<td>Repetition, ‘again’</td>
<td>Repetitive (π2)</td>
</tr>
<tr>
<td>4;7</td>
<td>nusq</td>
<td>‘want to’</td>
<td>Volition (π1)</td>
</tr>
<tr>
<td></td>
<td>sima</td>
<td>‘apparently’</td>
<td>Evidentiality (π3)</td>
</tr>
<tr>
<td></td>
<td>gqqg</td>
<td>Quotative, ‘it is said’,</td>
<td>Evidentiality (π3)</td>
</tr>
<tr>
<td>5;2</td>
<td>qattaar</td>
<td>‘repeatedly’</td>
<td>Iterative (π1)</td>
</tr>
</tbody>
</table>

language (Fortescue & Lennert Olsen 1992: 115). The inflections in the adult stage that concern TMA are presented in Appendix G, since West Greenlandic formed part of the adult GRAMCATS sample discussed in Chapter 7, here under the name of Inuit.

The acquisition of West Greenlandic is examined by Fortescue & Lennert Olsen (1992), mainly based on cross-sectional data at 2;2, 3;1, 3;4, 4;7, 5;2 (N = 1). As the intervals in age between the children are rather large, they are assumed here to represent successive stages of language development. For each
recorded child, a list of productive morphemes is presented, although the authors stress that the lists are probably conservative and do not reflect the children’s abilities fully because the recording sessions were not extensive. The criterion for productivity in the study of Fortescue & Lennert Olsen (1992: 138-39) is that a child has to use a morpheme on at least two stems or that an affix is used on a stem that occurs elsewhere with another affix. Around 2;3, a West Greenlandic child already uses about 40 inflectional endings and 25 derivational affixes (p.112). Only the morphemes that concern TMA are here presented in Table 10-5.

The first child, recorded at 2;2, mainly spoke about the here-and-now and used the indicative to describe actions taking place at speech time (p.142). The first TMA morphemes are all expressions with narrow scope: prospective, perfect and obligation. The morpheme *ssa* is used in adult West Greenlandic for future tense and for expressing obligation, but at 2;2, it is used only for expressing obligation, also in combination with negation ‘must not’. The form *nikun*, in adult West Greenlandic used for perfect (*π1*) and for past tense (*π2*), is first only used to express perfect.

The second child, recorded at 3;1, had difficulty describing things that happened in the past as opposed to the present (p.151). He is cognitively able to refer to past events as he uses the causative mood once (which is adultlike) for referring to a past action: ‘I sang it like this’, uttered upon finishing singing a song. However, in general he is not able yet to relate past events to speech time by using a past tense affix (p.154). Like the first child, the second child uses aspectual suffixes and participant-oriented modality. The future marker *ssa* is now used for expressing intention of first person ‘I will’, which functions mainly like a narrow scope marker. The marker *niar* that can express prospective and future tense is only used for prospective (*π1*) at this age. The habitual or frequentative sar/tar is also used.

The third child, recorded at 3;4, 'was clearly better able to express purely temporal relations’ (Fortescue & Lennert Olsen 1992: 167) He still mainly uses aspect operators and participant-oriented modality (both narrow scope operators), but tense markers are now also clearly present, just as an expression of event quantification. He uses for example *nikun* for marking past tense (whereas it was first only used for marking perfect) and *niar* and *ssa* as real future tense markers. Note that *ssa* was used by the youngest child only for expressing the modal sense ‘must’ (*π1*), by the second child for expressing intention of first person ‘I will’ (*π1/π2*), and by this child as a real future tense marker (*π2*) (p.167). This development mirrors the diachronic development of future tense markers (discussed in 7.2.3) from modal marker, to expressing intention of first person to real future tense marker.
The fourth child, recorded at 4;7, mainly adds new distinctions within the participant-oriented modality domain. She is also the first child that uses operators with wide scope productively. She distinguishes between nikuu and sima: nikuu expresses experiential perfect ‘have –ed’ (some time in the past) which is classified as a tense marker by Fortescue & Lennert Olsen, but may also be used aspectually. As well as nikuu, sima can be used for perfect aspect but also for epistemic modality ‘apparently’. This child consistently uses nikuu for the experiential past or perfect and sima for epistemic modality. Sima is not used as an aspectual marker (Fortescue & Lennert Olsen 1992: 189-90). It is not used with narrow scope, but immediately with wide scope.

Finally, the child recorded at 5;2 used more constituents in a clause, but his use of two-or three-affix word forms was limited compared to the fourth child. The only new affix he uses compared to the previous children is a marker of iteration (property quantification, π₁) qattaar.

If the lists of morphemes for each individual child are taken to represent the general development of the TMA system in West Greenlandic, then the order of acquisition of TMA morphemes in West Greenlandic is in accordance with the predicted order in H6. At the beginning, mainly operators of aspect and participant-oriented modality, are used, both operators with narrow scope (π₁). Then, some event quantification and tense markers (π₂) come in. In a later stage evidential markers with wide scope (π₃) are used. The development of different uses of nikuu, niar, and ssa is also in accordance with the predicted developmental path: first they are used with the meaning of aspect or participant-oriented modality and only later in the use of expressing tense.

In general, the acquisition of West Greenlandic supports the hypothesis. There is no stage in which the acquired TMA system has π₂-operators but no π₁-operators, or π₃-operators, but no π₂-operators. However, there are some details that are not directly expected, i.e., that the marker sima is used from the start as an evidential marker (π₃) and not first as an aspectual marker (π₁). This may be explained by the fact that its aspectual use is already covered by another marker nikuu that the children acquire at an earlier age. What goes against H7 is that West Greenlandic has an expression that functions both as a π₁-operator (perfect) and as a π₃-operator (evidentiality), but not as a π₂-operator. At a certain stage, children will use this marker with both narrow and wide scope, but not with medial scope (like in adult West Greenlandic). A final detail that is counter to expectation is that, within the domain of quantification, operators with medial scope (habitual, repetitive, frequentative) appear before operators with narrow scope (iterative). For this, I have no explanation.
10.3.5  Finn-Oegric: Finnish

Finnish is a Finno-Oegric language, mainly spoken in Finland. It is an agglutinative language with an extensive case system. The order of suffixes on the verb and the categories expressed are presented in (5), with the usually unmarked categories between brackets (Toivainen 1997):

(5)  \[ V \rightarrow \text{DERIVATIVE} \rightarrow \text{VOICE} \rightarrow \text{MODALITY} \rightarrow \text{TENSE} \rightarrow \text{PERSON} \]
    (neutral) (active) (indicative) (non-past) (3SG)
    reflexive passive imperative past etc.
    frequentative conditional non-past neg.
    etc. potential past negative

The relevant TMA expressions are presented in Table 10-6. The negative forms are constructed by an auxiliary \( e- \) with person/number inflection followed by the negative form for the main verb, i.e., the past participle for past tense, and the 2nd person imperative for non-past tense.

The construction for marking obligation in Finnish is very complex. The subject has to occur in the genitive case and the verb is constructed from the auxiliary \( oll \) 'be' and the main verb in the passive present participle, consider (6) (from Toivainen 1997: 110):

(6) \[ \text{minu-n on nuste-tta-va kaikki} \]
    I-GEN be:PRS:3SG lift-PASS-PRS.PART all

'I have to lift everything up.'

<table>
<thead>
<tr>
<th>Form</th>
<th>Author's definition</th>
<th>FG classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Ø/ass.</td>
<td>Non-past</td>
<td>Non-past (( \pi_2 ))</td>
</tr>
<tr>
<td>-i</td>
<td>Past</td>
<td>Past (( \pi_2 ))</td>
</tr>
<tr>
<td>e-p/N + V-Ø/ass.</td>
<td>Negative non-past</td>
<td>Non-past (( \pi_2 ))</td>
</tr>
<tr>
<td>e-p/N + V-nut/nyt</td>
<td>Negative past</td>
<td>Past (( \pi_2 ))</td>
</tr>
<tr>
<td>-isi</td>
<td>Conditional</td>
<td>Irrealis (( \pi_2 ))</td>
</tr>
<tr>
<td>olt-la 'be' + V-nut/nyt</td>
<td>Perfect</td>
<td>Perfect (( \pi_1 ))</td>
</tr>
<tr>
<td>olt-la + V-tta-va</td>
<td>Obligation</td>
<td>Obligation (( \pi_1 ))</td>
</tr>
</tbody>
</table>

Notes. ass. = assimilation to preceding vowel or following consonant; p/N = person /number inflection
The acquisition of Finnish is examined in Toivainen (1980; 1997) and Laalo (2003). Toivainen collected data of 25 children between 1:8 and 4:4, from on average eight 15-minute interviews with each child. The acquisition order was based on the first use of the particular forms in the interview. The age of acquisition reported was based on the average age at which the children first used the affix. See Figure 10-2:

\[
\begin{array}{cccc}
\text{Non-past (3p)} & < & \text{Neg. non-past} & < \\
1:8 & & \text{Past (3p)} & 2:2 \\
\text{Past (1p)} & < & \text{Perfect (1/2p)} & < \\
\text{Non-past (2p)} & & \text{Irrealis} & < \\
\text{Neg.past, 2:7} & & 2:10 & < \\
\text{Perfect (1/2p)} & < & \text{Obligation} & < \\
2:9 & & \text{Pluperfect} & 3:0 \\
\end{array}
\]

Figure 10-2. Order of acquisition of TMA expressions in Finnish (based on Toivainen 1980: 44, 181)

The first verb form, imperatives and non-past indicatives, combine with different lemmas. Only the basic form of the indicative is used at this age, which is the third person singular, a form used in child-directed speech also for first and second person. It is used for referring to present or immediate future events in the child’s surroundings or to the child itself (Toivainen 1980: 44-46, 183). The past tense 3s, usually refers to the immediate past: men-i go-PAST (=it went, it has gone), or to a process that is still continuing during the moment of speaking or even in the immediate future. For example, tein kauppaa expressed ‘I was making a shop’, when the child is only just building it at that moment. Only a few children use the past tense form sometimes to refer to real past events. It is thus not used adultlike, but it is in clear opposition to the present tense forms (p.66-71, 183). It is not discussed at what age the past tense form is used adultlike. The first negative forms often occur without a main verb, like ‘doesn’t/didn’t’ in English.

When the perfect comes in, it denotes, in contrast to the past tense, an event which is more distant in the past but its effect is to be seen in the present moment (p.187). The pluperfect is sporadically used from 2:7 but it is not yet acquired fully, i.e., by all 25 children, at age 3:0. The complex construction for expressing obligation is attested only at 2:7 in one of Toivainen’s children. However, according to Laalo (2003: 337) the less complex construction with the verb saa ‘gets’ in the negative construction ei saa is used to express ‘must not’ at 1:8 already.
Laalo (2003) investigated first contrastive uses in the longitudinal and diary data of two children (1;7-2;1). Like in the study of Toivainen, the first verbs are the 2S imperative and 3S present indicative. The early past tense forms are formulaic: *tippu* 'fell' is typically used when food or toys have fallen on the floor and *loppu* 'end(ed)' when the food has all been eaten up (p.330). First contrastive uses are between past and present tense forms. One of the children contrasts a past tense with a present for the first time at 1;7, when playing with toy animals, saying *puskee* /*pukkee* /‘butts’ and *puski* /*pukki* /‘butted’ (p.332). The other child contrasts the past and present tense even at age 1;6. He uses *tippu* ‘fell down’ versus *tippu* ‘falling down’, ‘when porridge was continuously dropping from a spoon onto the tablecloth’ (p.339). This child soon uses the opposition 3S indicative present and past frequently and at age 1;7 he has many two-member miniparadigms consisting of the 3S present and past tense forms: ‘throws’/ ‘threw’, ‘falls’/‘fell’, ‘puts’/‘put’, ‘is sleeping’/‘slept’, ‘is’/‘was’, ‘covers’/‘covered’, ‘butts’/‘butted’, ‘strips’/‘stripped’, ‘takes away’/‘took away’ (p.334). At 1;8, 22 lemmas are used contrastively of which especially the use of ‘remembers’ vs. ‘remembered’ seems precocious (p.335). Also at the age of 1;8, the first contrastive use with a past participle occurs: ‘eat’ is used in the present, the past and as a past participle ‘eaten’ (p.338).

In Finnish, past and present tense forms are thus acquired remarkably early, before other forms. Slightly later, perfect aspect is used. Although the adult complex expression for obligation appears late in child language, a more simple expression to denote obligation is used very early. Irrealis expressions occur only at 2;10. This order of acquisition does not support the hypothesis, in that the early use of past and present tense forms is counter to expectation. However, the use of these forms is not yet adultlike in that they are limited to referring to past events in the immediate past.

10.3.6 Indo-European

10.3.6.1 Baltic: Lithuanian

Lithuanian is a Baltic language, closely related to the family of Slavic languages. It is a synthetic language with verb inflection for mood and tense. There is a three-way mood distinction between indicative, conditional and imperative and a three-way tense distinction between present, past and future. Besides inflectional marking of tense, there are periphrastic (compound) tenses with many different participles, but unfortunately, their function in adult Lithuanian is not discussed. Aspectual distinctions between imperfective and perfective are marked by pre- and suffixes. However, the opposition between perfective and imperfective verbs is not systematic and is considered semi-grammatical as the
lexical meaning may be modified by prefixation, for example dėti 'put', pa-dėti 'put down' or 'help'. There is also a habitual or frequentative past, but it does not occur in early child language (Wójcik 2003: 401-03, 19, fn 3).

The acquisition of Lithuanian in one child is described in Wójcik (2003). The child was recorded between 1;7 and 2;5, but Wójcik’s analysis concentrates on the first contrastive use of inflections between the age of 1;7-1;10. It appears that the child tends to leave out prefixes or to use fillers instead. At 1;7, the child uses present and imperative forms. The verb mokėti, ‘can’ is the only verb used with different person endings in the present tense (1sg, 2sg, 3sg/pl). At 1;8, infinitives appear and at 1;9, the first uses of future, past and participles occur. At this age the suppletive forms of būti ‘be’ are used contrastively, the negative form yra, the third person present nėra, the third person future bus and the third person past buvo. Several verbs are used with different person inflections, including the verb norėti ‘want’, but there are no temporal contrasts yet for non-suppletive verbs. At 1;10 conditionals emerge but they are very rare and restricted to third person. At this age, the first regular tense oppositions occur: ‘walk/go’ and ‘fall’ are used in present, future and past tense, ‘sleep’, ‘go (by a vehicle)’, ‘build/put on’ and ‘put’ in present and future tense, and ‘peel’ is used in future and past tense. Periphrastic constructions with participles (compound tenses) were not productive yet at the end of the recordings (2;5).

In sum, the acquisition of Lithuanian is partly in accordance with the hypothesis: participant-oriented modality (‘can’ and ‘want’) is acquired as one of the first TMA-expressions, although it is not clear whether these verbs are lexical verbs or auxiliaries. What is not expected from the hypothesis is that tense distinctions are acquired so early; already at 1;10 several verb lemmas are used contrastively with different tense inflections. At that same age, aspectual prefixes and compound tense forms are not yet used productively. Unfortunately, there is no information available on the contexts in which children use the forms or for what purpose. It is thus unknown whether children use their TMA forms with adult-like functions.

10.3.6.2 Germanic: Dutch, German, Swedish

The languages of the Germanic subbranch of the Indo-European family, including English, belong to the best-studied languages in the world. TMA expressions in different Germanic languages are very similar. Table 10-7 presents the most important TMA expressions for English, Dutch, German and Swedish. All Germanic languages have inflectional past and non-past markers; there is a substantial group of relatively frequent verbs that have irregular past and past participle forms. The use of simple past tense forms varies across languages: in English, it is the default form for expressing past
time, whereas in German its use is mainly restricted to modal verbs and copula. The different semantics are indicated by the symbols # and * in Table 10-7.

The perfect or resultative construction ‘have’ or ‘be’ + past participle is present in all languages, but its semantics differ. In English and Scandinavian languages it is aspectual, expressing the post-state of an event; in Dutch, it has aspectual functions, but it can also be used purely temporally; in German, called the Perfekt, it has become the default expression for past tense, although in combination with telic verbs it still has a resultative or perfect interpretation. Swedish has two different participles: one in –d that combines with vara ‘be’ called the perfective participle and one in –t that combines with bar ‘have’, called the supine. The former is used to indicate resultative, the latter to indicate perfect.

Progressive aspect is only obligatorily expressed in English, by be –ing. In contexts where English uses the progressive, all other Germanic languages can use the simple present or an optional progressive construction if the speaker wants to stress that the event is ongoing. The future tense is in all languages expressed by an auxiliary. English and Dutch have a construction ‘go’ +

<table>
<thead>
<tr>
<th>English</th>
<th>Dutch</th>
<th>German</th>
<th>Swedish</th>
<th>FG Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>-ed</td>
<td>-te/-de</td>
<td>-te</td>
<td>-de</td>
<td>Past (π2)</td>
</tr>
<tr>
<td>-e/s</td>
<td>-e/-t /-en</td>
<td>-o/-s/-t /-en/-t</td>
<td>-r</td>
<td>Present (π2)</td>
</tr>
<tr>
<td>be / have +</td>
<td>zijn / hebben +</td>
<td>sein / haben +</td>
<td>vara + V–d</td>
<td>Resultative (π1) + past* (π2)</td>
</tr>
<tr>
<td>-ed²</td>
<td>ge-V-p²/#</td>
<td>ge-V-p²/#</td>
<td>bar + V–p²</td>
<td></td>
</tr>
<tr>
<td>will + INF*</td>
<td>zullen + INF*</td>
<td>werden + INF*</td>
<td>skola + INF³</td>
<td>Prospective* (π1) or future (π2) + prediction (π3)*</td>
</tr>
<tr>
<td>going to</td>
<td>gaan + INF*</td>
<td>-</td>
<td>kommer (att) + INF*</td>
<td>Prospective* (π1)</td>
</tr>
<tr>
<td>+ INF³</td>
<td>+ INF n/#</td>
<td></td>
<td></td>
<td>Future* (π2)</td>
</tr>
<tr>
<td>be –ing</td>
<td>zijn aan het / zit / sta / lig te + INF</td>
<td>sein am + INF</td>
<td>håller på / sitter / ligger och + V-FIN</td>
<td>Progressive (π1)</td>
</tr>
<tr>
<td>wanna</td>
<td>wil</td>
<td>will / mag</td>
<td>vill</td>
<td>Disposition (π1)</td>
</tr>
<tr>
<td>must</td>
<td>moet</td>
<td>müss</td>
<td>måste</td>
<td>Entailment (π1/π2/π3)</td>
</tr>
<tr>
<td>may²</td>
<td>mag</td>
<td>darf</td>
<td>får</td>
<td>Potentiality (π1/π2, π3)</td>
</tr>
<tr>
<td>can</td>
<td>kan</td>
<td>kann</td>
<td>kan</td>
<td>Potentiality (π1/π2/π3)</td>
</tr>
</tbody>
</table>
infinitive, but the uses are rather different. In English it functions as a real prospective aspect marker, without any selection restrictions. The Dutch expression can function either aspectually, for marking inchoative or prospective, or as a future tense marker, restricted to nonstative verbs. In Swedish, the construction skola + infinitive has intentional or prospective use, whereas the periphrastic construction kommer (att) + infinitive is used as a pure future marker (predictive future).

All Germanic languages have different types of modality, expressed by auxiliaries, which in some languages (Dutch, German) also function as lexical verbs. They can function with different scopes. English is the only language that has ‘new’ emerging modals like wanna, gonna and hafta.

Developmental orders in Germanic languages that would support the hypothesis would be the acquisition of aspect before tense and the acquisition of participant-oriented modality before other types of modality and before tense. This was in fact the attested order of acquisition in English in Chapter 8. English is not further discussed in this chapter, as it was fully covered in Chapter 8.

Dutch

The TMA expressions in Dutch were presented in Table 10-7. There is a considerable number of studies on the acquisition of Dutch that cannot all be discussed here. I restrict the discussion to a few major studies based on longitudinal data. An overview of the acquisition of Dutch is described in De Houwer & Gillis (1998). It is based on longitudinal (more than 30 subjects) and cross-sectional data from children between 1;0 and 3;11. The first stage of the acquisition of Dutch verbs is characterized by a preponderance of lexical verbs as root infinitives, as in (7) and (8) (adapted from Blom 2003: 240, 242):

(7) Situation: Peter (2;0,28) wants to have his dog

\[
\text{Peter \ woef \ hebb-en} \\
\text{Peter dog have-INF} \\
\text{‘Peter have dog.’}
\]

(8) Situation: Abel (2;7,15) is drawing a hand

\[
\text{Ik \ een \ hand \ teken-en} \\
\text{I \ a \ hand \ draw-INF} \\
\text{‘I draw a hand.’}
\]
Unlike lexical verbs, copula, auxiliaries and modal verbs are immediately acquired in finite form, which is similar to the acquisition of German. They come in around age 2:0 and are at first used without an infinitive. At the same age, present tense singular forms (-ø and -t) and bare past participles (without the auxiliary hebben ‘have’) are used.

Although much is known about the acquisition of forms in Dutch, the contexts of use have not been very well investigated and it is not clear at what age Dutch children acquire tense distinctions. The first finite main verbs are for the majority in the present tense and do not contrast to past verbs. The perfect construction in adult Dutch has aspectual and temporal use, referring either to a present state that results from a previous event (perfect), or referring to an entire event in the past (perfective past). According to Haeserijn et al. (1997: 12) the exact distinction with the simple past form in Dutch is not very well examined, but it is probably a distinction in imperfective and perfective viewpoint. The simple past relates the event to a specific moment in the past, but may also be used for habitual past. It is mainly imperfective in aspect or neutral. The perfect construction is used for single events in the past or for past events that are not linked to a specific moment and is mainly perfective in aspect. Children use the bare past participle rather frequently but the contexts of use are not very well investigated. The simple past form occurs rarely with lexical verbs before the age of 4:0 and is used mainly in contexts of pretend play to indicate irrealis. Future reference seems to occur before past reference: already between 2:0 and 2:6 the construction gaan + infinitive is used for prospective/inchoative or future meaning. Complex verb phrases occur around 2:6: past participles are now mostly accompanied by an auxiliary and modals occur in combination with an infinitive form. The use of the future auxiliary zullen is rare under age 4:0 and the past perfect is acquired after 4:0.

Gillis (2003) carried out a study on contrastive use of verb forms in Dutch in the speech of one girl. The first occurrence of verb forms for this girl follows the order: bare stem (1:5) < infinitive (1:6) < present tense -t (1:9) < past tense (1:10) < past participle (2:4) < present tense plural (2:4). Around 2:0 the present tense -t for the third person singular and the past participle occur with an increasing number of verbs: at 2:5 the past participle occurs with the greatest variation in lemmas (nearly 20), although the infinitive form occurs in about 70 different lemmas. The bare stem and present tense -t occur with slightly fewer lemmas and the simple past tense occurs with less than five different lemmas. The first modal verb is already used at 1:5: kan niet ‘can’t’; it is the only modal up to 1:10 and only at 2:0 it is used in combination with an infinitive verb kan + bijten ‘can bite’. At 1:10 willen ‘want’ is the second modal that comes to be used, at 2:0 the copula zijn appears and at 2:1 the auxiliaries gaan, moeten, hebben and zijn are used frequently in combination with an infinitive verb. The first
TMA contrast is between present versus present perfect/past participle from 2;1, two months ahead of the contrast between present and past tense (2;3).

The work of Rozendaal (2001) gives insight into the use of past tense forms. She examined the correlation between lexical aspect and past reference in Dutch and found out that there is a strong correlation both in input and in child language between perfect forms and telic situation types (57% in the input, 75% in child language), whereas other verb types combine with telic verbs in 29% (input) and 32% (child language) of the cases. The situation for the simple past is very different. It is often used with (modal) auxiliaries and with zijn ‘be’ and hebben ‘have’, both in the input (52% of all tokens) and in child speech (71%). Of the lexical verbs with simple past marking, 68% is atelic in the input, and 76% in the children’s speech. There is thus a clear distinction in the use of the perfect and the simple past form: the former is mainly used for describing telic events in a perfective way, the latter mainly used for atelic events, in an imperfective or aspectually neutral way.

Blom (2003) investigated the use of Root Infinitives (RIs) in child Dutch. It was found that temporal reference for RIs was free, that is, the utterances could refer to past, present and future events, although the percentage of past references was less than 5%. Further, the majority, approximately 75% of all RIs, had a modal interpretation. The modal senses involved in these constructions are all participant-oriented.

Modal RIs nearly always expressed intentions, dynamic necessity (wishes and desires) or deontic necessity (commands). With their modal P[eriphrastic] V[erb]s, all children introduce dynamic and deontic possibility, denoting abilities and permission, respectively. (Blom 2003: 197)

Hoekstra & Jordens (1994, cited in Blom 2003: 151) found in the data of one girl at 1;10 and 1;11 the modal expressions magie ‘may not’, kannie ‘cannot’, nee ‘no’, maa ‘want not’, minne ‘want’ and wil ‘want’. These are all participant-oriented modal uses ($\pi$). The forms seem to be unanalyzed, but are clearly used to express modal notions.

Blom detects an early correlation in early child language between form and lexical aspect. RIs are mainly used with dynamic verbs; only 4-18% of the RIs is stative, whereas 42-63% of the finite main verbs is stative. Of the first finite forms 75% is an auxiliary (without an infinitive) like kan ‘can’, wil ‘want’, moet ‘must’, mag ‘may’, gaat ‘goes’, komt ‘comes’ or is ‘is’ and only 25% is a lexical verb (past ‘fits’, zie ‘see’, zingt ‘sings’, rink ‘jumps’, beet ‘is called’, hoor ‘hear’, valt ‘falls’, zit ‘sits’, eet ‘eats’. The first finite verbs are rote learned, and do not yet show signs of productive inflection. A similar pattern occurs in the input: 89% of the finite verbs is stative and only 3% of the infinitives.

According to Blom’s analysis (2003: 201-2, 33) Dutch children acquire the aspctual contrast between completed and non-completed first around 2;0 and
express the former with past participles and the second with RIs. Second, from circa 2;4, they acquire the contrast between reals and irreals: realis is expressed with present tense verbs for ongoing events and irrealis is expressed with periphrastic verb constructions for referring to possible or necessary future events. Although there is inflection yet, according to Blom, it only marks person/number, but not yet tense. All simple past forms are highly frequent, irregular verbs, such as wou ‘wanted’, was ‘was’, deed ‘did’, bad ‘had’, ging ‘went’, zat ‘sat’. Finally, after about 2;9, the contrast between past and non-past is acquired, the former expressed by the present tense inflection, the latter by the simple past, both on verbs in second position.

To recapitulate, although the forms for present tense and perfect aspect are acquired around the same time, the acquisition of Dutch TMA functions supports the hypothesis that aspect is acquired before tense. First of all, the past participle used to express perfect aspect or perfective past (\( \pi_1 \) and \( \pi_2 \)) is acquired before the pure past marker for past time reference (\( \pi_2 \)), and the aspectual/temporal construction gaan + infinitive used to express inchoative or prospective and future (\( \pi_1 \) and \( \pi_2 \)) is acquired before the construction zullen + infinitive for future time reference (\( \pi_2 \)) and prediction (\( \pi_3 \)). These forms are used in contrast to the non-past inflection, which is mainly used to refer to ongoing events or situations. According to the functional analysis of Blom, which is in agreement with the other sources, the first semantic distinctions that children make seem to be aspecectual (completed versus non-completed, \( \pi_1 \)), the next distinction is between reals and irreals (\( \pi_2 \)) and the final distinction is between past and non-past tense (\( \pi_2 \)). Furthermore, there is evidence that modal verbs occur early on, initially in participant-oriented use (\( \pi_1 \)), modifying the predicate, only later in epistemic use (\( \pi_2/\pi_3 \)) (there is no information available at what age epistemic modality in Dutch is expressed).

German

The TMA expressions of German are presented in Table 10-7. An overview of the acquisition of German is described in Mills (1985). It is mainly based on diary data. Like in Dutch, the first stage of German is characterized by frequent use of root infinitives. Finite verbs are restricted to formulaic utterances such as schmeckt from es schmeckt ‘it tastes good’, in answer to the frequent adult question on presenting food: schmeckt’s? ‘does it taste good?’. In the two-word stage most verbs are still in the infinitive form, although present tense forms and past participles are sometimes used. Auxiliaries and modal verbs are occasionally used at this stage. Gradually, the use of finite verbs becomes more frequent, auxiliaries and modal verbs are used more often and the regular form of the past participle is overgeneralized to irregular verbs. The simple past appears later than the past participle/perfect construction, and also here,
regular inflection is overgeneralized to irregular verbs. Around age 3;0 the auxiliary is used in the Perfekt construction (haben ‘have’ + past participle) and the future tense werden + infinitive begins to be used.

A study particularly dedicated to the acquisition of temporal reference in German is Behrens (1993). This study explores the relation between the development of the concepts of time and the linguistic encoding of time. Behrens (1993: 51-52) concentrates on four questions:

1. What is the order of emergence of tenses?
2. Do children refer to non-here-and-now situations before the onset of productive tense inflection?
3. Do infinitival and noninfinitival forms encode a semantic contrast?
4. Is the use of first past markers conceptually or semantically restricted?

These questions are investigated in the longitudinal data of four children and diary data of three other children. Overgeneralization and morphological contrast between single verbs are taken as criteria for productivity, since they show that a child is building up inflectional paradigms. Modal, main and copular verbs are analyzed separately to see whether there is a difference.

Behrens’ findings are in line with Mills (1985): before the age of 2;0, children go through a nonfinite phase with mainly infinitives or bare stems. There are a few finite verbs that are restricted to specific lemmas: children use unanalyzed constructions. In the next phase, from about 2;0, children start using main verbs in the present tense or as past participle, and modal verbs and copulas in finite form. The emergence of copula with nonverbal predicates is one of the clearest indications that finiteness develops. Children use more than one form per verb now, but the acquisition of finiteness is a gradual process: for a long period, finite and nonfinite forms co-exist. Around age 2;6, children acquire the auxiliary for the Perfekt, the past copula and the simple past tense. Later constructions are the pluperfect, the future and the subjunctive. These are structurally not more complex, but they are infrequent in the input and not of great importance when talking about the here-and-now.

In sum, the acquisition order of verb forms depends on the type of verbs. For main verbs the order is: nonfinite < present tense / past participle < Perfekt (with auxiliary) < preterite < Pluperfect / future < subjunctive/passive. For modal verbs and copula the acquisition order is: present < preterite < Perfekt < Pluperfect / future < subjunctive/passive. For main verbs, the complex past tense is thus acquired before the simple past, whereas for modal verbs and copula the simple past is acquired before the complex past. This

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4 Except for one boy who is a holistic learner. He starts out with finite unanalyzed constructions.
reflects the distribution in the input: main verbs are mainly marked for past tense by the Perfekt, whereas modal verbs and copula are by default marked by the simple past. The absence of root-infinitive use of modals and copula also reflects the pattern in the input: they rarely occur as infinitives.

Behrens also investigated children’s reference to the non here-and-now, specifically to absent objects and to non-ongoing events, in order to explore the development of the concept of time. At a very early age, children show anticipation of forthcoming events based on their knowledge of standardized routines. One of the children, for example, opens her mouth at age 0;4 when a spoon comes close in anticipation of food. The expression of intention and commands may also be considered as reference to immediate future events, since it is the expression of a present desire that the event will be fulfilled in the near future. It can therefore be viewed as the root for future tense marking (Harner 1982, cited in Behrens 1993: 123). From 1;2, children express commands and intentions; they use object names and adjectives in a volitional function, they use words for expressing the wish for recurrence, such as weiter ‘further’, andere ‘another’, mehr ‘more’, mal ‘again’. Children also use adverbs or particles to encode the right boundary, i.e. the end of an event, if they want the event to be finished or completed. Examples of adverbs are so and alle, ‘all gone, finished’ and isolated particles that encode resultativity or a change of state, such as X rein, X an, X zu, X aus ‘in, on, close, out’.

Also in the one-word stage, memory of past events occurs. Children talk about past events, but they do not yet encode it linguistically. These uses are mainly in scaffolded contexts, when being asked about it, but they also talk about past events spontaneously. Behrens (1993: 120) provides a convincing example from the Stern diary data (here in (9)) where the father provides a scaffolded temporal frame in which the child semantically refers to previous (c, d) and subsequent events (b, c, f, g, h, i), without mastery of linguistic means for marking them:

(9) Situation: Hilde (2;0.19) enters the room to say ‘good night’ to her father (= FAT). He interrupts his work and asks: ‘What do you want to say to me?’
   a. HIL: Nacht ‘night’
      FAT: Wo gehst du bin? ‘Where are you going to?’
   b. HIL: Bett ‘Bed’
      FAT: Wo bist du gewesen? ‘Where have you been?’
   c. HIL: Ba ‘For a walk’
      FAT: Wo hast du ‘Ba’ gespielt? ‘Where did you play ‘walk’?
   d. HIL: Picken Sand ‘play sand’
Behrens (1993: 127) shows that children have a variety of non-here-and-now references before tense marking is productive, mostly ‘closely tied to experience’ with ‘the present moment as vantage point’. She demonstrates that ‘children have a rudimentary temporal orientation’; they remember prior events and use their knowledge about event sequences to anticipate. This clearly shows that children have cognitive representations of past and future events, before marking it linguistically. Hence, cognition is not a sufficient condition for language development, as cognitive abilities for temporal reference precede linguistic encoding of it with a considerable time gap.

As for the semantic function of infinitival and non-infinitival forms, it appears that infinitives are used for all types of reference. They are temporally neutral and do not locate the event on the time line. Finite forms in contrast are used in an adultlike way from the start. Rather than a change in the relation between form and function, there is an increase in grammaticality during language acquisition. Between 1;9 and 2;7, a child expresses intention and commands and refers to simultaneous, anterior, future and non-actual events; the types and proportion of reference domains do not clearly change over age, but target forms steadily replace non-target forms. When a new form is acquired, existing form-function relationships continue to exist and the child enlarges her formal repertoire to express temporal notions. There is no one-to-one relation between form and function: reference to simultaneous events, for example, is made by infinitives, and present tense of modal and main verbs. Immediate future is referred to by infinitives, imperative, and present tense of main and modal verbs.

The question remains with respect to the use of past tense markers whether they are conceptually or semantically restricted. Behrens (p.169-78) concludes that children have a preference for combining past tense with telic events (which often yields a perfect or resultative meaning) and that the use of past
tense to refer to states and activities increases with age. However, children never restrict the past tense to telic verbs or to resultative events; their past forms also refer to remote past and non-actual events (fantasies, stories). Therefore, the correlation of past tense and telic, resultative events could be the result of children’s interest in these topics, rather than a semantic restriction or conceptual constraint. ‘The proximal and often causal relation between past event and present moment may help the child to identify the function of past tenses.’ (p.178). According to Behrens, the past participles (and later the Perfekt) are thus used aspectually and temporally from the beginning. The acquisition of the auxiliary in the Perfekt construction is the completion of the morphological system, rather than the acquisition of a newly available temporal concept (Behrens 1993: 169, 76, 85).

The emergence of contrastive use of German verb forms is examined in Bittner (2003) in the longitudinal data of two children (1;6-2;2). The development is similar to the description in Mills (1985). First contrastive uses occur around 1;11 between the infinitive, the present tense –t, the bare stem (for imperative or 1p present) and the past participle. Around 2;0 there is overgeneralization of –t (the suffix for the past participle) in contexts related to an outside perspective or perfectivity (Bittner 2003: 75). Bittner doubts whether this can actually be overgeneralization of the past participle form because the children have only used a few target regular forms of the past participle.

From 1;8 and 1;11 the two children use modal auxiliaries, at first without infinitives. At 2;0 they both use several modal auxiliaries in different forms (muss/ müssen ‘have to’, soll/sollen ‘shall’, darf ‘allowed to’, kann ‘can’, mag/möchte ‘like/would like’ and will/wollen/wollte ‘want’) and they rather frequently combine modal auxiliaries with infinitives. Around the same age, both children have started to use different forms of the copula sein. One child has already used ist, sind, war, waren, ‘is, are, was, were’ and at 2;0 sein ‘be’ and the other child ist, bin (1p), sind and war. This second child is already using the present forms of sein consistently, however ‘no recurrent use of the past tense forms is attested in her data’ (2003: 66).

Although by 2;2 inflections have become more frequent and are combined with more different verbs, most verbs (60%) only occur in one form and root infinitives are still frequent. Bittner concludes that ‘the children have not yet established the target categories of the present tense paradigm. What has probably been established is the relation of certain verb forms to very general or basic perceptual features, i.e. pregrammatic form-meaning relations.’ (2003: 73)

Bittner assumes that the first verb forms are rote-learned and stored as separate linguistic items. This probably continues for new lemmas and new verb forms for a long time but simultaneously:
the most frequent inflectional types are analysed and mapped according to perceptual features from which grammatical oppositions start to dissociate (…) the child accumulates forms of the type it was becoming familiar with by rote-learning and the mapping of forms to contexts and situations becomes more easy the more instances are already stored. (Bittner 2003: 79-80)

In conclusion, it is debatable whether the predicted order of acquisition, π1-operators < π2-operators < π3-operators, is completely supported by the acquisitional data on German. It depends on the interpretation of the early present tense and, in particular, the past participle forms. From Behrens’ viewpoint, the forms are aspectual and temporal from the start, whereas Bittner claims that the participles express perfectivity (perfective aspect). Modal verbs appear around the same time and express participant-oriented (π1) notions at first. There are no reports on the acquisition of epistemic modality (π2, π3) but they do not seem to occur in the speech of young children.

Swedish
The TMA expressions in Swedish were presented in Table 10-7. An overview of the acquisition of Nordic or Scandinavian languages is presented in Plunkett & Strömqvist (1992). I concentrate on their data presented on Swedish, mainly based on the longitudinal data of two children and on earlier research on Swedish language acquisition. The longitudinal data show that the present and the past participle emerge around 1;10 and the past tense a few months later around 2;0. Plunkett & Strömqvist (1992) remark that generally in Mainland Scandinavian languages (Danish, Norwegian and Swedish), the first verb inflection is the present tense suffix, slightly before the past participle which in turn emerges considerably earlier than the past tense suffix. They claim (1992: 475) that the past participle encodes resultative aspect, which makes this form ‘more relevant to the current situation than the past’.

In Swedish, the generic pronoun man emerges first in modal contexts such as possibility man kan… (‘one can…’), obligation man måste… (‘one has to…’), prohibition man får inte… (‘one must not’), and in conditional contexts such as om man skär… (‘if one cuts…’) (Plunkett & Strömqvist 1992: 478). These uses express norms and values of social society, in FG classified as deontic event-oriented modality (π2). Unfortunately, Plunkett & Strömqvist do not report at what age these constructions occur and they also do not present information on the acquisition of other modal expressions and future reference.

A study specifically oriented towards the acquisition of tense in Swedish is Christensen (2003). The proposed model of the acquisition of tense was already discussed in the introduction to Part III. The main point was that Christensen

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5 Scandinavian is the subbranch of Germanic languages to which Swedish belongs.
assumes that the temporal information conveyed in the grammatical tense system is vague and incomplete. The speaker specifies the exact temporal reference point deictically, anaphorically or explicitly. Deictic specification rests on deictic or pragmatic factors present in the discourse space and is extra-linguistic. Later on, the child acquires linguistic forms to specify the temporal location, by anaphoric specification in a temporal clause and by explicit time adverbials (see the examples in the introduction to Part III).

Christensen examined the acquisition of TMA in extensive diary studies of two boys. The acquisition of verbs starts with a root infinitive stage that lasts from about 1;6 up to 2;1. Between 2;0 and 2;3 inflected forms come in: the children now use infinitives, nonfinite supines (past participle, see Table 10-7), finite present and past tense. Slightly later modals without an infinitive—with an implied main predicate—are also used, mainly *kan inte* ‘cannot’ and *vill inte* ‘don’t want’. Between 2;2 and 2;5 children start using modals with subordinate infinitives: *kan* and *vill* are acquired before *ska*. Between 2;4 and 2;7 the full perfect, with correct use of the auxiliary is acquired. The order of acquisition according to Christensen is: infinitive < present/supine/past < modals without INF < present copula < *kan / vill + INF* < intentional future (*ska + INF*) < full perfect (*har + SUP*).

In the root infinitive stage (1;6-2;1), the (temporal) relation between the utterance and the referential event or situation is not linguistically marked and can only be pragmatically deduced. The root infinitives are, however, used to refer to three different relations between utterance and time of the event. First, the most frequent reference is to an intentional, deontic or immediate future: the child refers to something he wants to do himself or he wants someone else to do. Second, the child refers to an ongoing activity. Third, the child refers to a past event that is recent or remote, resultative or non-resultative. In this stage, a child also refers to current states, however not by root infinitives but by nonverbal predicates without a copula or by modals. On the basis of distinct temporal references, Christensen (2003: 45) claims that there are semantic tense categories yet that precede formal tense categories.

When inflections first are used (2;0-2;3) reference to intentional/deontic future (= prospective) is linked to *ska + INF* or to the imperative. Children refer to ongoing activities by the simple present, as in adult Swedish. Current states are described by a nonverbal predicate in combination with a copula, by state verbs in the present tense, or, most frequently, by modal verbs (like in adult Swedish). The present tense is not yet used for future tense reference or for marking habitual or generic situations. Reference to past events is marked by the supine or the past tense and there is some differentiation in use. The root supine, and later the full perfect, is used for resultative past, typically with an accomplishment or achievement verb.
The event referred to can be recent or remote, but its most characteristic property is that it has a stable and obvious result or outcome (or more general: a post state) which remains at the time of speech, for instance as a property of quality in an object or person, which has undergone the resultative event in the past (...).

(Christensen 2003: 49)

An example of resultative past is presented in (10) (ex. 40, 2003: 50):

(10) Situation: H (2;0) talking about a toy motorbike, which has been outside in the snow and now is wet, standing in the bathtub to get dry.

\textit{cykel, daffit}

\textit{cykel duschi-t} (target form: duscha-t)

\textbf{bike} \textbf{take.a.shower- SUP}

This example shows that:

H can derive an earlier event from a current post state. The bike is wet, standing in the bathtub to get dry. But he draws the jocular conclusion that it has been taking a shower, though he himself had been playing with the bike in the snow.

(Christensen 2003: 50)

The perfect is typically used when a previous event has caused a certain result. It is most frequent when the event that lead up to the result was observed, but also when it was not observed. An example of a visible poststate or result of which the preceding event in the remote past is inferred and not observed is presented in (11) (ex. 48, 2003: 51):

(11) Situation: B (2;3) sees that there is new gravel on the playground

\textit{Någon ha-r lag-t gris där} (B at 2;3)

\textbf{Someone} \textbf{has-PRS put-SUP gravel there}

Only in a few cases is the perfect used with atelic events, such as ‘mummy has been sleeping’, when the child’s mother has been taking a nap during the day.

Children use the simple past tense also to describe poststates, like in adult Swedish, and in this use, the communicative difference with the perfect is minimal. The simple past marker is, however, also used in specific cases: when the event is in the remote past, clearly unbounded (atelic) or nonresultative, then the past tense is the only possible marker. Recent past events—within the same pragmatic situation, before the time of speech, but within wider discourse space—that are nonresultative are also primarily marked by the simple past, consider (12) (ex. 53, 2003: 53):
Situation: a bell on a toy train has given a short ring.

de   in gade  (B at 2;1)
det  ringa-de  (target form: ring-de)
it   ring- PAST

When an event is located in the remote past—the day before the utterance or earlier—in adult Swedish, the temporal location is normally anaphorically or explicitly specified. The children in Christensen’s data, however, have not mastered these types of temporal specification before about 2;6, although they do refer to remote past events, either by a root infinitive or by the simple past, consider (13) (ex. 62, 2003: 55):

Situation: B (2;3) sees a blanket that he and H. have used the day before when they were pretending to be ghosts.

vi   lek-te   spöke
vi   lek-te spöke
we   play- PAST   ghost

Past tense forms are at this age not yet combined with stative verbs. Christensen (2003) claims that:

Utterances with reference to the remote past are normally triggered—and made interpretable—by extra-linguistic factors, for example a similarity, regarding an object, person, or the place etc., between the situation at the time of speech and some preceding situation. (….) In [(13)] a certain object which was involved in the remote past activity triggers the utterance. The conclusion must be that remote past at this stage is deictically specified. The pragmatic connection between the situation at the time of speech and some past event makes the utterance temporally interpretable—but only to an interlocutor who shares the past experience with the child. The child has no means to establish the connection between ‘now’ and ‘then’ linguistically. (p. 55-56)

According to Christensen (p.56) the child’s lack of linguistic specification of temporal location of remote events ‘delimits his ability to freely speak of previous events and situations.’ In my view, however, the child is at this age not yet concerned with temporal location—he does not have the ability to infer what information his interlocutor needs to understand him—and the restricted reference to remote past events is a consequence of his limited memory that depends on clear triggers rather than on his limited linguistic capacities.

Children now also refer to potential or nonfactual situations, the meaning of it coming close to habitual or generic meaning. These utterances in general contain the generic pronoun man ‘one, you’, as in (14) (ex. 35, 2003: 48):
Situation: all sentences uttered on the same occasion, while H (2;1) is examining the washing machine.

You can.
PRS push.
INF button-DEF; You can.PRS screw.INF there;

You can.
PRS open.INF, close.INF

Utterances like (14) occur before the simple present is used for expressing generic or habitual states. Their meaning is similar to participant-external event-oriented modality \( \pi_2 \) discussed in 4.2.3.1 and 4.2.3.2. There is hardly any information in the literature on the acquisition of event-oriented modality \( \pi_2 \) but these data on Swedish suggest that this meaning occurs slightly later than the meaning of participant-oriented modality \( \pi_1 \) but before epistemic uses (event- or proposition-oriented \( \pi_2 \) or \( \pi_3 \)).

During the basic stage, that ends around 2;6/2;7 children learn to match grammatical forms and the basic temporal types. After this stage, children learn to specify the temporal location anaphorically and explicitly. They develop the capacities to order events in a chronological sequence and to relate different events in a narrative. The first uses of explicit temporal specification emerge, by adverbs that directly relate to the utterance time such as nu ‘now’ and snart ‘soon’, sen ‘ later’ and igen ‘again’. Children start using explicit specification for remote past events, but at first in a very vague and imprecise way. The first adverbial that exceeds the here-and-now is igår ‘yesterday’. It comes in around 2;4 and is first used to establish a nonspecific point in the remote past, so often not ‘yesterday’ at all. The location in time is still very inexact and needs a lot of mutual knowledge to be understood.

Anaphoric specification emanates from two juxtaposed clauses, in which the one clause is temporally related to the other instead of to the time of speech, consider (15) (ex. 66, 2003: 60):

(15) Situation: B (2;5) pointing at the cupboard, meaning that he wants to go inside it when he has finished his meal.

ja ka gå in där ja ätit
Jag ska gå in där jag ät-it
I will.PRS go.INF in there I eat-SUP
These juxtaposed clauses are precursors to adult matrix clauses with a subordinate *when*-clause (*när*). They appear first at 2;7 and are quite frequent around 3;4. (ex. 69, 2003: 60):

(16) Situation: H (2;10) talking to his mother, while looking in an advertisement for toys, where he can see a Barbie-doll.

\[
\text{sådan hade du när du var liten}
\]

\[
\text{such have-PAST you when you be-PAST little}
\]

When the *when*-clauses emerge, the child becomes able to relate events or states to each other linguistically and he can now introduce temporally remote topics in the conversation in such a way that his interlocutor can identify them. The temporal specification is much more exact than the early use of adverbs like 'yesterday'. It is in the *when*-clauses that the present is first used to express future—‘Will you work daddy when we sleep?’ (B 3;3)—and to express generic situations—‘Do the knights spill on their clothes when they eat?’ (B 3;3) (ex. 71 and 72, 2003: 60). Explicit and anaphoric specification are acquired between 2;6 and 3;0. This information is important to 10.5.2.2, when the universal acquisition of the semantics of tense and aspect will be discussed further.

During the elaborated stage new forms come in. The past form of the intentional future and of the perfect are now acquired—*skulle* ‘would/was going to’, and *hade-* ‘had -ed’—as well as the periphrastic, predictional future. More complex combinations also arise, such as ‘would have bought’ and ‘will have bought’. The intentional future in the past is used occasionally from 2;2. The early instances are specified deictically and indicate ‘recent past intention’, consider (17)-(18) (ex. 75 and 76, 2003: 63):

(17) \[
\text{ja skulle släcka lampan, mamma} \quad \text{(B at 3;0)}
\]

‘I was going to turn off the lamp, mummy’ (while playing in bed his mother throws a quilt over him, which prevents him from reaching the lamp, which he intended to turn off)

(18) \[
\text{du skulle ta ne pätt, mamma} \quad \text{(B at 3;0)}
\]

‘you were going to gather the laundry and take it downstairs’ (when his mother has gone upstairs to gather some laundry and starts doing something else)

At circa 3;1, this construction is frequent.

Another new form that begins to be used is the periphrastic future expression *kommer att* + INF, that indicates predictional future. The earliest
occurrences resemble prototypical adult uses: the future event is not intentional and the situation referred to is atelic, see (19) (ex. 78, 2003: 64):

(19) Situation: B (3;4) while helping his mother to mow the lawn.

gäset komme växa igen
gräs-et komm-er växa igen,
grass-DEF will-PRS grow-INF again

The predictional future in the present tense is used frequently only around age 4;8-4;9.

The final form to be acquired is the pluperfect. It appears often in subordinate, mainly relative, clauses, such as at 3;9: ‘I have forgotten to draw something on that drawing which I had drawn with sharks.’ (when he wants to add something on a drawing that he has already given to his mother) (ex. 79, 2003: 65). The pluperfect is very rare for a long period but becomes frequent around 5;1.

In sum, the acquisition of Swedish supports the hypothesis. Aspect, tense and participant-oriented modality markers are the first to be acquired. Claims differ as to whether the supine (perfect, π1) appears before or simultaneously to the past tense (π2) marker, but the present tense occurs from early on. One of the first oppositions seems to be between ongoing states or activities (encoded by the present tense form) and events that have a clear post-state (perfect). Full use of the present tense markers, including its future reference, generic and habitual use, develops gradually. Intentional future (prospective, π1) is acquired before real, predictional future (π2) and there is evidence that participant-oriented modality (π1) is acquired before event-oriented modality (π2). The acquisition of epistemic modality is not discussed in either of the studies on Swedish.

10.3.6.3 Greek

Modern Greek is a fusional language with a three-way mood opposition between indicative, subjunctive and imperative. Aspect distinctions are made in all moods: nearly all verbs distinguish between a perfective and an imperfective stem. In the indicative mood there is an opposition between past and non-past tense, marked by inflection. Non-past verb forms preceded by the particle θα express future tense, hypothetical and inference, whereas non-past verb forms preceded by the particle ου express modality, such as desire, wish or command. This latter construction is the subjunctive mood. There is a periphrastic (present and past) perfect, composed of the auxiliary έχω ‘have’ and the perfect formant (Stephany 1997: 194). Most frequent and unmarked combinations are the imperfective non-past, the perfective past and the perfective subjunctive. A
marked combination is the imperfective past: this construction is only used when background information is present. The marked combinations of an imperfective stem with a punctual verb expresses iterativity and of a perfective stem with a durative verb inchoative meaning (1997: 195).

The acquisition of Greek is reported in detail by Stephany (1986; 1997). It is mainly based on data of five children at the ages of 1;10, 2;4 and 2;10, on longitudinal data of one child from 2;6-4;0 and on cross-sectional data from 21 children between 2;0 and 4;0. Stephany has no clear criteria of acquisition. She pays attention both to the acquisition of form and function in child language.

By 1;10 all inflections have emerged with the subjunctive for expressing modal functions being more frequent than either the indicative or the imperative. The perfective and imperfective are marked on the verb in 90% of the cases. Non-past indicative forms are restricted to imperfective aspect and occur mainly in combination with stative and atelic verbs referring to ongoing events at speech time. The past indicative forms are restricted to perfective aspect and occur mainly with telic punctual verbs.

Past reference develops in these data from resultative meaning, to immediate past without result, to more remote past time reference and the combination with imperfective aspect. The earliest uses of the past tense forms in the samples at 1;10 are restricted to verbs with perfective aspect, mainly in combination with punctual-telic verbs such as ‘open’, ‘enter’, ‘fall’ and ‘put’. The main function of the perfective past tense till 2;10 is a completive, resultative meaning, expressing the present result of an action: the past tense meaning is merely implied as the action leading up to the result is in the past. Stephany offers an example (ex 97, 1997: 290) that according to her is a clear indication of the resultative function of the perfective past: the child should refer to the resultant state of the cutting-event, her scar, which is relevant at speech time. Consider (20):

(20) Situation: Mairi (1;10) pointing to a scar on her finger

\[
\text{íδ}^-\text{-e(s)? } \text{kópik-a.}
\]

\[
\text{see:PFV-PAST:2SG } \text{cut:PFV:PASS-PAST:1SG}
\]

‘Do you see? I cut myself.’

However, an alternative explanation is equally possible: the scar could be a trigger for the child to tell about the salient cutting-event in the past, in which case the perfective past would refer to past time and not to the resultant state. The correct interpretation is dependent on what the child finds most interesting, either the scar, or the cutting.

Although most perfective past tenses are used to refer to a resultant state, already by 1;10, past tense forms are sometimes used in a nonresultative way,
and refer to immediate past tense events, which is illustrated by (21) (ex. 98a, 1997: 291).

(21) Situation: Spiros (1;10), a few minutes after broom had been put into upright position.

\[
\text{é-pes-e (i)} \quad \text{(s)kúpa} \\
\text{AUGM-fall:PFV-PAST:3SG} \quad \text{(the)broom.}
\]

‘The broom fell down.’

From 2;4 past tense forms may refer to events in more remote past or in fairy tales, illustrated in (22) (ex. 98b, 1997: 291):

(22) Situation: reference is made to an event having happened a few days earlier when Maria (2;4) had washed her doll.

ADL: What did you do to it in the bathroom? (=doll)

MAR: \[
\text{é-klin-a} \\
\text{(target form: tó-plin-a)} \\
\text{AUGM-wash:PFV-PAST:1SG} \quad \text{(it-wash:PFV-PAST:1SG)}
\]

‘I washed it.’

At 2;10 most speech still applies to the here-and-now and to the realis domain, but some uses of the past tense within narratives appear (1997: 205-06, 90-93). The first imperfective past is attested at 2;4, but it is used sparsely up to 2;10 when still no more than 5% of all past forms are imperfective, mainly in combination with atelic verbs. The past imperfective is first used in its ‘durative’ meaning and only later in its habitual sense, which occurs before the age of 4;0 only in the context of fairy tales. The frequentative meaning of the past imperfective is acquired even later and is used even less frequently; instead, the perfective form is erroneously used in combination with iterative adverbials like ‘every day’ (1997: 205-06). Between 2;6 and 3;9 more and more lexemes are used both in perfective and imperfective past. During the 4th or 5th year, children use both aspects of a verb contrastively in the same tense and mood for about 50% of all verb types.

The use of the present perfect does not occur before 2;6; the past perfect appears a several months later around 3;2. At first, the auxiliary éxo is variably omitted. In the longitudinal study of Katis (1984, cited in Stephany 1997), at 2;6 the present and pluperfect account for 3.6% of all past forms, whereas at 3;9 they make up 30.6% of all past forms. The present perfect occurs mainly with telic verbs and at first expresses resultative. It is in competition with the perfective past, which is overused ‘for situations the cause of which cannot be referred to’. For referring to resultant states or experience in the remote past,
children seem to consider the past perfect more appropriate than the perfective past (Stephany 1997: 206, 47).

Stephany (1997: 247-49, 99-306) also investigated the development of modality and future. The subjunctive (used to express modality) and future tense are in adult Greek distinguished by the particles na and θα. In child language, however, these uses are not differentiated at first: children often omit the particles (in 43-88% of all cases at 1;10) or reduce them to a. Gradually, children start using na, but they still vary it with a, and leave out a particle in most cases: the subjunctive verb has both modal prospective and temporal prospective uses. In the samples at 1;10, it is in the majority of cases (78% to 98%) modal: they express the child’s wishes or intentions to act (‘Spiros is going/wants to read’), obligations of the addressee or a third person (‘You shall sit down’, ‘she shall take me in her arms’), and they are used for asking permission (‘May she (=Speaker) take the piggy?’). These utterances imply futurity so that there is no clear-cut distinction with future reference, but they mainly mark modality. More temporal functions arise when the child refers to uncontrolled situations, often with inanimate or third person subjects (‘it (=tape recorder) is going to break now’), or in a more remote future sense (‘You’ll also become a mommy’). Slowly, the future particle θα comes in, and more than 50% of all tokens are preceded by a particle, but the non-specialised morpheme a is still used and particles are still left out frequently. More and more, children learn to differentiate consistently between na and θα. At 2;10, the subjects in Stephany’s study use a particle in on average 93% of all cases and differentiate between subjunctive and future in 72-97% of all cases.

Other expressions of modality are auxiliaries. From 1;8, boró, ‘can, be.able, may’, is used, most frequently to express inability ‘can’t’ and not yet for expressing permission. It is initially used without a main verb up to about 2;10. The modal auxiliary prépi ‘must.3SG’ occurs around 2;4, much later than boró and less frequently. It is used to express obligation. The speaker’s wishes are very frequently expressed by the volitive main verb θέλω ‘want’, mainly in combination with nouns, but from 2;4 also with object clauses.

A construction that is used early as an indirect directive, expressing social norms or habits is the 3PL non-past indicative, consider (23) (from Stephany 1997: 303):

(23) Situation: Mairi (1;10) when her mother approaches the toy monkey with her foot.

ze (for ben) vín-un to póði.

not: NONMODAL put: IPFV-NONPAST:3PL the foot.

‘One doesn’t put one’s foot there.’
This construction raises an impersonal modal interpretation, which resembles event-oriented deontic modality ($\pi_2$). The modal reading is, however, a matter of implicature, since the same construction can be used for describing people’s ordinary behavior such as in ‘They call it a nightingale there’. The example indicates that young children have no conceptual problems with event-oriented deontic modality.

The first epistemic modal uses occur around 3;9, consider (24) (from Katis 1984, cited in Stephany 1997: 306):

(24) *boɾ-i* ke na *for-ātane*. (M at 3;9)
    may: IPFV-NONPAST:3SG also MOD fear-PASS:IPFV:PAST:3SG

‘It is possible that she was frightened.’

Based on the translation, this seems to be an example of objective (event-oriented) epistemic modality ($\pi_2$).

Christofidou & Stephany (2003) studied the contrastive use of inflection in two children. These children used the subjunctive up to 2;0 only in main clauses, for expressing deontic modality. After 2;0 it is also used in subordinate clauses, with different functions. The first contrasts made by the children are modal (perfective subjunctive and imperative) versus nonmodal (imperfective non-past and perfective past) and imperfective versus perfective. The imperfective non-past typically occurs with atelic durative or stative verbs for ongoing situations, whereas the perfective past most often occurs with telic verbs with a resultative function.

The input of the parents to the children was also compared to children’s speech and there appeared to be a close correspondence between type and tokens of TMA categories, although the repertoire used by the adults is more elaborate than that of the children. About two third of the lemmas in the input is restricted to one or two forms, but the other lemmas are used in more than two forms. The input appears to be adapted to the child’s linguistic level, although it is more advanced (Christofidou & Stephany 2003: fn.30).

In conclusion, the hypothesized order of acquisition is confirmed by the data on Greek. Imperfective and perfective aspect ($\pi_1$) are used from the start, although not yet contrastively. The imperfective present forms are restricted to marking ongoing events and states, whereas perfective past forms are predominantly used for marking resultant states and now and then for immediate past reference. Tense distinctions ($\pi_2$) are at this stage only implicit and seem to be expressed independently of aspect from about 2;4, when imperfective past forms come in. Complex aspect like the perfect and pluperfect occur later. The Imperfective in Greek is first used with the meaning imperfective past ($\pi_1/\pi_2$) and only later with the meaning past habitual or past
frequentative (π2/π2, event quantification). Participant-oriented modality (π1) is expressed from the early stages (before 2;0) by the subjunctive/future construction and by boró. Later, real future tense uses arise (π2). Epistemic modality (π2/π3) occurs much later, after 3;6. By and large the order of acquisition corresponds to the hypothesized order: aspect and participant-oriented modality (π1) < tense (π2) < epistemic modality (π2/π3).

10.3.6.4 Romance: French, Italian and Spanish

The Romance languages French, Italian and Spanish, have very similar TMA systems. The common TMA expressions in the three Romance languages are discussed in this section and presented in Table 10-8. French, Italian and Spanish make a three-way temporal distinction between past, present and future tense. Verbs carry a portmanteau inflection that marks person, number, tense,

<table>
<thead>
<tr>
<th>Italian</th>
<th>French</th>
<th>Spanish</th>
<th>FG Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>inflection -a/e</td>
<td>inflection -o</td>
<td>inflection -a/e</td>
<td>Present (π2)</td>
</tr>
<tr>
<td>inflection -va</td>
<td>inflection -ait</td>
<td>inflection -aba/-ia</td>
<td>Imperfective past6 (π1 + π2)</td>
</tr>
<tr>
<td>-</td>
<td>avoir / être ‘have’/‘be’ haber ‘have’ + PPTC</td>
<td>Perfect (π1)</td>
<td></td>
</tr>
<tr>
<td>aver/ esvere ‘have/be’ + PPTC</td>
<td>avoir / être ‘have’/‘be’ inflection -(i)ó</td>
<td>Perfective past7 (π1 + π2)</td>
<td></td>
</tr>
<tr>
<td>andare ‘go’ + INF*/#</td>
<td>aller ‘go’ + INF*/#</td>
<td>ir a ‘go to’ + INF*</td>
<td>Prospective* (π1) or future# (π2)</td>
</tr>
<tr>
<td>stare ‘be’ + PPTC</td>
<td>star ‘be’ + PPTC</td>
<td>Progress (π1)</td>
<td></td>
</tr>
<tr>
<td>potere</td>
<td>pouvoir</td>
<td>poder</td>
<td>Potentiality (π1/π2/π3)</td>
</tr>
<tr>
<td>dovere</td>
<td>dever</td>
<td>tener que</td>
<td>Entailment (π1/π2/π3)</td>
</tr>
<tr>
<td>volere</td>
<td>vouloir</td>
<td>querer</td>
<td>Volition (π1)</td>
</tr>
</tbody>
</table>

Note. The inflectional forms presented are the third person singular forms.

6 The imperfective past forms in Italian, French and Spanish are called Imperfetto, Imparfait and Indefinido, respectively.

7 The perfective past forms in Italian, French and Spanish are called Passato prossimo, Passé composé and Definido, respectively.
aspect and mood. In spoken language, the perfect construction ‘have’/‘be’ + past participle is a perfect aspect marker in Spanish, has turned into a perfective past marker in Italian and has both functions in French. All three languages have an opposition between imperfective and perfective past tense. In Spanish, the contrast is encoded by inflection; in Italian and French the imperfective past is marked by inflection, and the perfective past by the periphrasis ‘have’/‘be’ + past participle (French, Italian). French and Italian also have an inflectional perfective past form, but these forms have disappeared or are disappearing from the standard spoken languages. The future can be expressed inflectionally or periphrastically, the latter being more common and in general used for expressing ‘intention’ or prospective, rather than real future tense, although this latter use is also possible in French and Italian (indicated by the symbols $\#$ and * in Table 10-8). Spanish and Italian have a progressive construction that is not obligatory; the present tense can also be used to refer to ongoing activities. Modality is expressed by modal auxiliaries or, in Spanish, by periphrastic constructions.

French

The relevant TMA expressions in French are presented in Table 10-8. A past perfect and past in the future may be formed by combining forms, but they are not attested in spontaneous child language. The conditional mood is used in hypothetical and counterfactual statements and there is a subjunctive mood, restricted to subordinate clauses.

An overview of the acquisition of French is given in Clark (1985), based on several diary studies and experimental research. From 2;0, children start using tenses and typically contrast the perfect construction, _avoir_ / _être_ + past participle (Passé Composé), with the present tense. The data on French suggest that children initially rely on verb tense to mark the contour of an event rather than to mark temporal relations per se. First tensed forms are past participles like _fini_ ‘done, finished’ and _parti_ ‘gone’, used for marking results or end-states (perfect aspect, $\pi^1$). From about age 3 the full perfect construction, now denoting perfective past ($\pi^1+\pi^2$), is contrasted with the imperfective past, which is used for background information and ongoing events. At age 3 the periphrastic future is acquired for marking prospective aspect or future tense; the inflectional future tense is acquired later. Future forms are first used in routines, in anticipation of the usual sequence. Note that in other Romance languages the periphrastic future is also acquired before the inflectional future. Later acquisitions in French are conditional and subjunctive moods for expressing irrealis.

The acquisition of tense and aspect in particular is examined by Bronckart & Sinclair (1973): 74 children participated in a production task, divided in age
groups of on average 3;7, 4;7, 5;6, 6;6 and 7;8. An experimenter acted out an action with toys, such as a horse jumping over a fence or a fish swimming. The actions differed, among other things, in having a clear result or not (push a car towards a garage versus swim around) and having duration or not (jump several jumps for 10 seconds versus jump one big jump in one second). Afterwards, the children had to tell what they saw. Note that in adult French this task would require the use of a past tense form, irrespective of the characteristics of the actions.

There appeared to be strong correlations between characteristics of the action and the verb forms used by the children. The actions that obtain a clear result were in the vast majority of cases (78%) described with the Passé Composé. Furthermore, there was a distinction based on duration. Actions with a result that were punctual or nondurative were from the youngest group onwards referred to by the Passé Composé in 90% of the cases, whereas durative actions with a result were in the youngest age group described equally by use of the Passé Composé and the present tense. With age, the use of the present tense for durative actions diminished and the use of the Passé Composé increased. Finally, the children described the events that did not lead to any result mostly with a present tense (76%), even at the age of 6. Some children use the imperfective past from age 6. Bronckart & Sinclair explain these associations as follows:

If the action gives an immediate result, the use of passé composé reaches its maximum because the observer can only focus on the result; if a certain time elapses before the result is obtained, the observer can either focus on the result or on the action process itself. The longer it takes to complete the action, the more probable becomes focusing on the action and the use of présent. (Bronckart & Sinclair 1973: 126)

The results show that the distinctions in having a result and having duration were more important to the children than the temporal relation between the event and the moment of speech, because if the temporal relation had been the most important cue, children would have equally used the past tense for the different action types.

Exclusive attention to the result of an action implies focusing on the ‘past’ character of an action; conversely, a focus on the process, without attention to the result, projects the action into a kind of perpetual present. For certain types of events, these early, incompatible focuses take on prime importance and lead the child to ignore the relationship of posteriority between enunciation and the termination of the action. (Bronckart & Sinclair 1973: 127)

An important thing to note about the study of Bronckart & Sinclair is that it does not investigate the relation proper between lexical aspect and tense/aspect morphology, i.e., they do not report whether children indeed describe the
events with a clear end result as a telic event. Their study investigates which characteristics of the real world are salient to the child and connected to morphological forms, but not whether there is a relation between event types (linguistic category) and morphological forms. The main conclusion that can be drawn from this study seems to be that French speaking children do not pay attention to temporal relations in the early stages.

Kilani-Schoch (2003) investigated the emergence of the contrastive use of verb forms in two French speaking children. The order of forms according to first emergence and frequency is present indicative singular < infinitive < past participle / imperative < passé composé (<) periphrastic future < simple future / simple past. The early forms of the passé composé or past participle without the auxiliary are mainly restricted to telic lemmas. The forms are extended to stative verbs between 1;8-2;0 and to activity verbs between 1;9-2;2.

The first contrastive uses occur from about 1;8/2;0 and are between the present, the perfective past (past participle) and the infinitive. Contrastive uses between the periphrastic future and present tense become frequent between 1;10 and 2;4. Kilani-Schoch (2003) argues that:

since French aspectual distinctions are not encoded separately from tense and are tied to the opposition between periphrastic and synthetic tense, aspectual distinctions obviously depend on the mastery of the respective tense subsystem, i.e. the opposition between imparfait (Imperfect as in Latin and the other Romance languages) and passé composé (Compound past). (p.289)

This means that, in her view, aspect in French is necessarily acquired at the same time or later than tense. The function of the forms is acquired later than the forms themselves.

There is little information on the acquisition of modality in French. Clark (1985) reports that one of the ten most frequent verbs in 2-4 year olds is vouloir ‘want’. A study on the comprehension of modality by children between 4;0 and 12;0 is reported in Piéraut-Le Bonniec (1980, cited in Bascelli & Barbieri 2002) and shows that the understanding of deontic modality around age precedes the understanding of epistemic modality, around age. Deontic modality is participant-or event-oriented (π1 or π2) whereas epistemic modality is event- or proposition-oriented (π2 or π3). The ages at which the children understand the forms are, however, very late, at 7;0 (deontic) and 10;0 (epistemic) whereas production data in other languages show that children express at least deontic modal meanings before the age of 2;6 or even before 2;0. It is unknown to me why the age of comprehension is so late in this experiment.

In conclusion, depending on the semantic interpretation of forms in child language, the acquisition of TMA in French does or does not support the hypothesized order. According to the analysis of Clark and Bronckart & Sinclair, early verb forms distinguish between imperfective, perfect and
prospective aspect (π₁), and only later on, tense distinctions (π₂) are marked. Kilani-Schoch claims that aspect cannot be acquired independently of tense and therefore, aspect is acquired simultaneously or later than tense. There is some evidence that deontic modality (participant-or event-oriented, π₁ or π₂) is acquired before epistemic modality (event- or proposition-oriented, π₂ or π₃).

**Italian**

The relevant TMA-markers in Italian are presented in Table 10-8. The perfect construction, avere/essere + past participle, combines with nonstative verbs for marking that an action has been accomplished. The imperfective past is the default past marker with stative verbs, for marking a past state. When the perfective past combines with a stative verb, it can either denote inception—came to know—or termination—John loved Mary (but he doesn’t love her anymore). The combination of imperfective past and nonstative verbs marks progressive or iterative. There is a conditional inflection for marking hypothetical statements (among others) or polite or tentative modality.

The study of Antinucci & Miller (1976) is one of the first that reported about the use of tense and aspect in young children. Antinucci & Miller investigated past tense forms in longitudinal data of seven Italian children (1;6-2;6) and cross-sectional data of 48 children (2;0-4;4). The past participle occurs from the beginning (ca. 1;6), but the imperfective past begins to be used only around 2;1. A peculiar phenomenon in child Italian is that the past participles of transitive verbs are marked for agreement with the object of the verb, whereas in adult Italian, there is no agreement on the past participle of transitive verbs (unless the object is pronominalized). Antinucci & Miller explain this by assuming that children use the past participle as an adjective that attributes a state to the object, more precisely, the end state of a process or action in which the object was involved. The situation types with which the past participles are used support this: they are mainly used with telic situations with a clear result, very infrequently with telic situations that have no clear result or with activities (dynamic, atelic) and never with states.

Some present, observable states have a specific characteristic in that they are linked to a preceding event of which they are the result. Change of state verbs (causative or not) describe those situations in which some end-state comes into existence as the result of a process. In these cases, therefore, the past event (process) and the present moment (end-state) are related not simply by an abstract temporal relation but by a more concrete effectual relation. This concrete link is exactly what enables the child to represent the past event once he has access to the present end-state. (Antinucci & Miller 1976: 183)

It thus seems that the function of early past tense forms in child Italian is to encode end-states (of past events), relevant in the here-and-now. From this use
as a perfect aspect marker, the adult perfective past tense meaning develops as a natural implication. Antinucci & Miller remark (1976: 183-84, fn 6) with respect to this development in child language that it reflects the diachronic development of the compound past construction in Italian. Like in child language, the participial past did originally agree with the object of transitive verbs and only later came to mark 'past action'.

In a later stage, between 2;0 and 2;8, the imperfective past, combining with stative and activity verbs, emerges. It occurs almost entirely in contexts of story telling or play. These stories are not past anecdotes and in most cases the stories are not previously told to the child: the children invent the stories online, either stimulated by pictures in a book or when they act out scenes in their play. Antinucci & Miller (1976: 186) found that the imperfective past is at first not used for marking past tense, but for marking pretend world (irrealis) in contrast to real world (realis). The succession of events in story-telling or the repetition of a single event may help the child to establish the notions of past activities. The hypothesized meaning of the imperfective past is supported by the fact that children start the expression of hypothetical and counterfactual not by the conditional mood inflection (adult Italian), but by using the imperfective past form.

Noccetti (2003) investigated the emergence of contrastive use of Italian verb morphology in one child (2;0-2;7). The first verb forms are the present and imperative and a single use of the past participle. Most spontaneous child utterances are used for describing objects and events in the here-and-now. Other utterances, frequently non-spontaneous, refer to ‘the non-immediate present, to past events or to ‘family-bound’ situations, which are meaningless outside the family context since they refer to personal experiences’ (Noccetti 2003: 358). This latter type of reference is expressed by past participles and a few imitated imperfect forms. Up to 2;4, verbs occur only in one type. The first person singular present tense is mainly used in questions, the third person singular and plural mainly to describe ongoing actions, the past participle to refer to accomplished actions, such as *rotta* ‘broken’.

The first contrastive uses occur at 2;5. Verbs are now used both in present, past participle (with or without auxiliary) and infinitive. Frequency proves to play an important part in this development:

The verbs which show a high number of types and tokens, in fact, are more likely to occur in different contexts facilitating semantic bootstrapping and are,

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8 Compare this development to the perfect construction in English, that has a similar origin (see 6.3.2).

9 The study of Pizzuto & Caselli (1994), based on strict productivity criteria for inflectional forms, confirms that the present tense inflection is acquired first.
therefore, the first to emerge in C[himd]S[peeh] and the first to show some forms of their paradigms. (Noccetti 2003: 369-70)

According to Noccetti the verbs sapere ‘to know’, volere ‘want’, dovere ‘must’ and potere ‘can’ are frequent in the input but ‘mental and modal verbs (…) are not perceptively salient and do not belong to the early phases of acquisition’ (2003: 370).

A study on the comprehension of modality is performed by Bascelli & Barbieri (2002). It elaborates on an experiment by Hirst & Weil (1982) on English. Bascelli & Barbieri investigated the comprehension of dovere and potere in the forms deve ‘must’, dovrebbe ‘should’, non deve ‘must not’ and può ‘may’, potrebbe ‘might’, and non può ‘may not’. These verbs have both epistemic and deontic meanings. In the experiment, 192 children took part, divided in four age groups with mean ages of 3;9, 5;2, 6;8 and 8;8. A control group of 60 adults performed the same tests. In the epistemic modality test, the children had to find a Smurf hidden under a cup or a box. Children were given some help in a single and a double sentence condition. In the single-sentence condition one puppet said: ‘The Smurf must / may / should / might / must not / may not be under the cup/box’. In the double-sentence condition two puppets each provided a ‘helping’ statement, using two different auxiliaries, such as ‘The Smurf must be under the cup’ and ‘The Smurf may be under the box.’ The children should follow the instruction with the strongest modal. In the deontic modality task, children participated in a game in which they had to win Smurfs: if they lifted the Smurfs’ house they won Smurfs, if they lifted Gargomel’s house, they lost Smurfs. However, they could not act freely, but had to obey permissions or obligations in deontic statements: you must / may / should / might / must not / may not lift the Smurfs’ / Gargomel’s house. There was again a single and a double-sentence condition: in the double sentence condition, the children should obey the utterance with the strongest modal, even if this was a disadvantageous action (i.e., loose Smurfs).

The results show that in the epistemic test, the three and five year olds did not differentiate between the modals: they considered all positive statements as reliable information on where to find a Smurf. The three year olds did not yet show any understanding of the negative forms. By the age of six, children distinguish between deve and può (necessity and possibility), but the weaker forms dovrebbe and potrebbe are not yet understood. Eight year olds begin to understand the different degrees of possibility (può versus potrebbe) and necessity (deve versus dovrebbe) but it is not yet adultlike.

In the deontic modality test, children of three year old did not yet differentiate between the modals: they performed all orders, independent on whether the order expressed permission or obligation and independent on an advantageous or disadvantageous outcome (gain or loose Smurfs). The five year
olds made a weak contrast between forms: there was a significant difference between the interpretation of the strongest (devi, must) and the weakest (potresti, might) form. The children do not seem to be able to evaluate their own advantage. Six year olds and eight year olds on the contrary do not obey very often, but prefer to perform the most advantageous action, independent on the order they get. The control group of adults—who performed the test with coins instead of Smurfs—also disobey a disadvantageous order in 40% of the cases. Six year olds still treat devi (must) and puoi (may) alike, but eight year olds clearly understand the distinction between the four different modals and act as the adults. The experiments show that Italian children understand deontic modality (participant-oriented, }\pi_1{)} very well around age 8 whereas epistemic modality (}\pi_2{|}\pi_3{|}) is still not fully understood by that age. Like in the French experiment of Piérot-LeBonniec (1980), the full comprehension of deontic meanings is reported to occur at a much later age than the production of these meanings in other languages. That there is such a large gap between the findings on spontaneous production data and the comprehension in experiments suggests that the methods of research cannot straightforwardly be compared.

In sum, the first contrast to be encoded seems to be between end-states (past participle, used as perfect aspect, }\pi_1{)} and events in the here-and-now (present tense, }\pi_2{|}). In Antinucci & Miller’s view, the imperfective past is first used to express irreals (}\pi_2{|}). The experimental data show that participant-oriented modality (}\pi_1{)} is acquired before epistemic modality (}\pi_2{|}, }\pi_3{|}). These results support the hypothesis that there is no stage in which }\pi_2{|}-operators are present but }\pi_1{)-operators are not, or in which }\pi_3{|}-operators are present but }\pi_2{|}-operators are not. However, the acquisition of }\pi_2{|}-operators (present tense) starts around the same time as }\pi_1{)-operators (perfect aspect).

Spanish

The relevant TMA expressions in Spanish are presented in Table 10-8. In contrast to Italian and French, Spanish has a rather frequent progressive marker (estar ‘to be’ + Gerundio/ present participle) that may combine with all tense

\[10\] The results in this study are in contrast to the experiment in English (Hirst & Weil 1982), in which the comprehension of epistemic modality seemed to precede the comprehension of deontic modality. This is probably the result of a difference in the experimental set-up: in the Italian experiment, contrary to the Hirst & Weil study, the children have to perform an action in response to both tests and not only in response to the epistemic test. A further difference is that the deontic modal verbs in the Italian test are, like the epistemic verbs, addressed to the children and not to a third party, as was done in the tests on English. The deontic and the epistemic test in the Italian experiment are thus more similar so that the outcome is probably a better representation of the children’s linguistic competence than in the English experiments.
markers. In addition, there is a subjunctive (inflection) in Spanish, mainly restricted to subordinate clauses, but possible in main clauses to express the imperative or wishes.

The acquisition of Spanish is examined by Mueller-Gathercole, Sebastián, & Soto (1999; 2000) and Aguirre (2003). Earlier research on Spanish (cited in Mueller-Gathercole et al. 1999: 138) has already shown that children by about 2;0 years use the infinitive, imperative (expressed by the subjunctive), present tense, present and past participle and future tense. The first contrastive uses within the field of TMA are between present, past participle and periphrastic future at circa 1;11-2;0. At that age, the perfective past (preterite) and full present perfect are also used, though infrequently. The imperfective past is acquired last.

In Mueller-Gathercole et al. (1999; 2000) research is reported from two children: Maria 1;6-2;6 and Juan 1;8-2;1, who were recorded for half an hour-sessions with intervals of one or two months. These children (2000: 151-52) use already many different verb forms in the first sessions, but every verb lemma is used in only one form. There is thus no contrastive use of verb forms. Furthermore, when contrastive use emerges, different verbs are used in different contrasts:

The forms for each verb appear to be learned one by one, with no overriding general principle governing which forms are added next. That is, (…) one does not find, for example, that many verbs suddenly emerge in the preterit, or that many verbs suddenly appear in the present participial form, or that many verbs suddenly appear in the first person singular present tense form. (2000: 160)

Given the productivity criterion in this study that a morpheme must be used with at least two verbs and at least one of those verbs must be used with another, different inflection, few of the early inflections are productive. For both children, the first forms that are used productively and contrastively are the infinitive, imperative and 3s.present. For Juan, the first contrast in TMA is at 1;11, when he uses ir ‘go’ contrastively between present (vamos and va) and periphrastic future (va a ir), although the future is not yet productive: va a ir, is the only future construction. At 2;1 the distinction between perfective past and present is used for caer ‘fall’, and between past participle and present for romper ‘break’.

For Maria the first contrast in TMA occurs at 1;10 for caer between present and perfective past and for ir between present perfect and present. Especially the first contrast should be regarded as non-productive: in all her recordings, Maria uses the perfective past inflection with only three different lemmas. At 2;1 a further contrast is used between 3s.present and 3s.present perfect (for caer) and this contrast becomes productive. At 2;3 the imperfective past emerges and at 2;4 the periphrastic future and the progressive.
Mueller-Gathercole and colleagues (1999: 153-58) have also investigated the role of input. The frequency of forms in the input only moderately correlates with acquisition order. Although the mothers frequently use the forms that their children use, such as 3s.present, imperative or infinitive, they also use forms that their children do not yet use, such as 2s.present, present participle/present continuous, present perfect and imperfective past. These latter forms are linguistically more complex and the linguistic complexity seems to influence the acquisition order more than the frequency in the input.

According to Mueller-Gathercole et al. (1999; 2000) contrastive use of inflections occurs relatively late. They claim (2000: 167) that the inflectional system in Spanish is not yet fully productive at 2;6, since there is only a handful of contrasts used productively. A serious problem with this conclusion, however, lies in the methodology of the study. The children are recorded for only half an hour with intervals of one or even two months. From Juan there are only four recordings taken into consideration altogether. From Maria, up to the age of 2;0, there are only recordings at 1;6.3, 1;7.24, 1;10.17 and 2;0. This is a very low frequency, which highly reduces the chance to find contrastive uses of the same lemma before 2;0. In particular for contrastive use, the corpus should be as dense as possible, for only when the conversation is about similar events in different contexts, the same lemmas will be used in different forms. The chance that exactly these contrasting situations occur within the recorded sessions is probably very small, and thus, the child seems to show hardly any contrastive use. Although it is certainly possible that children start out by piecemeal learning—a conclusion more thoroughly supported by denser corpora like the one in Lieven et al. (1997) or Tomasello (1992)—this study on Spanish would not count as very good evidence for it.

Another recent study that looks at contrastive use of inflection in Spanish child language is Aguirre (2003). She examined the spontaneous speech of one boy between 1;7 and 1;11 on the basis of ten recordings between 30-90 minutes. Up to 1;8, the child only uses rote-learned forms: verbs appear in only one form. At 1;9 three lemmas (ir ‘go’, romper ‘break’ and asustar ‘frighten’) are used both in the present tense and the past participle and one lemma caer ‘fall’ in the present (cae), past imperfective (caía), and past perfective (cayó). At 1;10, there are three new lemmas used in the present tense and the past participle; three lemmas are used in the present indicative in contrast to the present subjunctive; one lemma (coger ‘take’) is used in the present indicative and the present participle. The present subjunctive is in this stage only used to express prohibitive illocution. At this age the first present progressive uses emerge and infinitives as complements to the modal verbs poder ‘can’ and querer ‘want’. These data show contrastive use much earlier and much more frequently than the study of Mueller-Gathercole et al. (1999; 2000), which is probably the direct
result of the length and frequency of the recordings. Up to 1;11, Mueller-Gathercole et al. have collected an hour and a half of speech of Maria. For the same period, Aguirre has recorded 9 hours of speech. The conclusion of Aguirre (2003: 17) is that the acquisition order in Spanish follows the order 3s.present (< imperative) < past participle < 1s.present (< 3s.present subj.) < 3p.present < present participle. I will here accept the conclusion of Aguirre and not the conclusion of Mueller-Gathercole et al. Unfortunately, both studies did not explicitly describe the contexts of use of the TMA forms in child language.

Summarizing, the acquisition of TMA in Spanish starts with the opposition between the present (tense, π2) and the past participle (perfect aspect π1), without the auxiliary. The forms for aspect and tense thus occur from the same age. The periphrastic future for expressing intention emerges somewhat later as well as the progressive, but unlike in English, Spanish uses the present tense as the regular device for referring to ongoing events and the progressive only for stressing ongoingness. The perfective past (Preterit/Definido) is acquired before the imperfective past (Imperfect/Indefinido). Although not systematically studied and discussed, the modal auxiliaries in their participant-oriented use (π1), with or without an explicit main verb, appear to be among the first productive forms (Aguirre 2003). There is thus no stage in which Spanish children have π2-operators but no π1-operators. The function of the early contrasts is, however, not described. There are also no reports on the acquisition of π3-operators in Spanish.

10.3.6.5  Slavic: Polish and Russian
The TMA systems in the two Slavic languages that will be discussed, Polish and Russian, are very similar to each other, but very different from the Germanic and Romance languages. The TMA system of Polish will be discussed in detail; the system in Russian will be discussed only briefly as it resembles the Polish system to a large extent.

Polish
Polish is a West Slavic language and is classified as inflectional or fusional. It has hardly any bare stems: nearly every form of the verb is somehow inflected. There is an obligatory distinction between perfective and imperfective aspect. For most verbs the perfective form is derived from the imperfective by a prefix or suffix, for example pisą / na-piśa’ ‘to write’ (imperfective/perfective), kop-a-ć / kop-na-ć ‘to kick’ (imperfective/perfective). For some verbs the perfective and imperfective form are equal in morphological complexity; they both consist of a stem and a suffix. The different suffixes, possibly accompanied by stem alternation, indicate the aspectual distinction. There are also prefixes which, besides indicating perfectivity, carry additional meaning more or less like verbal
particles in English: podpisae ‘to sign’ (perfective), wy-pisač ‘to write out’ (perfective), prze-pisač ‘to copy’ (perfective), etc. These forms can be made imperfective again by suffixation: pod-pisya-ć, wy-pisz-ywa-ć, so-called secondary imperfectivization. For a few verbs the aspectual pairs are not derived but suppletive, for example brać (imperfective) / wziąć (perfective) ‘to take’.

The meaning of the perfective and imperfective is still contentious. In general the perfective is considered to specify the notion of a complete situation, i.e. a situation that has a beginning, a continuation, and a termination. Contrary to our definition of the imperfective in 3.3.3, the Polish imperfective form is aspectually neutral: it does not specify whether the action is ongoing or not. As a result, both forms are possible if a situation is completed; the perfective is chosen if the speaker wants to stress the property of completion in the situation. If reference is made to a situation that is not completed, then only the imperfective is possible (Smoczynska 1985: 602).

Polish has three tenses: past, present and future. The interaction with aspect is rather complicated and will be illustrated by the verb pisač/napisač ‘to write’ (imperfective / perfective). There are two different verb stems. Stem I is the ‘present tense stem’ (pisz/-napisz-) that occurs in the present tense of imperfective verbs, the future tense of perfective verbs and in imperatives. It will be discussed below. Stem II is the ‘infinitive stem’ (pisa/-napisa-) that occurs in the past tense, the past participle, the infinitive and the conditional. The past tense is formed by stem II, a past suffix, a gender suffix (masculine -ø, feminine -a or neuter -o) and a person/number suffix, consider (25):

(25) Imperfective past: pisa -l -{ø/a/o} -m
    STEM II -PAST -{M/F/N} -1SG

Perfective past: na-pisa -l -{ø/a/o} -m
    STEM II -PAST -{M/F/N} -1SG

The past participle is the same form as (25), but without person/number marking. The conditional form has an extra conditional suffix –by in between the gender and person/number suffix: (na-)pisa-l-{ø/a/o}-by-m.

The present and future tense forms are less straightforward and are dependent on the aspect of the verb. Stem I in combination with an imperfective form yields a present tense, whereas Stem I with a perfective form yields a future tense, consider (26) and (27):

(26) Imperfective present: pisz-c
    STEMI -1SG
Perfective future: *na-pisz-ę*

STEMI -1SG

There is no present tense for perfective verbs. The future tense for an imperfective verb form is constructed with an auxiliary *będ- ‘will’* inflected for person/number and either a past participle or an infinitive, the choice between them being optional, consider (28):

Imperfective future: *będ-ę pisa-l-{*a/a/o}*  
AUX-1SG STEMII-PAST-{M/F/N}  
Or: *będ-ę pisa-i*  
AUX-1SG STEMII-INF

Modal meanings in Polish are expressed by full verbs. Sentences with modal verbs are embedded constructions rather than simple sentences with a complex predicate. Furthermore, there is a number of impersonal modals in subjectless constructions: *można ‘one:can’, wolno ‘one:is:allowed:to’, trzeba ‘it:is:necessary:to’,* etc. (Smoczynska 1985: 603-04, 08).

The acquisition of Polish has been studied extensively (Smoczynska 1985; Weist et al. 1999; Weist et al. 1997; Weist, Pawlak, & Carapella 2004; Weist et al. 1984). Smoczyńska’s (1985) description is based on the longitudinal data of ten children and a few extra observations. She does not explicitly state the criteria of productivity that she has used. With respect to her data, she notes first of all that the acquisition order of forms differs for individual children. In general, however, the acquisition of inflection starts with the 2s imperative used in opposition to the 3s imperfective present. Then the infinitive emerges, after which the perfective future (formally identical to present imperfective) and the past tense appear, the latter mainly with perfective verb forms, but also with imperfective. Finally, the imperfective future (periphrastic construction) is acquired in which the future auxiliary is occasionally omitted. On average, children of 2;0 years old use all the available tense-aspect combinations. Around this age, children also make reference to hypothetical events, although they do not yet mark it linguistically. Marking of hypothetical statements—using the particle *by*—emerges in all children before age 3, although the frequency increases at least till age 5. Reference to counterfactual events appears later (Smoczynska 1985: 646-53).

In Polish child language, tense and aspect morphology emerge almost simultaneously and meaningfully according to Smoczyńska. She claims that tense morphology does not coincide with an aspectual distinction, like past for completedness and present for ongoingness. Past morphology would not mark resultant state since it may also refer to past activities and to moderately remote
past events. From the initial period of inflected verbs, the children use imperfective past forms to refer to an activity in the past, such as leciał samolot ‘fly:IPFV:PAST plane’ (= ‘The plane was flying’) (1;7), pływała się ‘swim: IPFV:PAST’ (1;8) and jadłam ‘eat: IPFV:PAST’ (1;11) (Smoczynska 1985: 647). Unfortunately, there is no information presented about the frequency or productivity of these forms or the contexts in which they are used.

As well as Smoczyńska, Weist and colleagues (1986: 364; 1984) argue that children in Polish distinguish between perfective and imperfective aspect, simultaneously with tense distinctions and that tense and aspect are marked independently. This claim is supposedly supported by the fact that children distinguish between perfective past and imperfective non-past forms: if children would only mark the distinction between completeness and non-completeness and ignore the tense marking on the verb, they could have used perfective non-past forms (perfective for marking completeness) in opposition to imperfective non-past forms (imperfective for marking non-completeness) in contexts where adults would also make a distinction between past and non-past. However, this scenario does not occur. Children are sensitive both to the aspectual and to the tense distinction in the verb forms.

In contrast to the claims of Smoczyńska and Weist et al., Stoll (2001: 124) claims that there is a strong relation between tense, aspect and situation type in Polish. She points out that the longitudinal data in Weist et al. (1984) reveals a correlation between tense and aspect. Telic verbs (achievements and accomplishments) are preferably used in the perfective aspect. Atelic verbs (states and activities) can only be imperfective: they are however preferably used in the present tense, rather than the past tense. Bloom & Harner (1989) made a similar point. They reanalyzed the data in Weist et al. (1984) and found that although Polish children may use past tense with imperfective state and activity verbs from the same age as perfective past, the latter were far more frequent.

In sum, according to Weist and Smoczyńska, Polish children acquire different combinations of tense and aspect remarkably early. Especially the use of imperfective past forms before the age of 2;0 is precocious compared to other languages. It seems as if children already master the difference between imperfective past and imperfective present, between perfective past and perfective future and between perfective and imperfective past. Only the contrast between perfective and imperfective future occurs somewhat later, but it is acquired around 2;0. Rejecting these claims, Stoll and Bloom & Harner query the productivity of the combinations: there is a strong correlation between on the one hand atelic verbs, imperfective aspect and present tense and on the other hand telic verbs, perfective aspect and past tense. My view on this matter will be discussed in 10.5.2.1.
Weist and colleagues (Weist et al. 1999; Weist et al. 1997; Weist et al. 2004; Weist et al. 1991) performed several experiments to investigate the acquisition of tense and aspect in Polish, compared to English and Finnish in order to find support for the developmental stage model of Weist, described in the introduction to Part III. Children between 2;6 and 5;6 or 6;6 are tested on conceptual and linguistic temporal tasks. The children in general appeared to understand linguistic distinctions between future/past reference and between perfective/imperfective aspect in the past between age 2;6-3;6. Children understood the distinctions between remote versus immediate past and future reference, between the concepts ‘before’ versus ‘after’, and between sequential versus simultaneous order of events (the difference between ‘and then’ versus ‘when’) much later, between 4;6-5;6.

The experiments furthermore contain elicited production tasks. They show that all children linguistically encode the distinction between past and future tense from 2;6. Polish and English children also encode the aspectual distinction between perfective/imperfective in the past from 2;6, but Finnish children do so only from 4;6. The delayed performance of the Finnish children is probably caused by the fact that Finnish has no primary aspect markers: the case distinction between partitive and accusative can be used to express imperfective/perfective aspect, but it is not its main function. Linguistic encoding of the ordering of two events (simultaneous versus sequential) develops around 4;6 in all languages.

A general result of the experiments is that the children’s performance on the linguistic tasks is very sensitive to the experimental design. The different studies show that it is very difficult to set up crosslinguistic experiments that really test the same thing in each language: the frequency of use of language-specific categories is different across languages, just as their phonological saliency, structural complexity, reliability (one form covers one function), etcetera.11

**Russian**

Russian is an East Slavic language. The basic grammar of the Russian verb strongly resembles Polish (see above): there is an obligatory aspectual opposition between perfective and imperfective aspect and a three-way temporal distinction. The perfective verb form is in most cases derived by prefixation from the imperfective form. However, the opposite pattern also occurs: secondary imperfectives are derived from a perfective (prefixed) verb form by suffixation. Finally, there are suppletive aspectual pairs. Besides the aspectual distinction there is a temporal distinction between past, present and

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11 Weist et al. (2004) examine the influence of distributional properties of an expression on the acquisition patterns.
future, the present tense being restricted to imperfective verb forms. Verbs in the past tense are inflected for gender and number and verbs in the present and future tense are inflected for person and number. The (imperfective) present and perfective future have the same inflectional paradigm. The imperfective future is constructed with an auxiliary by ‘will’ (Bar-Shalom 2002: 323-25).

The spontaneous use of aspect and tense morphemes was investigated by Bar-Shalom (2002) in four children between 1;6 and 2;11. She does not explain her criteria for considering forms productive. She claims that past tense forms immediately appear both with perfective and with imperfective forms and both with telic and atelic verbs. One of the children for example uses from 1;6 telic perfective past; *upa-l-a* fall.PFV-PAST-F.SG ‘fell’; from 1;7 telic imperfective past *ubir-a-l-o* bus take+away-IPFV-PAST-PL ‘was putting away the beads’ (specific set of beads); from 1;8 atelic perfective past *pe-plana-l-i* PFV.swim-PAST-PL ‘swam a while’ (perfectives with *pe-* mean ‘V for a while’) and atelic imperfective past *wote-l-a* want.IPFV-PAST-F.SG ‘wanted’. (2002: 328-29). Three other children use first telic perfective past and atelic imperfective past and later telic imperfective and atelic perfective past. The future tense is first acquired for perfective verbs for all children, for example at 1;6 *naden-im* ‘(we) will put on’. The periphrastic future for imperfective aspect occurs later, for the first time around 2;5: *bud-a-spat* ‘(I) will sleep’ (2002: 331-32). The use of aspectual forms is errorless: reference to present tense actions is correctly restricted to imperfective verb forms, whereas both aspects are used for past and future reference. The conclusion of Bar-Shalom is that Russian is different from non-Slavic languages, in that imperfective past forms are used from early ages.

Gagarina (2003) has examined the speech of three Russian children, L, V and R from onset of speech to 3;0 in on average 2.5 hours of speech per month. She arrives at different conclusions than Bar-Shalom. The children start using verbs between 1;7-2;1, both infinitives and inflected forms. Infinitives are used instead of inflected forms at least till 1;11-2;3 and during this period infinitives may denote situations in the past, present and future. They occur mainly in answer to adult’s questions while they are more rare in self-initiated utterances. In all three children perfective and imperfective verb forms occur simultaneously: perfectives mainly have past tense inflection, whereas imperfectives have present tense inflection. From about 1;9-2;2 the past perfective and present imperfective come to be used more often, but inflectional rules are not yet mastered fully: 3s forms predominate, some forms only occur incidentally and there are still many rote-learnt forms. There are sporadic occurrences of perfective verbs with future tense and imperfective verbs with past tense inflections.

First contrastive uses of lemmas are mainly between infinitives or imperatives versus present or past tense forms. There are no aspectual contrasts
yet at least up to about 2\textsuperscript{0}-2\textsuperscript{3}. There are a few temporal contrasts for specific lemmas though: L uses at 1;9 the imperfective verbs \textit{chistit’} ‘clean’ and \textit{sobirat’} ‘collect’ in past and present tense, V uses at 2;3 the perfective verbs \textit{npast} ‘fall down’, \textit{poexat’} ‘start going by car’, \textit{pojti} ‘start on going’ and \textit{priji} ‘come’ in past and future tense and the imperfective verbs \textit{bolet’} ‘be ill’ and \textit{est’} ‘eat’ in past and present tense and R uses at 2;0 the perfective verbs \textit{poexat’} ‘start going by car’ and at 2;1 \textit{pojti} ‘start going by foot’ and \textit{priji} ‘come’ in the past and future (similar to V). According to Gagarina, however, these forms should not be considered as evidence that tense marking is acquired, as there is no active morphological productivity yet.

Gagarina thus shows that children in general start out with imperfective present and perfective past inflection. Gradually, perfective future and imperfective past forms come in. According to Gagarina (2003):

- mastering of aspect begins when the child starts to produce/use a) \textit{PERF} and \textit{IPFV} verbs in all (three) tenses, b) modifications of the basic meanings of \textit{PERF} and \textit{IPFV} aspect, c) counterparts of one lexeme, d) one and the same stem with different prefixes (diverse Aktionsarten) in various contexts with different partial meanings of \textit{PERF} and \textit{IPFV} aspect. It seems that, generally, as long as finite verb forms are rote-learnt, their development (and choice) would be determined much more by extralinguistic (and external situational) and contextual factors than when rule-based learning starts. (p.155)

Gagarina (p.144) also claims that as long as infinitives are used where inflected forms should be used, the child has probably not yet constructed a verb paradigm, but instead is ‘only on the way to learning the appropriate morphological rules’. At that stage, children use one or more inflected forms in a set of familiar or repeated contexts while they use the infinitive in new, unfamiliar contexts.

Stoll (1998; 2001) set up experiments in order to test the children’s comprehension and production of the perfective-imperfective distinction, the past-present distinction and contrasts in telic-atelic situation type. One hundred children were divided in age groups of 2, 3, 4, 5, and 6 year-olds. They watched videoclips in which two puppets each performed the same kind of action in a different way (2001: 128-30), for example the continuous reading of a book versus reading a book all the way through and closing it. The first action should be referred to in adult Russian by an imperfective verb form, whereas the second action could be described by a perfective verb form. One of the contrasts tested was between telic and atelic actions, as in the above example, but other contrasts made by perfective and imperfective forms were also tested. Perfective forms in Russian can express that an action lasted for a while (stand, sit for a while and stand again versus sitting continuously), that an action started (starting to cry versus crying), or that an action was done semelfactively, for
example, wave once with one hand (versus wave all the time). After the child
had watched the video clips with the two actions, both clips were shown again
simultaneously on a split screen and stopped in a frozen frame. The
experimenter asked the child which puppet did something, for example: Who
read the book? The question was always asked in the perfective form, since the
imperfective form in Russian is neutral and could refer to both scenes.

The first result is that the percentage of correct answers increases with age.
Children between 2 (ca. 55%) and 4 (ca. 30%) in a large number of cases chose
the wrong scene or both scenes. They do not see a difference between the
scenes or they do not relate the difference to the imperfective and perfective
forms. The responses are however not completely random. There is no relation
with the formal contrast of the perfective-imperfective pair (whether by
prefixing, secondary imperfective, or suppletive pairs), but there is a relation
between the situation type (telic, delimitative, ingressive, semelfactive) and the
number of correct responses. Children of all ages performed best on the telic
situation types with 95% correct in 6-year-olds but worst on ingresses (‘start
to’). Children of all ages even preferred the wrong scene for the ingressive
meaning, i.e. the scene where the puppet performed the action for the whole
time (Stoll 2001: 135-41).

The findings of Stoll are in stark contrast to the claim that children learning
Slavic languages master aspect and tense from the start, as was made by Bar-
Shalom (2002) for Russian and by Weist et al. (1984) for Polish. Their main
argument is the absence of errors, but the contexts in which the aspectual
forms occur have to be analyzed systematically. Early competence can only be
supported:

if one can give a clear distributional analysis of verb forms showing that the two
different aspectual forms occur independently of the Aktionsart of the verb,
independently of tense, and independently of any other semantic category. (Stoll
2001: 148)

In Gagarina (2004) the matter is further complicated by raising the question
whether the perfective-imperfective distinction in Slavic languages should be
considered a grammatical or a lexical process. She stresses that only verbs with
potentially telic readings form proper aspectual perfective-imperfective pairs, as
they mark the distinction between a completed event and an ongoing event.
Imperfective verb forms may denote ongoingness but also habitual or
generalised-factual events. The relation between prefixes (18 subtypes) for
deriving a perfective from an imperfective and the resultant meaning is
unpredictable: with one verb the prefix only marks perfectivity, whereas with
another verbs it adds additional lexical meaning. It is also not predictable which
prefix may combine with which lexeme. There is thus some ground for
considering the perfective and imperfective form of a lemma as two related, though different lemmas rather than as two inflectional forms of one lemma.

Gagarina (2004) studied the use of aspectual pairs in the same children as in Gagarina (2003), from the onset of verbs till five months later. She observed a close relation between the percentage of perfective and imperfective verbs in the input and in the children’s speech. The absolute majority of perfective verbs denote resultative actions and combine with past tense inflection. The majority of imperfective verbs denote ongoing actions or processes, as well as intentions and combine with present tense inflection. Note that imperfective verbs mainly co-occur with (durative) telic verbs or verbs of motion. Gagarina (2004: 50) argues that the two types of verb forms ‘do not really reflect tense, but indicate aspectual distinctions’. However, children do not ‘mistakenly analyse tense morphology as grammatical aspect’, but just represent the correlation between tense and aspect that is also typical for adult Russian.

From about the third month after verb onset the first imperfective past forms are produced to mark ongoingness or generalised-factual events and the first perfective future forms arise to mark near future: both combinations are very rare, and again, this is the case in the input as well (between 8 and 18% imperfective past and between 15 and 31% perfective future) (2004: 51). Within the five months, the number of contrastive aspectual pairs is not high: 10% in the children’s speech and 19% in the input. Within these pairs, the perfective forms cluster with past tense and the imperfective forms with present tense so they are hardly used contrastively within one tense.

In sum, Bar-Shalom claims that Russian children acquire tense and aspect independently from the start. In contrast, Stoll and Gagarina claim that tense and aspect morphology arise around the same time, but are at first not or hardly ever used contrastively. They doubt if children master aspect and tense from the start as Russian children, like children in other languages, show a relation between tense-aspect and situation type. The exact meaning of early tense and aspect inflections, however, is not clarified in either of the studies. I will discuss my view on this matter in 10.5.2.1.

10.3.7 Japanese
There is debate in the literature whether Japanese is a separate language family, or whether it is related to Korean and / or to Altaic languages. Here, I treat it as a separate family. The most relevant TMA expressions of Japanese are presented in Table 10-9. The precise semantics of the different constructions are not always discussed very well in the literature. In those cases, more general labels of the TMA domain are applied in the FG classification.

<table>
<thead>
<tr>
<th>Form</th>
<th>Author’s definition or translation</th>
<th>FG classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>–ta</td>
<td>Perfect / perfective / past tense</td>
<td>Perfective (π1) + past (π2)</td>
</tr>
<tr>
<td>–te i-</td>
<td>Progressive / resultative</td>
<td>Progressive (π1) / resultative (π1)</td>
</tr>
<tr>
<td>–ru</td>
<td>Non-past tense (present states, habitual, future)</td>
<td>Non-past (π2)</td>
</tr>
<tr>
<td>–(chat)ta</td>
<td>Completed past</td>
<td>Completive (π1) + past (π2)</td>
</tr>
<tr>
<td>–nakatta</td>
<td>Negative past tense</td>
<td>Past (π2)</td>
</tr>
<tr>
<td>–nai</td>
<td>Negative non-past tense</td>
<td>Non-past (π2)</td>
</tr>
<tr>
<td>–tai</td>
<td>Desiderative, non-past tense</td>
<td>Volition (π1)</td>
</tr>
<tr>
<td>–chau</td>
<td>Completed non-past</td>
<td>Perfective (π1) + non-past (π2)</td>
</tr>
<tr>
<td>–oo</td>
<td>Intenitve/cohortative</td>
<td>Modality (π1) / illocution (no TMA)?</td>
</tr>
<tr>
<td>–ern</td>
<td>Potential</td>
<td>Potentiality (π2)</td>
</tr>
<tr>
<td>kuru</td>
<td>‘come to’</td>
<td>Aspect (π1)</td>
</tr>
<tr>
<td>oku</td>
<td>‘put’</td>
<td>Aspect (π1)</td>
</tr>
<tr>
<td>–nakya</td>
<td>Obligation, ‘must’</td>
<td>Obligation (π1)</td>
</tr>
</tbody>
</table>

In Japanese, there are several inflections on the verb for marking tense and aspect. The past tense marker –ta is in between a perfect or perfective aspect marker and a past tense marker. It is still used for referring to currently relevant states. There are hardly any restrictions in the combinations of the past tense marker with different verb types. The non-past marker –ru combines with stative verbs to refer to present states and with dynamic verbs to refer to habitual or future actions. The obligatory aspectual marker –te i- yields progressive meaning with activity and accomplishment verbs. Unlike English, the progressive marker does not refer to the pre-state when combined with a punctual situation (as in: they are reaching the summit) but to the post-state, as in the ball has fallen (and it is still there). In those cases it marks the duration of the resultant state and is analyzed as a resultative marker. It is in general not combinable with stative verbs, but it may mark temporariness, consider (29) (from Shirai 1998: 285):

(29)  *Huzusan-ga mie-te i-ru*
     Mount Fuji-NOM be-visible-ASP-NONPAST
     ‘We can see Mount Fuji’ (at this moment).
The progressive/resultative marker is combined with a past or non-past marker. The completed past –chatta adds the notion of completion or totality to past tense—‘ate all up’—or the implication that the event was unfortunate—‘got broken’ (Clancy 1985: 425). In addition to inflectional marking, there are concatenated verb structures, that mark aspectual nuances: verbs like kuru ‘come’, shimu ‘finish’, oku ‘put’, aru/iru ‘exist’ occur after the non-final form of the main verb. Besides, there are sentence-final particles that express assertion, emphasis, questioning, call for confirmation and epistemic or evidential notions.

The acquisition of Japanese is described in Clancy (1985). This description is mainly based on extensive longitudinal data of one girl (1;0-6;0), on more limited longitudinal recordings for five children (1;6-3;6), and on diary studies on ten children. The acquisition of tense and aspect in particular is described in Shirai (1993; 1998) and Li & Shirai (2000). Finally, Matsui, Yamamoto, & McCagg (subm.) concentrate on the acquisition of epistemic and evidential expressions.

First, the general overview of Clancy (1985) will be presented. She does not explicitly use productivity criteria, but she presents examples of contrastive use. She claims that the first inflections are already productive before MLU 1.5: this is probably the result of the lack of a base form of Japanese verbs and the fact that the verb and its inflection are utterance final and therefore perceptually salient to the child. At first, lemmas occur in one form, but before the age of 2;0 children already contrast between imperative –te and past tense –ta.12

Around 2;0, there is an increase in verbal inflections: present progressive / resultative –teru (= –te i–ru), non-past tense –ru and completed past –chatta are productive at this age. The non-past negative suffix -nai and desiderative –tai emerge and between 2;0 and 2;6, the completed non-past –chan, cohortative/intentive –oo, past progressive/resultative –te–ta and potentials in –eru come in. In the same period many concatenated verb structures are acquired, such as aspectual constructions with kuru ‘come’ and oku ‘put’. Around 3;0, the child acquires the expression for obligation –nakya ‘must’. The first verbs are restricted in their use: verbs occur with only one inflection, verbs with present tense morphology are referring to states, verbs with past tense morphology to change of states. Unfortunately, the use and semantics of the other inflections are not discussed (Clancy 1985: 381-87, 425-27).

12 The three most common sentence-final particles are also acquired before 2;0, yo, ne and no, but they do not belong to the TMA domain. Children use yo (assertive/emphatic) mainly in answers to questions; ne to express agreement with the addressee or to seek confirmation or approval from the addressee (similar to the use of a tag question in English) and no, which in adult Japanese indicates certainty about an inference, is by children used in questions (wh- and yes/no-), especially when speaker and addressee share a lot of information, and in answers.
Shirai (1993; 1998) investigated the acquisition of –ta (past), –te i– (progressive / resultative) and –ru (non-past) and the association of these three forms with situation type. He examined previous reports and longitudinal data from three children between 1;0 and 3;0. The onset of –ta is first, followed by –ru and then –te i– (after 2;0). However, productive use (more than five lemmas in one month) is almost at the same age for –ta and –ru, around 2;0, and a few months later for –te i–. The non-past form occurs from the start with different verb types: state, activity, accomplishment and achievement verbs, although the stative verbs for inanimate and animate existence, aru and iro, have high token frequency. Between 1;6 and 1;8, most past markers combine with telic verbs, either punctual or non-punctual. It is most strongly, but not entirely, associated with achievement verbs [+punctual, +telic] (between about 60% and 75%). The past marker is initially relatively frequently used with stative verbs, especially with atta and ita, verbs for inanimate and animate existence; these forms are probably the result of rote-learning as they are not used contrastively with the present forms. The past marker is often used to refer to situations that are currently relevant, i.e., as a perfect aspect marker, in particular in combination with stative verbs. For only one child, the use of –ta emerges during (and not before) the recorded data, and this child ‘(…) appeared to be using –ta in the beginning as a perfect marker, signifying current relevance (…) Only much later was he able to use it as a past tense marker (…)’ (1998: 299). Finally, the progressive / resultative marker –te i– occurs with all but stative verb types. Some children acquire the progressive and resultative meaning simultaneously, whereas for other children one of the meanings arises earlier. Notice in this respect that many verbs in Japanese may be interpreted as either achievement (punctual entry into the activity) or as activity.

For one of the children the relation with the input was studied. It appears that in the different samples –ta is used mainly, but not exclusively, with achievement verbs (50%-71%), –ru is not restricted to any verb type, and –te i– is used primarily in its progressive meaning up to 1;8, and after that age more often in its resultative meaning. The distributional pattern of the three grammatical forms over situation types in the input is thus similar but less strong than the distribution in the child’s speech.

Japanese children very early use grammatical expressions for reported speech, between 1;11-2;1. However, these expressions seem not to function as evidential markers of hearsay, but purely as markers of direct speech which do not belong to the domain of TMA. Examples are presented in Clancy (1985: 437), here in (30):
(30) `buun     tte   tob-u   no.  (child at 1;11)
    sound-of-flying QUOT fly-NONPAST EP.
'It flies (going) “buun”.'

[And, when adult had failed to understand pronunciation of child:]

Uupapa tte   it-ten    no.
Supercar QUOT say-PRS.PROG EP.
'I’m saying, “supercar”.'

Matsui et al. (subm.) performed an experiment to test the children’s comprehension of epistemic and evidential expression in Japanese. They contrasted the use of the sentence ending particle (da)yō (speaker certainty or speaker knowledge) with kana (speaker uncertainty, epistemic) or with tte (hearsay, evidential) and the use of the verbs ‘know’ with ‘think’ (epistemic contrast) and ‘see’ with ‘hear’ (evidential contrast). Ninety-seven children participated in the study in age groups of on average 3;6, 4;6, 5;5 and 6;5. Four contrasting pairs of utterance types were generated, such as ‘The apple is in the blue box dayō/kana’ or ‘I know/think the car is in the green box.’ Children first watched a thief who surreptitiously hid objects in one of two containers. Then two animals told about the location of the objects, but they made conflicting statements. One used the most certain expression, the other the less certain. Afterwards, the child had to indicate the location of the hidden objects.

It appeared that in each age group children performed best on the yo-kana pair (epistemic particles) and worst on the ‘see’-‘hear’ pair (evidential verbs). At 3;6, the children gave 75% correct answers for the epistemic particle pair, whereas the other pairs were at chance level or slightly above. At 4;6, the epistemic verbal pair is now also understood correctly (73% correct answers), whereas the remaining two pairs are only correctly answered in 62% or less. At 5;5, the children seem to have grasped the meaning of the evidential particle pair as well (70% correct) and finally, at 6;6, the children have more than 70% correct answers on the evidential verb pair. Children in all age groups performed significantly better on the particle pairs (yo versus kana and yo versus tte) than on the verb pairs (‘know’ versus ‘think’ and ‘see’ versus ‘hear’).

Performance increased over age, but the differences between age groups were larger for the verb pairs than for the particle pairs.

Both for the verb pairs and for the particle pairs, children performed better on the epistemic opposition in certainty (yo-kana and ‘know’-‘think’) than on the opposition in evidentiality (yo-tte and ‘see’-‘hear’). This cannot be explained by frequency effects alone: in the input samples of one child, yo is most frequent (3955 tokens), then tte (1603) and then kana (970). The verbs are far
less frequent than the particles: ‘see’ is the most frequent one (410 tokens), followed by ‘know’ (70), then ‘think’ (51), then ‘hear’ (34).

The subjects were furthermore tested on a false-belief task: it appeared that there was no correlation between passing or failing the test and the performance on the particle pairs (78% of the children who failed the test were able to make correct choices based on the particles), but there was a correlation between the false-belief task and comprehension of the verb pairs. Children who failed the test performed significantly worse on the comprehension test than those who passed the test. The explicit knowledge about theory of mind needed for passing a false-belief task is apparently not required for understanding epistemic modality as expressed in the particles, which is based on implicit or unconscious understanding of another's mind. The results suggest that it is easier for children to grasp procedural information (implicit) about the speaker's mind as conveyed by the particles than to grasp conceptual (explicit) information as conveyed by the verbs. Furthermore, the concepts of certainty seem to be easier than those of evidentiality, performance on the former at least improving up to the age of four or five and the latter up to the age of six.

In sum, the first inflections acquired in Japanese, are tense and aspect markers. The past tense marker is acquired first. There is, however, evidence that the early past marker functions at first as a perfect aspect marker in the children’s language. Shirai (1993; 1998) reports that the present tense (π2) marker is acquired before the progressive /resultative (π1), whereas Clancy (1985) reports that present tense (π2), progressive/resultative (π1) and completive past (π1 + π2) appear about simultaneously. This matter will be further discussed in 10.5.2.1. The performance in the comprehension tests suggests that epistemic distinctions expressed by sentence final particles are acquired later.

10.3.8 Kartvelian: Georgian

Georgian belongs to the Kartvelian or South Caucasian language family. Georgian has a complex, basically agglutinative, verb structure that is composed of several slots. The relevant slots are presented in (31):

\[
\text{(31) imperfective / perfective – Verb Root – durative / punctilliar - tense}
\]

Georgian verb roots can be divided into different conjugations. Verbs of the 1st and 2nd conjugation are telic, verbs of the 3rd and 4th conjugation are atelic (states and activities). Before the verb root, a directional prefix indicates the aspectual distinction between perfective and imperfective. The prefixes have to
be learned individually for separate verbs. After the verb root the distinction between durative and punctilliar aspect is indicated by the presence or absence, respectively, of a so called 'series marker'. The series marker is present in the future and present tense, the imperfective past (Imperfect), the conditional and conjunctive; the series marker is absent in the imperative, the optative and perfective past (Aorist). The present perfect is usually formed with the series marker and the pluperfect is formed without the series marker. After the series marker slot, tense is indicated: past perfective (Aorist), past imperfective (Imperfect), present or future tense (like in Polish, the present tense marker in combination with a perfective verb results in a future tense interpretation), present perfect and pluperfect. The present perfect and pluperfect are used as evidential markers beside their aspectual function (Imedadze & Tuite 1992: 40-49).

The acquisition of Georgian is described in Imedadze & Tuite (1992), mainly based on longitudinal data for two children and diary studies for several children. The first verb forms, from about 1;0, are telic verbs in the imperative and stative verbs in the present tense, such as mina 'I want' or anna 'I don't want'. Around 1;7, more verbs arise in the indicative: for a few months, stative verbs are always in the imperfective present and telic verbs in the perfective past. From 1;9 indicative verbs become more frequent; the future tense and optative emerge for expressing desire and intention. Although different verb forms are now used, there is still no opposition between punctilliar and durative aspect: telic verbs are always used in the (punctilliar) imperative, optative or perfective past and stative or activity verbs are always used in the (durative) present (p.57, 73). Fairly early Georgian children use the perfective and imperfective prefixes productively. The difference in use between the two verb forms is, however, not explained, nor whether they associate with certain (lexical) aspect or tense forms. From what age children start using the imperfective past is also not explicitly discussed, but it seems to be acquired later than the other tenses (cf. p.70-71).

Between 2;0-2;6, an opposition arises between the punctilliar and durative aspect: first, telic verbs are used with both aspects (it is not indicated with what tense they occur). The form of the durative marker (series marker) is not predictable for a large number of verbs and children often overgeneralize the most productive and widespread durative marker, when a less common or unproductive form should be used. Beside the durative marker, the opposition between durative and punctilliar aspect is sometimes indicated by slightly or even completely different verb stems, for example ḥl for 'spread out'-durative.

---

13 The Georgian-Russian bilingual child Dali produces innovative combinations from age 2;0 of Georgian prefixes and Russian verb roots (Imedadze & Tuite 1992: 68-69).
šal for ‘spread out’-punctilliar; šwreb for ‘do’-durative, ken for ‘do’-punctilliar. Especially for telic verbs, children erroneously use the punctilliar stem for forming the durative construction. The opposite pattern occurs with verbs of the 4th conjugation (stative): stative verbs have unpredictably either the imperfective past or the perfective past to form the past tense. When the perfective past is used, children often apply it to the durative stem where they should use the punctilliar stem. The durative stems of stative verbs and the punctilliar stems of telic verbs are thus overgeneralized (Imedadze & Tuite 1992: 67-69).

The development of a distinction between durative and punctilliar co-occurs with another important development, the acquisition of case-marking. Georgian is a split-ergative language that applies a nominative case marking for verbs in a durative construction and ergative case marking for verbs in a punctilliar construction. From the moment that children apply the durative-punctilliar opposition for telic verbs, case markers begin to be used, and they are used correctly (p.57, 73).

The first perfect form to appear is the present perfect, which is primarily used for the expression of negated past actions, like ‘I didn’t break it’. Reports about initial use diverge from 2;3 till after 3;0. The present perfect in Georgian is used to express perfect aspect, but has an additional evidential sense of indirect experience: ‘the speaker has inferred or been informed that an event has taken place, rather than having been a direct witness to it.’ The perfective past (Aorist) is the neutral form and may, but need not, imply that the speaker witnessed the action or event. According to Imedadze & Tuite this evidential contrast emerges early in child Georgian. They illustrate it by an utterance at 2;3, in which the child would use the present perfect and the perfective past contrastively in evidential respect, consider (32) (p.67):

(32) Še=χεd=el melia-s da=θ=κεr=i=a ɛtɛmia=a,  
look:2SGS:3O:IMP fox-DAT catch:3O:3PFT bird-NOM  
melia-m mo=l=par=a  
fox-ERG steal:3SGS:3O:PFT,PAST  
‘Look! The fox [apparently] has caught a bird; The fox ran off with it.’

Imedadze & Tuite consider this example as indicating an evidential distinction between the present perfect and the past perfective, in which the child ‘is describing a picture in a book of a fox running off with a bird. The capture of the bird is not shown, but [the child] infers that it occurred.’ However, when the child considers the perfect as the proper form for marking a resultant state,
whether witnessed or non-witnessed, he would have used the same form. Only if
the child would use the perfective past and present perfect contrastively for
describing witnessed and non-witnessed events with a resultant state, there is
evidence that the child indeed grasps the evidential contrast. Like West
Greenlandic (10.3.4), Georgian has an expression that functions both as a \( \pi_1 \)
-operator (aspect) and as a \( \pi_3 \)-operator (evidentiality). Therefore, at a certain
stage, children will use the expression in both these functions, without using it
as a \( \pi_2 \)-operator. This goes against H7.

In sum, the details of Georgian language acquisition are not set. One of the
earliest forms express volition (\( \pi_1 \)) ‘want’ and ‘don’t want’. The first inflected
forms typically combine tense, grammatical aspect and situation type in the
imperfective durative present for state and activity verbs and the perfective
punctilliar past for telic verbs. The future and optative are acquired a bit later
and express desires and intentions at first. Unfortunately, it is only marginally
described how the distinctions in tense, perfective-imperfective, punctilliar-
durative and telic-atelic may be combined in Georgian, what the resultant
interpretations would be and how children find out about it. Moreover, there is
no information on the contexts of use for these forms in child (or adult)
Georgian, so it cannot be decided what children encode with these forms:
aspect, tense or both. Between 2;0 and 2;6 the distinction arises between
punctilliar and durative aspect, but again, the functions of this distinction are
left unexplained. The final form acquired is the perfect, first the present perfect
and later the pluperfect. Although it is claimed that one of the children
indicates an evidential distinction by the perfect already at age 2;3, the example
is not convincing and can be explained alternatively in terms of a purely
aspectual distinction. To conclude, Georgian children make a major distinction
between the telic-perfective-punctilliar-past (\( \pi_1/\pi_2 \)), the atelic-imperfective-
durative-present (\( \pi_1/\pi_2 \)), and the future and optative used for desires and
intentions (\( \pi_1 \)). They furthermore use expressions for volition (\( \pi_1 \)). Evidential
uses of the perfect forms (\( \pi_3 \)) are acquired later. It seems as if children do not
go through a stage in which there are \( \pi_2 \)-operators but no \( \pi_1 \)-operators, neither
through a stage in which there are \( \pi_3 \)-operators but no \( \pi_2 \)-operators, but the
data cannot count as hard evidence in support of the hypothesis due to the lack
of information on the function of the forms in child Georgian.

### 10.3.9 Korean

Korean is classified as an isolate, although there is some suggestion of a
possible relatedness to Altaic languages, Japanese or both. Korean has different
expressions forms for indicating TMA: inflection, periphrastic complement
structures, and obligatory sentence ending particles (SE’s). Periphrastic
complement structures consist of a matrix verb that takes a verbal or clausal complement: these structures are used to express present and future tense, aspect and modality. Outside the periphrastic constructions, the matrix verbs function as single lexical verbs (Kim 1997: 403). SE’s have very divergent functions: they are used to express modal notions, illocution, emphasis, evidentiality and politeness.

Korean has a three-way tense distinction between relative past, present and future tense in relative clauses. Inflection on the embedded predicate encodes that the time of the embedded clause was anterior, posterior or simultaneous to the time of the matrix predicate. Unfortunately, there are no data on the acquisition of these markers, except for the remark that children acquire relative clauses early, around age 2;0 (Kim 1997: 338, 46). In main clauses, past tense is encoded by inflection on the predicate –ass/-ess, whereas the non-past is in general left uncoded. However, present and future tense may be encoded by the periphrastic complement structure kes + i- (= complementizer + copula) that can take a clausal complement with relative tense inflection. The combination with a relative present marker on the verb, V-nun kes-i-, is used to describe ongoing events, such as ‘The boat is passing by’; the combination with a relative future marker on the verb, V/- kes-i-, is used to describe future tense, such as in ‘(I) will play with daddy’. Furthermore, future time reference may be implied or expressed by the SE’s for intention and volition, -kkey and –llay.

Aspectual distinctions (π1) are expressed by complement structures: progressive, egressive, resultative and perfective. Participant-oriented modality (π1) can be marked by several expressions: there are SE’s for expressing intention and volition, -kkey and –llay, and several complement structures that express permission, volition, obligation, weak obligation, prohibition, and (in)ability.

Finally, there is a group of SE’s, –ta, –a/–, –i, and –tay of which the meaning is controversial. In Kim’s analysis (1997) the first three markers express illocution and different degrees of politeness and do therefore not belong to the domain of TMA. The expression –tay is a reportative marker, an evidential notion (π3). In the analysis of Choi on the contrary (1991; 1995) all four expressions are claimed to express a notion of evidentiality or epistemic modality. This analysis will be discussed in detail later and also return in 10.5.3.1. A general overview of the relevant TMA expressions in Korean is presented in Table 10-10.

The acquisition of several forms is discussed in Kim (1997), and of modal complement structures and SE’s in Choi (1991; 1995). The former study is based on the longitudinal data of five children between 1;7 and 3;5, with the focus on two children, and the latter on longitudinal data of three children.

<table>
<thead>
<tr>
<th>Form</th>
<th>Author's definition or translation</th>
<th>FG classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>-(u)n</td>
<td>Relative past in relative clause</td>
<td>Past (π2)</td>
</tr>
<tr>
<td>-(u)n</td>
<td>Relative present in relative clause</td>
<td>Present (π2)</td>
</tr>
<tr>
<td>-(u)n</td>
<td>Relative future in relative clause</td>
<td>Future (π2)</td>
</tr>
<tr>
<td>V-nun kes-i-</td>
<td>Present tense</td>
<td>Present (π2)</td>
</tr>
<tr>
<td>V-1 kes-i</td>
<td>Future tense</td>
<td>Future (π2)</td>
</tr>
<tr>
<td>V-kö iss-</td>
<td>Progressive</td>
<td>Progressive (π1)</td>
</tr>
<tr>
<td>V-a/e peli-</td>
<td>Egressive</td>
<td>Egressive (π1)</td>
</tr>
<tr>
<td>V-a/e iss-</td>
<td>Resultative</td>
<td>Resultative (π1)</td>
</tr>
<tr>
<td>V-a/e nob-</td>
<td>Perfective</td>
<td>Perfective (π1)</td>
</tr>
<tr>
<td>-kkey</td>
<td>Intention, future, prediction</td>
<td>Prospective (π1)  / future (π2) / prediction (π3)</td>
</tr>
<tr>
<td>-lay</td>
<td>Volition, future</td>
<td>Volition (π1) / future (π2)</td>
</tr>
<tr>
<td>V-a/e po-</td>
<td>Permission, ‘shall I’/’may I’</td>
<td>Permission (π1)</td>
</tr>
<tr>
<td>V-to tway</td>
<td>Permission</td>
<td>Permission (π1)</td>
</tr>
<tr>
<td>V-ci mal-</td>
<td>Volition / desire</td>
<td>Volition (π1)</td>
</tr>
<tr>
<td>V-su iss-</td>
<td>Ability</td>
<td>Ability (π1)</td>
</tr>
<tr>
<td>mos + V</td>
<td>Negation of ability</td>
<td>Inability (π1)</td>
</tr>
<tr>
<td>V-myen an tway</td>
<td>Negation of permission/obligation</td>
<td>No Permission (π1)</td>
</tr>
<tr>
<td>V-na pwa</td>
<td>Inference</td>
<td>Evidentiality (π3)</td>
</tr>
<tr>
<td>-ta</td>
<td>Declarative, informal / unassimilated information*</td>
<td>No TMA / proposition-oriented modality (π3)*</td>
</tr>
<tr>
<td>-a / -e</td>
<td>Declarative + Interrogative + Imperative, neutral/ assimilated information*</td>
<td>No TMA / Proposition-oriented modality (π3)*</td>
</tr>
<tr>
<td>-ci</td>
<td>Declarative + interrogative / shared certainty*</td>
<td>No TMA / proposition-oriented modality (π3)*</td>
</tr>
<tr>
<td>-tay</td>
<td>Reportative / indirect information</td>
<td>Evidentiality (π3)</td>
</tr>
</tbody>
</table>

Note. *Classification of these expressions differs in Kim (1997) and Choi (1991; 1995)
between 1.8 and 4.0. As a criterion for acquisition both authors required the form to be used with at least three different verbs, either within one month (Kim 1997) or within one session (Choi 1991, 1995). In spite of the slightly different criteria, the data will be treated here as comparable and the presented acquisition order and ages here are based on the average age of acquisition reported for the children in both studies (Kim 1997: Table 7, p.363, Table 8, p.406, Choi 1995: Table 2, p.179).

The first form to be acquired is the SE _–ta_ at 1.9, either expressing declarative, informal (Kim) or epistemic modality (_π3_) (Choi). At 1.10 the SE _–a/-e_ is acquired, either expressing informal, polite, declarative (Kim) or epistemic modality (Choi). At 1.10, also the past tense inflection and the modal marker for permission, V-_a/e po_- are acquired. Around 2.0, the complement structures for present, future and progressive are acquired as well as the SE _–ci_. Between 2.1 and 2.4 the aspectual expressions for resultative, egressive and perfective are acquired, as well as the SE for volition _–llay_. About a month later, at 2.5, the SE’s for intention _–kkey_ and for reported speech _–tay_ are acquired. The children in Kim’s study acquire several modal complement structures between 2.1 and 2.4, for volition (V-_ko sibh_), obligation (V-_ya toy_), weak obligation (V-_nun kes-i_), prohibition (V-_ci mal_) and ability (V-_su iss_). The children use one uncertainty marker _po_ ‘I guess’ or _sibh_ ‘I guess’ productively at 2.7, whereas the children in Choi’s study do not yet use it. Neither of Kim’s subjects use the evidential construction _kes kath_ ‘seem’ productively at 2.8/3.3 (Kim 1997: 403-07).

The reports for the SE’s are remarkably similar in both studies, but the reported age of acquisition for (participant-oriented) modal complement structures are divergent. Kim studied six modal constructions that are acquired between 1.10 and 2.4; Choi also studied six modal constructions, (three of which overlap with Kim’s study), but these are acquired only between 2.6 and 3.0. The three modal constructions that overlap between both studies (ability, obligation and volition, V-_ko sibh_) are acquired by Choi’s subjects at least six months later than by Kim’s subjects. It is unclear why there is such a big difference for these forms between both studies.

In the analysis of Kim, the data are more or less in accordance with the predicted order of acquisition: past tense (_π2_) and participant-oriented modality (permission, _π1_) are acquired simultaneously; progressive aspect (_π1_), present and future tense (_π2_) are acquired slightly later. Further expressions for aspect and participant-oriented modality are acquired later than tense, but there is thus no stage in which _π2_-operators are present but _π1_-operators are not. The first _π3_-operator (reportative, _–tay_) appears quite early compared to other languages, but later than _π1_- and _π3_-operators. Unfortunately, the initial contexts of use of the different tense forms are not discussed in the literature.
In the analysis of Choi, however, children in Korean start out with \( \pi^3 \)-operators, \(-\text{ta}\) and \(-\text{e}\). Here, Choi’s analysis of the SE’s and the child data will be discussed in detail. According to Choi, in adult Korean \(-\text{ta}\) is used in declaratives when the speaker has just perceived something noteworthy in the present context. It expresses that the information is new to the speaker (S), that it is registered for the first time. The SE \(-\text{e}/\text{-a}\) is used in declaratives or interrogatives for information that is old to S, that is registered earlier and already assimilated in the knowledge system of S. The suffix \(-\text{e}\) is the most frequent in adult spontaneous conversations and can be considered the neutral suffix (Choi 1995: 173). The SE \(-\text{e}\) expresses certainty of S to the truth of the proposition and denotes at the same time that the information is also known to the listener or can be readily inferred. It is for example used in questions, when agreement of the listener is expected, such as in ‘Isn’t Mary pretty-\(\text{-ci}\)’ Finally, the suffix \(-\text{tay}\) expresses that the source of information is indirect, such as hearsay (Choi 1997: 105-06).

In language acquisition, \(-\text{ta}\) and \(-\text{e}\) are among the first forms to be acquired. Choi states that they are initially used to distinguish between declarative and imperative: \(-\text{ta}\) is used to describe events and situations in the here-and-now, whereas \(-\text{e}\) is restricted to requests or commands. Within one to six weeks, however, at the age of about 1;10-2;0, \(-\text{e}\) is also used in declaratives and \(-\text{ta}\) and \(-\text{e}\) are now used to differentiate between the status of the information. In 85% of the cases \(-\text{ta}\) is used in the following contexts:

1. describing a scene in a picture as the child is looking at it,
2. describing events/states that the child has just observed:
   1. a perfective aspect which results in a particular state, e.g., *nemecy-ess-ta* ‘fallen down’.
   2. an ongoing event/state, e.g., *can-ta* ‘sleeping’,
3. commenting on the existence or non-existence of an event/object.

(Choi 1995: 182; 1997: 111)

The suffix \(-\text{ta}\) is used for new/unassimilated information that the child experiences in the here-and-now, whereas the suffix \(-\text{e}\) is used to refer to information already assimilated in the child’s knowledge system. In 64% of the cases it is used in the following contexts, although the distribution of \(-\text{e}\) over the various functions differs for individual children:

1. to give information about a past event/state;
2. to convince the listener of an event/state of affairs, or to talk about an event/state which was not occurring at the time of
ACQUISITION OF TMA ACROSS LANGUAGES

speech (e.g., negation, actions which the child was about to perform, make-believe events while playing with a doll or toy); and, in questions to verify the truth of a proposition. (Choi 1995: 184; 1997: 112)

The next SE’s that Choi (1997: 115-17) discusses are –ci and –tay, that are acquired somewhat later, around 2;0 and 2;2, respectively. In adult Korean –ci expresses shared certainty of the truth of the proposition. The suffix –tay expresses indirect source of information, such as hearsay or a newspaper. The first occurrences of –ci in child language are in the context of (partial) repetition of an adult utterance with –ci, such as in (33) (1997: 115):

(33) ADL: nemecy-ess-ci
   ‘fall-PAST-SE’ (= fell down?)
   CHI: nemecy-ess-ci
   [as a statement]

Note that this type of use is the one acquired around 2;0. Later in development, between 2;2 and 2;4, –ci is used spontaneously by the child in contexts where there is perceptual support for the proposition or where certainty about the proposition develops during ongoing discourse and the final statement receives –ci (almost like a conclusion). Finally, –ci comes to be used for expressing weak obligation for events that are normally done in a particular situation, together with the obligation connective –ya. Consider (34):

(34) Situation: Mother and child (2;3) have just finished washing the doll. Mother asks: ‘Since the baby finished her bath, what should she do now?’
   CHI: os ipeya-ci
   clothes put.on-CONN-SE
   ‘She must put clothes on.’

The modal SE –tay, for expressing hearsay (‘it is said that’ / ‘I heard that’) is acquired last, with first instances around 2;3, 2;4. It is used much less by the children than the other three SE’s, but it is used consistently for (i) telling the listener what the child believed a third party said or felt or (ii) reporting what a third party just said. The children always seem to assume that the addressee does not know the information (Choi 1997: 117).

Finally, there is a special use of –tay with high pitch, that is used according to Choi (1995: 196) for marking that the information is new to the addressee (and
not to the speaker), such as when showing a new bracelet: ‘I have a bracelet-til!’

This use of the particle is acquired last.

In Choi’s analysis, Korean children linguistically mark an epistemic or
evidential contrast (π3) around the age of 1;10-2;0 between information that is
new and information that is old to the speaker. Children therefore go through a
stage in which π3-operators are present, but π1- and π2-operators are not.

The final conclusions on Korean depends on the analysis of the function of
the SE’s –ta, –e/-a, –i, and –tay in child language. In the analysis of Choi (1991;
1995; 1997), the acquisition of Korean does not support H6. Korean children
use evidential and epistemic SE’s extremely early. This study is often quoted as
evidence against the hypothesis that deontic modality (π1/ π2) is acquired
before epistemic modality (π2 / π3). In the analysis of Kim, on the other hand,
the acquisition of Korean is in accordance with H6. There is no stage in which
the children have π2-operators, but no π1-operators, or π3-operators, but no
π2-operators. The analysis of Korean SE’s will be further discussed in 10.5.3.1.

10.3.10 Mayan: Quiché and Yucatan

There are two languages of the Mayan family in the corpus: Quiché or K’iche’
Maya and Yucatan or Yucatec Maya. Mayan languages in general have very rich
inflectional systems. The specific TMA expressions will be discussed separately
for both languages.

Quiché / K’iche’ Maya

Quiché or K’iche’ Maya is spoken in the western highland region of Guatemala.
It belongs to the Greater Quichean family of the Mayan languages. Quiché has
a complex inflectional system: there is no grammatical tense marking, but there
are five aspectual/modality categories; the incompletive, completive,
potential/irrealis, volitive/imperative and perfect. They are marked by a prefix
and a suffix from a ‘termination’ class, the form of which depends on the type
of aspect, the verb type (root or derived transitive and intransitive), the
distinction between clause medial and clause final position of the verb and the
form of the verb root. Consider Table 10-11.

As an illustration, the forms for the termination class ‘dependent’, combining
with volitive/imperative aspect, are as follows: for root transitive verbs the
termination is -o’ or -o when the vowel in the verb root is /o/ and -u’ or -u:
when the vowel in the verb root is /u/; for derived transitive verbs the
termination is -j and for intransitive verbs the termination is -a, or -aq when the
verb is in clause final position. The Perfect termination that combines with
perfect aspect is -om for root transitive verbs, -m for derived transitive verbs

<table>
<thead>
<tr>
<th>Termination + prefix</th>
<th>Author’s definition</th>
<th>FG classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plain</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>k</em></td>
<td>Incompletive, imperfective</td>
<td>Aspect (π1)</td>
</tr>
<tr>
<td><em>x</em></td>
<td>Completive, perfective</td>
<td>Aspect (π1)</td>
</tr>
<tr>
<td><em>ch</em></td>
<td>Potential / irrealis</td>
<td>Irrealis (π2)</td>
</tr>
<tr>
<td>Dependent</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>ch</em></td>
<td>Volitive / imperative</td>
<td>Imperative (illocution)</td>
</tr>
<tr>
<td>Perfect</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>ø</em></td>
<td>Perfect</td>
<td>Aspect (π1)</td>
</tr>
</tbody>
</table>

and -inaq for intransitive verbs. The first three TMA markers have the same terminations, but differ in their prefixes. The irrealis and imperative have the same prefix, but differ in their termination. There are two irregular volitive/imperative forms for the verbs go and come. Furthermore, Quiché has complement taking verbs for expressing progressive tajin, ability kowin and volition aj. They combine with the incompletive aspect prefix (Pye 1992, 2001).

The acquisition of Quiché is described in Pye (1992; 2001), based on nine-months-recordings of three children, starting at 2;1, 2;9 and 3;1. Three other children were recorded for one month. The different terminations are already used productively in the earliest data (ca.2;0); the preverbal (T)MA-expressions however appear gradually. There is some individual variation, but in general the picture is similar. Pye (1992: 255) presents the order of acquisition, based on the 90% criterion of Brown (1973), discussed in 8.2.. Those morphemes that do not yet reach the 90% criterion are ordered according to the highest percentage of occurrence. The earliest forms to be acquired are the perfect, the progressive and the irregular volitive forms for the verbs ‘go’ and ‘come’. The incompletive, completive and regular volitive do not reach the 90% criterion in the samples of the children. Only the oldest child uses the incompletive and completive prefix in more than 50% of the obligatory contexts at around 3;8. For all children, the incompletive and completive are more frequent than the regular volitive. The children apparently do not yet use the potential.

A remarkable fact is that the order of acquisition does not reflect the frequency in the input. In the input, the incompletive, completive, and regular volitive are much more frequent than the irregular volitive, the perfect, and the
progressive. It seems to be the case that perceptual saliency, a combination of syllabicity, stress and utterance position, has more influence than frequency.

Finally an important area in Quiché is cliticization: there are many particles expressed as clitics on the verb. Unfortunately, the available data on the acquisition of these particles is sparse. Pye (1992: 297) remarks that the particles that modify the verb phrase, chi(k)14 ‘again’/’already’ and k’u(t) ‘so, then’ are most frequent and probably acquired before the particle k’a ‘still’. The particles a(h) ‘certainly, must’, ne(’ ) ‘maybe, perhaps’, pu(ah) ‘perhaps’ and b’ac(’ ) ‘indeed’ are least frequent and acquired last.

In sum, the acquisition of Quiché supports the hypothesized order of acquisition. Perfect and progressive aspect are acquired first, followed by the perfective and imperfective. The potential/irrealis (π2) seems to be acquired later. The aspectual particles for ‘already’ and ‘still’ with narrow scope (π1) and the quantitative particle ‘again’ with narrow or medial scope (π1/π2) are all acquired before particles expressing epistemic modality, having wide scope (π3).

Yucatan / Yucatec Maya

Another Mayan language in which acquisition has been investigated is Yucatan or Yucatec Maya, spoken in Mexico/Belize. It belongs to the Yucatecan subbranch of Mayan languages. Yucatan has a set of ‘status’ suffixes, among which are the incompletive, completive, perfect, subjunctive, imperative and past participle. The form of these suffixes is, like the termination suffixes in Quiché, dependent on the verb type (intransitive, transitive etc.) and on TMA markers that occur preverbally. These TMA markers (a range of 15) are independent elements, mainly auxiliaries, with the exception of the perfective and imperfective prefixes. In adult Yucatan, status markers occur always with a preverbal TMA marker, except for the perfect and participle. The relevant expressions are presented in Table 10-12.

The contrastive use of inflection has been studied in one child (1;10-2;4) by Pfeiler (2003). The first verb forms at 1;9 and 1;10 are bare roots or verbs with the suffix –eh (subjunctive or imperative). For intransitive verbs, bare forms correspond to incompletive status, for transitive verbs, this corresponds to subjunctive or imperative status. Both forms are used as imperatives, and the bare roots are sometimes used as desiderative illocutions.

After 1;10 for transitive verbs, incompletive status is encoded, although without the obligatory preverbal marker, and also the perfect status suffix –mah

14 The particles have a clause medial and clause final form, the latter indicated in between brackets.
Table 10-12. Relevant TMA expressions in Yucatan (based on Pfeiler 2003: 380-81)

<table>
<thead>
<tr>
<th>Status + TMA</th>
<th>Author's definition or translation</th>
<th>FG classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incompletive</td>
<td>Implicative (π1)</td>
<td></td>
</tr>
<tr>
<td>táan</td>
<td>Progressive</td>
<td>Imperfective (π1)</td>
</tr>
<tr>
<td>k-</td>
<td>Incompletive/imperfective</td>
<td>Imperfective (π1)</td>
</tr>
<tr>
<td>ts’o’ok</td>
<td>Terminative ‘conclude, result’</td>
<td>Aspect (π1)</td>
</tr>
<tr>
<td>yaan</td>
<td>Obligative, ‘must, have to.’</td>
<td>Obligation (π1)</td>
</tr>
<tr>
<td>be’el...e</td>
<td>Assurative future ‘surely, indeed’</td>
<td>Tense (π2) + certainty (π3)</td>
</tr>
<tr>
<td>taak</td>
<td>Desiderative</td>
<td>Volition (π1)</td>
</tr>
<tr>
<td>Completive</td>
<td>Perfective (π1)</td>
<td></td>
</tr>
<tr>
<td>t-</td>
<td>Completive / perfective</td>
<td>Perfective (π1)</td>
</tr>
<tr>
<td>Subjunctive</td>
<td>recent past (π2)</td>
<td></td>
</tr>
<tr>
<td>sáan</td>
<td>Recent past</td>
<td>Recent past (π2)</td>
</tr>
<tr>
<td>uuch</td>
<td>Remote past</td>
<td>Remote past (π2)</td>
</tr>
<tr>
<td>Perfect</td>
<td>Perfect</td>
<td>Perfect (π1)</td>
</tr>
<tr>
<td>Perfect</td>
<td>Perfect</td>
<td>Perfect (π1)</td>
</tr>
<tr>
<td>Participle</td>
<td>Resultative</td>
<td>Resultative (π1)</td>
</tr>
<tr>
<td>a(h)-a’an</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

and the past participle a(h)-a’an are used. The incompletive is used for ongoing events, the perfect for events just ended and the participle for resultant states. The first real contrastive uses of status markers is at 2;0: the contrast between a perfect mach-mach ‘has grasped’ and an incompletive mach-ik ‘grasps’ and the contrast between a completive lúub-ih ‘fell’ and the participle lúub-a(h)-a’an ‘fallen’. Bare roots are still used, with imperative or desiderative meaning.

Around 2;1, inflection becomes more frequent. The verb ‘fall’ is now also used with incompletive (-ul) and subjunctive suffix (-uk). The completive status marker is used with the correct meaning, for events just ended, but without the obligatory prefix t-. The incompletive suffix begins to be used in combination with the obligatory prefix k-. The tense marker sáan for recent past appears with ‘fall’ and ‘sleep’ and the correct subjunctive status suffix is used for prohibition.

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15 Barbara Pfeiler, personal communication.
After 2;1 the proportion of bare verbs decreases: the participle and incompletive status are used with various lemmas and increasing frequency. At 2;2 there is a contrastive use of the completive and incompletive marker for ‘threw’ and ‘throws’. The most frequent contrasts for transitive verbs are between the imperative, completive, participle and incompletive and for intransitive verbs between the completive and participle. For positional verbs, the incompletive and subjunctive forms are contrasted.

Contrastive use of suffixes occurs before contrastive use of the preverbal auxiliaries. Although some of the auxiliaries begin to be used rather early, they are very infrequent. The most frequent marker is the incompletive \( k \)-, with six tokens in the complete corpus. The first and third occurrence of the auxiliaries are presented in Table 10-13. The earliest auxiliaries are the recent past (\( \pi_2 \)), the completive (perfective, \( \pi_1 \)), incompletive (imperfective, \( \pi_1 \)) and the assurative future, which expresses future tense (\( \pi_2 \)) with a sense of certainty (\( \pi_3 \)). Note, however, that all preverbal auxiliaries are very scarcely used up to the age of 2;4.

In sum, the contrast between perfective, imperfective, perfect and resultative aspect (\( \pi_1 \)) is acquired first, although the incompletive and completive form lack the prefix for a while. The fine-grained aspecual and temporal (\( \pi_2 \)) distinctions that are expressed by prefixes are acquired later, with the recent past marker being the first tense form. The assurative future expresses a sense

<table>
<thead>
<tr>
<th>First use</th>
<th>Third use</th>
<th>Author’s definition</th>
<th>FG classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1;10</td>
<td>-</td>
<td>Progressive</td>
<td>Progressive (( \pi_1 ))</td>
</tr>
<tr>
<td>1;11</td>
<td>2;3</td>
<td>Completive</td>
<td>Perfective (( \pi_1 ))</td>
</tr>
<tr>
<td>2;1</td>
<td>2;4</td>
<td>Incompletive</td>
<td>Imperfective (( \pi_1 ))</td>
</tr>
<tr>
<td>2;1</td>
<td>2;4</td>
<td>Assurative future</td>
<td>Future (( \pi_2 )) + certainty (( \pi_3 ))</td>
</tr>
<tr>
<td>2;1</td>
<td>-</td>
<td>Subjunctive</td>
<td>-</td>
</tr>
<tr>
<td>2;1</td>
<td>-</td>
<td>Desiderative</td>
<td>Volition (( \pi_1 ))</td>
</tr>
<tr>
<td>2;1</td>
<td>-</td>
<td>Terminative</td>
<td>Aspect (( \pi_1 ))</td>
</tr>
<tr>
<td>2;1</td>
<td>2;1</td>
<td>Recent past</td>
<td>Recent past (( \pi_2 ))</td>
</tr>
<tr>
<td>2;3</td>
<td>-</td>
<td>Obligative</td>
<td>Obligation (( \pi_1 ))</td>
</tr>
<tr>
<td>2;3</td>
<td>-</td>
<td>Remote past</td>
<td>Remote past (( \pi_2 ))</td>
</tr>
</tbody>
</table>
of certainty ($\pi_3$). This supports the hypothesized order of acquisition. A remarkable fact of Yucatan is that the ‘perfective/past’ domain is divided in many phases, covered by the participle (resultative), completive (perfective), perfect (perfect), recent past and remote past, and probably also the terminative. Children do not seem to have any problems with this and start to use several forms within this domain from early on.

10.3.11 Semitic: Modern Hebrew

Modern Hebrew is a Semitic language, spoken in Israel. It is a language that has no obligatory aspectual distinctions and modal marking is realized lexically. In this regard, it is not the best language for testing the hypothesis. However, it is interesting to examine the contexts of use of the first tense forms in Hebrew so that they can be compared to other languages. Hebrew has a three way distinction between past, present and future tense: the verb forms are constructed of a consonant root with alternating vowels, pre- and suffixes to indicate the tenses, for example, different tenses of ‘learn’ are all built on the root ‘l-m-d’: present sg.masc. *lomed*; past 3sg. *lamad*; future 3sg. *yilmod*, infinitive *lilmod*. The present tense forms, inflected for person and gender, are similar to the participial forms, which in combination with the past tense copula denote past imperfective, past habitual (optional) or hypothetical. The future form denotes future tense and probability.

The acquisition of Hebrew is described in Berman (1985). The first verbal forms in Hebrew are imperatives, followed by infinitives. ‘Well into the third and even fourth year, children “over-use” infinitives, as the most typical way of expressing requests, desires, and prohibitions’ (p.268). Already in the one-word stage present and past forms of verbs are used, while the future tense emerges later, around 2;6. Initially, present tense forms are used only for activities (‘cry’, ‘play’) and states (‘want’, ‘know’) whereas past tense forms are used with telic (punctual) verbs (‘fell’, ‘broke, got broken’). The first future tense forms encode immediate rather than remote future. The present tense is already used earlier together with *axshav* ‘now’ to encode the next immediate step in a series of activities. Tense operators in Hebrew are thus at first restricted to one aspectual type. By age 3;0 the same lemma is used with all three tenses: *shote* ‘is-drinking’, *shata* ‘drank, has-drunk’ and *yishte* ‘will-drink, is-going-to-drink’ (p.269).

Besides tense inflections, Hebrew has different verb-patterns (binyanim) that encode properties of events, like transitiveness, causative, inchoative, iterative, etcetera, for example ‘write’ k-t-b, in the pa’al (neutral) is *katav* ‘write’, in the nif’al (passive) it is *ni-xtav* ‘be written’ and in the hitpael it is *hitkatev* ‘correspond’ (write + reciprocal). Although most notions covered by the verb-patterns do not belong to the domain of TMA, the acquisition pattern
resembles the development of tense and aspect in other languages. Between age 2;0 and 3;0 a given verb root is only used in one pattern. Between age 3-4 some variation of verb patterns occurs with certain frequent verbs. Children use the correct form in different contexts, but Berman argues that they do not yet have a clear perception of the systematic relation between verb patterns and semantics. Between the age of 4 and 5 children start to grasp this relation: numerous roots are used in different verb patterns in many different contexts and children make substitution errors and lexical innovations. Between age 5 and 6 children have full command of the system for most verbs, although they avoid certain verb patterns, mainly passives and inchoatives and use (wellformed) analytic periphrastic expressions instead (Berman 1985: 270-76). As well as in languages with aspect and tense marking, where specific lemmas at first occur with only one aspect or tense, in Hebrew specific lemmas at first occur only in one verb pattern.

In sum, Hebrew only has grammatical tense markers and a non-obligatory combined past imperfective/habitual or hypothetical. Only the tense markers occur in early child Hebrew, and they are used contrastively only from about 3;0. The acquisition of TMA in Hebrew is contrary to the prediction by H6 that children never go through a stage in which \( \pi_2 \)-operators are present, but \( \pi_1 \)-operators are not.

10.3.12  Sino-Tibetan: Mandarin and Cantonese

There are two languages in the corpus that belong to the Chinese subbranch of the Sino-Tibetan language family: Mandarin and Cantonese. Both languages are isolating with respect to their morphological structure.

Mandarin

Mandarin Chinese is spoken in the northeast region of China and is the main language, in that it has the largest number of speakers. It is also spoken in Taiwan. Mandarin is mainly an isolating language without tense marking, but with aspect particles and modal verbs. In the literature, there is no consensus on the exact functions of Mandarin aspect markers. Imperfective aspect can be encoded by \( zai \) or the suffix \(-zhe\). The former is a progressive marker and confined to non-stative situation types. The latter marks that an event is enduring or continuing and naturally combines with states, in particular as background information. There is a third general imperfective marker \(-wu\) that generally co-occurs with \( zai \) or \(-zhe\) in sentence final position. The imperfective aspect markers are not obligatory: the English utterance 'I’m writing' can be translated to Mandarin without an aspectual marker. The progressive \( zai \)
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highlights prominent actions, so the sentence in (35) can be uttered in for example the contexts i-iii (Erbaugh 1992: 389):

(35) ‘I’m writing now,’ implying, i) so don’t bother me, ii) I’m not drawing, iii) tell the guests to wait.

Perfective aspect in Mandarin is marked by –le: use of this marker either implies the completion [+telic] or termination [-telic] of an event. In combination with a state, it marks the inception of this state. The marker guo indicates that an event has been experienced (once) at some indefinite time, usually in the past, but sometimes in the future. The resultant state does not obtain at speech time. If it does, then –le is used. In addition to aspect markers, Mandarin has expressions for participant-oriented modality (π1). Erbaugh mentions that there are grammatical devices for marking conditionality or hypothetical, but she does not present the forms used. The relevant expressions are presented in Table 10-14.

The acquisition of Mandarin is described in Erbaugh (1992); the acquisition of lexical and grammatical aspect in particular has been analyzed by Li & Shirai (2000). Note that there are mainly π1-operators in Mandarin, which makes it very likely that H6 is supported by the data on acquisition. Like Hebrew, however, the contexts of use of the different forms are interesting for the comparison across languages.

Erbaugh (1992) examined the longitudinal spontaneous speech of four children between the ages of 1;10 and 3;10. Before age 2;0, TMA expressions

<table>
<thead>
<tr>
<th>Form</th>
<th>Author's definition or translation</th>
<th>FG classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>-le</td>
<td>perfective</td>
<td>Perfective (π1)</td>
</tr>
<tr>
<td>zai</td>
<td>Progressive [+dynamic]</td>
<td>Progressive (π1)</td>
</tr>
<tr>
<td>guo</td>
<td>(experiential) perfect</td>
<td>Perfect (π1)</td>
</tr>
<tr>
<td>-zhe</td>
<td>durative</td>
<td>Aspect (π1)</td>
</tr>
<tr>
<td>-me</td>
<td>Imperfective</td>
<td>Imperfective (π1)</td>
</tr>
<tr>
<td>yào</td>
<td>‘want’</td>
<td>Volition (π1)</td>
</tr>
<tr>
<td>huì</td>
<td>‘can/might’</td>
<td>Permission (π1)</td>
</tr>
<tr>
<td>néng</td>
<td>‘can, able to’</td>
<td>Ability (π1)</td>
</tr>
<tr>
<td>?</td>
<td>Hypothetical</td>
<td>Hypothetical (π2)</td>
</tr>
</tbody>
</table>
are extremely rare. Between 1;8 and 2;5 the perfective marker -le appears. The most common modal at this age is yào ‘want’, which combines with a verb. Time marking (by adverbs) occurs very infrequently.

Between 2;3-3;2, children often use huì ‘can/might’ and néng ‘can, able to’. The perfective marker –le is used commonly and correctly. It is used most often with reference to punctual events with a clear result that has current relevance (36), but even the youngest children use it also with activity verbs, such as ‘roll’, ‘fly’, ‘talk’, ‘cry’, ‘draw’ and ‘play’ (37). However, many of these activity verbs occur in resultative verb constructions, i.e., a serial verb construction with a resulting telic interpretation, such as be-wan-le ‘drink-finish-PFV’:

(36) dǎ-pò-le
hit-break-PFT
[I] have broken [it’]

(37) kū-le
cry-PFT
[I]’ve cried.’

About 85% of the uses of –le in the corpus refers to immediate past. Children often use it to ‘call attention to a noteworthy change of state, such as breaking a cup or finishing a block tower.’ (Erbaugh 1992: 423). Children use -le productively, which is shown by the fact that they ungrammatically attach it to nouns with a resultative meaning, such as the following examples at 2;0: ‘I’ve robot-ed’ (I’ve become a robot); ‘[It’s] house-ed’, when a block tower is completed; ‘[it] has two-ed,’ when lego-blocks are pulled apart (p.426-27).

After 2;6, the perfect aspect marker guo is used occasionally for past experience, for extended recurring activities and actions, rather than for unique experiences. Between 2;3 and 3;0 children infrequently but correctly use the progressive and imperfective markers. Remember that these markers are not obligatory in adult Mandarin, and only used when the speaker wants to emphasize the ongoingness of the event or mark it as background information. The progressive zuì contrasts with the unmarked form for activity verbs and can be used to ward off requests, as in (38) (from Erbaugh 1992: 429):

(38) Situation: Pang (2;8) refuses her grandmother’s requests to sing, claiming she is too busy slicing up clay.

Wǒ zuì qiě nàge
I PROG slice that
‘I’m slicing that up!’
The progressive is used contrastively to the perfective. This is shown by (39), which is uttered a moment later than (38), when Pang has finished:

(39) qiē-hăo-le
slice-finish-PFT
‘(I)’ve finished slicing’.

In contrast to the perfective marker, mainly used for self-reference, 50% of the progressive markers describes the action of someone other than the child.

Between 2;10 and 3;4 children begin coordinating events, by using the progressive or temporal adverbs. After 3;4 narratives emerge. The acquisition of aspectual expressions for distinguishing between foregrounded and backgrounded actions and states continues throughout late childhood.

After 3;2 modals are mostly used in correct contexts, although the main verb is still often omitted, which is ungrammatical in adult Mandarin. It seems as if the object marker bă is interpreted as a verb. Consider (40) (from Erbaugh 1992: 415):

(40) *bù  yào   bă   wŏ
not  want  OBJ-MARKER me  ø
‘don’t ø me’.

Auxiliary verbs and modals frequently function as main verbs: ‘I can ø this’, ‘I want (to) still ø’ (= ‘continue ø-ing’).

Already from age 2;0 the Mandarin children refer to hypothetical or counterfactual situations, by juxtaposing two clauses. The correct, explicit grammatical devices for marking conditionality are, however, rare before 3;10.

Li & Shirai (2000) carried out several experiments to test the children’s production and comprehension of the aspectual markers. Three age groups of 45 children of 4, 5 and 6 year old were shown two picture stories. The stories only contrasted in representing different parts of an event, such as ‘the window is open’ versus ‘the window opens’. One of the stories could be described by a sentence with the imperfective marker zai or -zhe, the other with the perfective -le. The children had to chose the story that best fitted the description they heard.

Overall performance increased with age. At 4 years of age, the marker -zhe was already understood correctly in more than 80% of the cases and at 5 already with ca. 90%. The progressive marker zai is best understood with activity and semelfactive verbs and worst with telic verbs. For the former verb types, 4-year olds answer 70% correctly, for the latter verbs types only about 55%. At 6, 90% of the activity and semelfactive verb combinations is
understood correctly and about 70% of the combinations with telic verbs. The marker -le is understood best with telic verbs (about 70% correct at 4;0) and worst with activity (38%), stative (44%) and semelfactive (51%) verbs. There is progress up to age 6, when the combination with telic verbs is understood correctly in about 90% and the other combinations of lexical and grammatical aspect fluctuate between 50-70% correct responses. The test shows that children have clear preferences for certain combinations of aspect and situation type.

In a second test, children between 3 and 6 (25 per age-group) had to describe the actions of a puppet to an experimenter that was blindfolded. The general result is that –ne and zai are used mainly with activity and semelfactive verbs and –le predominantly with telic verbs. All age groups use –ne and –le also with stative verbs and there are overgeneralization errors of zai to stative verbs. The marker –zhe was hardly ever produced (apparently, the marker –guo was completely absent).

The third test consisted of an elicited imitation task, in which children had to imitate grammatical or ungrammatical combinations. The children were between 3 and 5, divided in three age groups of 25 children. The imperfective marker was combined with resultative verb constructions [+telic] and with stative verbs. It turned out that the children have the greatest difficulty with the combination zai + telic verb but do not have problems imitating zai with stative verbs. Older children are better than the younger at imitating both the grammatical as the ungrammatical combinations. These findings suggest that children (at least at age 3) are sensitive to a distinction between atelic and telic (process and result) but not to a distinction between stative and dynamic (state and process).17

Li & Shirai (2000: 125) arrive at the conclusion that the patterns in child Mandarin are the result of the distribution in the input. The sensitivity to the process-result distinction is not absolute and becomes stronger with age, so that it cannot be explained by a prelinguistic or innate concept.

In sum, the data on Mandarin are in accordance with the hypothesis: aspect (π₁) is acquired first, then participant-oriented modality (π₁) and finally the expression of hypotheticality (π₂). There is at first a strong association between perfective aspect and telicity and between progressive aspect and atelicity.

Cantonese

Cantonese or Yue is another Chinese language, spoken in the southeastern parts of China, including Hongkong. Cantonese has mainly aspectual (π₁) and

16 This is predicted by the Basic Child Grammar hypothesis of Slobin (1985).
17 This is contrary to the prediction by the Language Bioprogram hypothesis of Bickerton (1984).
modal distinctions ($\pi_1$, $\pi_2$, $\pi_3$), but also an expression for future tense ($\pi_2$) and repetition ($\pi_2$). Since Cantonese formed part of the GRAMCATS sample, the exact TMA expressions in adult Cantonese are presented in Appendix G.

In a longitudinal study on eight children (1;5-3;8) it appears that between 1;9 and 1;11 aspect markers, modal auxiliaries and sentence final particles are produced. First, aspectual markers are acquired: the perfective $\pi_2$ is acquired before the durative $\pi_6$ and the progressive $\pi_2$. Around 2;0 modal auxiliaries are acquired: $\pi_1$ (postverbal), $\pi_3$ (preverbal) and $\pi_2$ (preverbal) (CANCORP). Dak1 is used to express ability and root-possibility, $\pi_3$ to express ability and intentional future and $\pi_2$ to express root-possibility and permission.

According to Lee & Law (2001) Cantonese has at least 30 sentence final particles that cover notions of aspect, mood, modality, condition, temporal order, evidentiality, focus, etcetera. These markers are not obligatory in adult Cantonese. Note that this analysis of TMA expressions in Cantonese is not identical to the one in the reference grammar used for Chapter 7 (Kwok 1971). However, for now, these particles will be considered grammatical expressions and the information on their acquisition will be discussed here. In child Cantonese, final particles emerge as soon as two-word combinations appear. Lee & Law (2001) examined the acquisition of five evidential or epistemic modal particles, which, in adult Cantonese, express the degree of commitment of the speaker to the proposition or the relationship between information and knowledge status of speaker and hearer. The particles are presented in Table 10-15. In Functional Grammar all these markers are classified as having wide scope ($\pi_3$), and according to H6 they should be late in the acquisition process.

Table 10-15. Sentence particles in Cantonese (based on Lee & Law 2001)

<table>
<thead>
<tr>
<th>Form</th>
<th>Author's definition or translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>wo5</td>
<td>Quotative, reported speech</td>
</tr>
<tr>
<td>gwaa3</td>
<td>Uncertainty about truth of proposition</td>
</tr>
<tr>
<td>wo4</td>
<td>Unexpectedness/surprise about information</td>
</tr>
<tr>
<td>lo1</td>
<td>Obviousness of information, ‘needless to say’: it also expresses agreement with what the interlocutor said before</td>
</tr>
<tr>
<td>aa1maa3</td>
<td>Elaboration: proposition is a reason or justification for another event or situation preceding in (non)linguistic context. Often used in answers to wh-questions.</td>
</tr>
</tbody>
</table>

18 See www.arts.cuhk.edu.hk/~cancorp/
Lee & Law investigated in spontaneous speech when the particles occur and in comprehension tests whether children understand the adult function. The spontaneous use of the particles is examined in longitudinal data of three children between 1;7 and 3;8. It turns out that the first particle, wo5 for marking quotative, is only used by one of the children, three times after age 3;0. Two of these instances are even redundant in that they combine with a verb of communication. Although the children hardly ever use the quotative particle they seem to understand the concept of reported speech as they regularly use direct and indirect quotation from about 2;5, which they express with lexical verbs of communication: ‘mam/dad/teacher said (that …)’.

The second particle, gwaa3 for uncertainty, is not used at all in the samples. The eldest child does, however, understand some notion of uncertainty as she occasionally uses the adverb for ‘probably’. The third particle, wo4 for unexpectedness or surprise, occurs once in the data of the youngest child and occasionally and correctly in the samples of the two older children from age 2;5 onwards. An example is presented in (41) (ex. 33c in Lee & Law 2001):

(41) Situation: Child (2;9.28) plays with a Garfield toy and comments on another toy in comparison with the Garfield toy.

\[
\begin{array}{c}
gam \ daai \ zek \ wo4 \\
So \ big \ CL \ UNEXP \\
'(this is) so big [surprise]' \\
\end{array}
\]

The particle is often combined with expressions that indicate that the situation described is extraordinary, such as adverbs of degree like ‘so’.

The fourth particle, lo1 for obviousness, is actively used by all children. It is rare before 2;0 but becomes quite frequent between 2;0 and 2;11. It occurs first when talking about characteristic properties of people or things, visible facts (to child and adult) or ego-related facts (name, intended actions/desires). An example is presented in (42) (ex.34a in Lee & Law 2001), in which SFP stands for sentence final particle:

(42) Situation: talking about a washing machine

\[
\begin{array}{c}
ADL: \ sai \ mafie \ aa3? \\
wash \ what \ SFP \\
CHI: \ sai \ saam \ lo1. \quad (Child at 2;5) \\
wash \ clothes \ OBV \\
'(it) washes clothes (obviously).'
\end{array}
\]

Although the particle is used in contexts that may seem appropriate, it is:
unclear whether the child assumed what was conveyed should have been evident to the hearer. It is possible that the child used the particle to mark information that was salient or readily available in his/her own knowledge or apparent from the environment without taking into account the state of the hearer's knowledge. (Lee & Law 2001: 28)

A later use of lo1 is in inferential contexts of cause or effect. This use emerges around 2;3, and becomes frequent after 2;6. After 3;0 it occurs productively in conditional contexts: 'if ... then ...-obviously.' Although Lee & Law (2001) consider this as marking cause or effect, the examples could still be interpreted as marking obviousness (of the cause or effect), consider (43) (ex. 34d in 2001):

(43) ADL: gam dimqaa1 wai ban aa3?
   so why will itchy SFP
   'why do you feel itchy?'
ADL: jan me ngaau nei aa3?
   have what bite you SFP
   'what bit you?'
CHI: man ngaau lo1 (Child at 2;11)
   mosquito bite OBV
   'mosquitos.'

In my view, the use of the marker in contexts of cause and effect is the result of the development of these linguistic contexts rather than a semantic change of the particle.

The final particle, the elaboration marker aa1maa3, does not occur in the data of the youngest child, it occurs only twice in the data of the middle child (only one appropriately), but it occurs 114 times in the data of the oldest child. She mainly uses it in answer to 'why'-questions (52 times) or other wh-questions (24 times). It is also quite often used inappropriately (35 times) in that it marks new information without a preceding context that is elaborated (when the child initiates a new topic that is only slightly or not at all related to the preceding context) or it does not provide information ('I know because I know - elaboration', LLY at 3;3.15, ex. 37b in Lee & Law).

In an experimental study Lee & Law further investigated the comprehension of the more frequent markers wo4 (surprise/unexpectedness) and aa1maa3 (elaboration). Thirteen six-year-olds had to make use of the information

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19 In this latter use, it resembles the use of the adverb natuurlijk ‘of course’ in Dutch, which children use quite often in answer to adult’s questions if they convey information that is obvious from their own point of view. This adverb is probably used at a later age than the Cantonese particle.
conveyed by the particles. In the comprehension test of \textit{wo4}, the children were told a story with pictorial support, in which two puppets had a box and a magician changed the contents of one of the boxes, without the puppets knowing of which box. The puppets looked into their boxes to the contents and the first puppet says: 'My box has a X'. The second puppet (or vice versa) says: 'My box has a X-wo4.' The child had to guess the contents of which box were changed, which is possible if the particle \textit{wo4} is comprehended as indicating surprise (about the change of the contents). However, the percentage correct guesses ranged from 0-75\% in the children and only 3 of the 13 children showed consistent comprehension. This test reveals that, although children of 2 and 3 use \textit{wo4}, they probably do not yet understand its adult meaning.

A comparable, though more abstract story was set up for testing the comprehension of \textit{aa1maa3}, but here the results were even worse. None of the children reliably understood the role of the particle, although the authors recognize that the test could have been too complicated.

Finally, the input of the respective particles to the three children is investigated. The quotative and uncertainty particle are extremely infrequent in the input (3-7 tokens and 1-2 tokens in the recordings) and when they are used, they are mainly directed to an adult addressee, not to the child. A possible explanation for the infrequent use is that in child directed speech these particles are not necessary. The quotative and uncertainty markers are used to weaken assertion, commitment, and responsibility for the truth of the proposition, but in child directed speech ‘no social penalty will ensue if adults overcommit themselves to a statement.’ (Lee & Law 2001). The other three particles are more frequent: 37-79 tokens for the unexpectedness particle, 243-692 tokens for the obviousness particle and 28-70 tokens for the elaboration particle: there is thus a clear similarity between the distribution of the particles in the input and in child language. The general conclusion of these studies is that both the understanding and the production of epistemic and evidential particles develop late. Although some of the particles occur before 3;0, they do not yet have complete adultlike semantics.

In sum, Cantonese children acquire operators with narrow scope (aspect and participant-oriented modality) before operators with wide scope (quotative, uncertainty, obviousness, surprise, elaboration). The acquisition of TMA in Cantonese therefore supports the hypothesis. Cantonese does have TMA expressions with medial scope (see Appendix G, GRAMCATS sample), such as modal markers that express event-oriented meanings. Unfortunately, there is no information available on the acquisition of these expressions.
10.3.13 Trans-New Guinea: Kaluli

Kaluli is spoken in Papua New Guinea. It is a Bosavi language, belonging to the Central and South New Guinea stock of the Trans-New Guinea languages. The relevant categories of aspect and tense are presented in Table 10-16. Verb stems in Kaluli vary drastically, depending on tense. In general there is one stem form used for the future imperative, negative imperative, present and recent past and one for the present imperative, future declarative, purposive and intensive 1 and 2. However, this distinction does not hold for all verbs and for many verbs the stem form is completely unpredictable. The stem for the past tense is completely irregular in any case.

The acquisition of Kaluli is described in Schieffelin (1985), based on diary notes, longitudinal data of three children (ca.2;0 - ca.2;8) and a few recordings of a fourth child. No explicit criteria for acquisition were used. Between 1;8 and 2;0 only the imperative and the non-past form are used. Between 2;0 and 2;6, children use different inflected verb forms and they do not use bare stems. When the children talk about a third person, they mainly use present and recent past forms for describing ongoing and completed actions, respectively. There is very limited use of intensive 2 or future, which may be due to sociolinguistic factors: for Kaluli people it is culturally not allowed to speak of other's intentions as the *communis opinio* is that one cannot know what someone else thinks or feels.

When children talk about themselves, most utterances are initially in the present tense and describe their own actions. From 2;3, children also use other tenses: reference to already initiated and future actions predominates; 10-15% of all utterances refers to past events; 5-12% to intended actions (Intensive 1).

<table>
<thead>
<tr>
<th>Form (1p)</th>
<th>Author's definition or translation</th>
<th>FG classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>-n/</td>
<td>Present</td>
<td>Present (π2)</td>
</tr>
<tr>
<td>Irregular stem change</td>
<td>Past</td>
<td>Past (π2)</td>
</tr>
<tr>
<td>-abe</td>
<td>Recent past</td>
<td>Past (π2)</td>
</tr>
<tr>
<td>-an</td>
<td>Habitual</td>
<td>Habitual (π2)</td>
</tr>
<tr>
<td>-mεn/-iεn/-εn</td>
<td>Future</td>
<td>Future (π2)</td>
</tr>
<tr>
<td>-aεni</td>
<td>Intensive 1: ‘about to’ (only 1p)</td>
<td>Immediate prospective (π1)</td>
</tr>
<tr>
<td>-gεn</td>
<td>Intensive 2: ‘starting to’</td>
<td>Ingressive (π1)</td>
</tr>
</tbody>
</table>

*Note. 1p = first person*
Up to 2;6, children have gaps in the verb paradigms: they do not use all possible verb combinations and certain inflections are restricted to specific lemmas. In general, children talk about what is observable and knowable (Schieffelin 1985: 573-74).

Aspect in Kaluli is expressed through prefixes, infixes and lexical items. It is optionally expressed, contrary to tense inflection, and ‘may be used when the speaker wishes to highlight some feature of the situation’ (p.581). Around 2;6, the aspectual prefix -<i>n</i> becomes productive, marking ‘still, in the process of’. Aspectual notions expressed through infixing appear only after 2;6, and before 2;9 children use infixing infrequently and often incorrectly. Children mark duration through repetition of the verb, whereas adults only use this device in narratives.

Besides the simple verbs, there is a serial verb construction that marks past consecutive action. The suffix –<i>έγγε</i> is applied to the verb stem, see (44) (from Schieffelin 1985:585):

(44)  
\[ \text{\textit{dienza} manε} \]  
\[ \text{take:PAST:CONSEC come:1:FUT} \]  
‘having taken, I will come.’

This construction arises between 2;1 and 2;3 and is at first mainly used with the verbs <i>dima</i> ‘take’ in combination with the final verbs <i>mena</i> ‘come’ and <i>hamana</i> ‘go’. Other serial verb constructions with an auxiliary verb <i>dowab</i> ‘do’ in third person express notions of participant-oriented modality (‘want to’, ‘able to’). They are used correctly at 2;6, but probably not yet fully productively.

Between 2;2 and 2;6, the evidential particle –<i>έλο</i> for marking visual evidence becomes productive. However, children tend to use it as a general emphatic marker, for example when they found something, ‘without the correct pragmatic force’ (p.542). Around 2;8 the evidential markers for expressing ‘having heard’ and ‘inferred from evidence’ are used and ‘children began to use these more specifically for their evidential features, not as generalized emphatics’ (p.543). The quotative verb ‘say:3’ is frequently used from age 2;2, to mark reported speech. Like the evidential particles it is at first often used emphatically, but also correctly in contexts of direct speech (p.542, 87-88).

In sum, the development of TMA markers in Kaluli is not in accordance with the predicted order by the Scope Hierarchy: the obligatory tense markers appear first. Non-obligatory aspecual distinctions are acquired after tense, the first particle around 2;6. What supports H6 is that evidential markers are first used for emphasis and only later, around 2;8 in the proper adult function of evidentiality.
10.4 **Intermediate Conclusion**

Before the results with respect to H6 will be discussed, H7 will be discussed briefly. H7 predicts that there will be no stage in child language in which a polysemous expression is used in the function of a π1-operator and a π3-operator, but not as a π2-operator. There was hardly any information in the studies with respect to this hypothesis. The data on the acquisition of the different functions of –mîş in Turkish supported the hypothesis. However, West Greenlandic and Georgian both have an expression that can function as an operator of perfect aspect and as an operator of evidentiality (π3). In these languages, children will thus reach a stage in which they use a polysemous expression with non-adjacent scopes. In Chapter 7 on adult languages, the co-occurrence of perfect aspect and evidentiality also appeared to go against H3b on polysemous expressions in adult languages (7.5.2.1). Here, West Greenlandic (Inuit) was also the exception to the rule. Furthermore, in 7.2.3, it appeared that diachronically, evidentiality may develop directly from perfect aspect (7.2.3), skipping a scopal layer. The assumption that underlies H3b and H7, i.e., that semantically related meanings have adjacent or similar scopes, is clearly too absolute. In order to test H7 thoroughly, detailed research is needed on the acquisition of polysemous modal expressions that can be used with all types of scope.

With respect to H6, the data on the acquisition of TMA show a large variety in the acquisition order of TMA expressions across languages. A summary of the crosslinguistic data is presented in Table 10-17. The categories presented in the table reflect the interpretation of the children’s forms as described in the literature. In some research, adult tense forms are analyzed as expressing something else than tense in child language. Only if the researcher has explicitly stated that tense forms in child speech are used with an alternative function, is this indicated in the table by ‘tense used as’.

The languages in the table are presented in the same order as they have been discussed, under their language families which are ordered alphabetically. In the rightmost column a plus or minus indicates whether the acquisition order is in accordance with the Scope Hierarchy. If π1- and π2-operators are acquired simultaneously or if π2- and π3-operators are acquired simultaneously, this is indicated by a ‘±’. For some languages, the acquisition order of different sets of morphemes is clear, whereas the overall acquisition order of all morphemes is not. In those cases, the different acquisition orders are separately presented, for example, the acquisition order of different modal expressions in Italian is presented separately from the acquisition order of tense and aspect as the mutual acquisition order is not known. For French, Polish and Russian, the analysis of different researchers leads to different conclusions; these
Table 10-17. Overview of acquisition orders of TMA in the languages of the sample

<table>
<thead>
<tr>
<th>Language</th>
<th>Acquisition order</th>
<th>Predicted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkish</td>
<td>(Tense used as) aspect ($\pi_1$) &lt; (tense used as) tense ($\pi_2$) &lt; habitual ($\pi_2$) &lt; evidentiality ($\pi_3$)</td>
<td>+</td>
</tr>
<tr>
<td>Warlpiri</td>
<td>(Tense used as) aspect ($\pi_1$) &lt; (tense used as) tense ($\pi_2$) &lt; evidentiality ($\pi_3$)</td>
<td>+</td>
</tr>
<tr>
<td>Sesotho</td>
<td>Aspect ($\pi_1$) / tense ($\pi_2$)</td>
<td>±</td>
</tr>
<tr>
<td>West Greenlandic</td>
<td>Aspect ($\pi_1$), participant-oriented modality ($\pi_1$) &lt; habitual ($\pi_2$) &lt; tense ($\pi_2$) &lt; evidentiality ($\pi_3$) &lt; iterative ($\pi_1$)</td>
<td>+</td>
</tr>
<tr>
<td>Finnish</td>
<td>Tense ($\pi_2$) &lt; aspect ($\pi_1$) &lt; participant-oriented modality ($\pi_1$) &lt; irrealis ($\pi_2$)</td>
<td>-</td>
</tr>
<tr>
<td>Lithuanian</td>
<td>Participant-oriented modality ($\pi_1$ or lexical) / tense ($\pi_2$) ± or - ?</td>
<td></td>
</tr>
<tr>
<td>Greek</td>
<td>Aspect ($\pi_1$) / participant-oriented modality ($\pi_1$) &lt; tense ($\pi_2$) &lt; event-oriented ($\pi_2$) / proposition-oriented modality ($\pi_3$)</td>
<td>+</td>
</tr>
<tr>
<td>Dutch</td>
<td>Aspect ($\pi_1$) / participant-oriented modality ($\pi_1$) &lt; irrealis ($\pi_2$) &lt; tense ($\pi_2$) &lt; future / prediction ($\pi_2$/$\pi_3$)</td>
<td>+</td>
</tr>
<tr>
<td>German</td>
<td>Participant-oriented modality ($\pi_1$) / aspect ($\pi_1$) / tense ($\pi_2$) ±</td>
<td></td>
</tr>
<tr>
<td>Swedish</td>
<td>1. Aspect ($\pi_1$) / tense ($\pi_2$)</td>
<td>±</td>
</tr>
<tr>
<td></td>
<td>2. Participant-oriented modality ($\pi_1$) &lt; event-oriented modality ($\pi_2$)</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>3. Prospective (&quot;intentional future&quot;) ($\pi_1$) &lt; future ($\pi_2$)</td>
<td>+</td>
</tr>
<tr>
<td>French</td>
<td>1. According to Bronckart &amp; Sinclair and Clark: aspect ($\pi_1$) &lt; tense ($\pi_1$)</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>2. According to Kilani-Schoch: aspect ($\pi_1$) / tense ($\pi_2$) ±</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Participant- or event-oriented modality ($\pi_1$/$\pi_2$) &lt; event- or proposition-oriented modality ($\pi_2$/$\pi_3$)</td>
<td>+</td>
</tr>
<tr>
<td>Italian</td>
<td>1. Aspect ($\pi_1$) / tense ($\pi_2$)</td>
<td>±</td>
</tr>
<tr>
<td></td>
<td>2. Participant-oriented modality ($\pi_1$) &lt; event-oriented modality ($\pi_2$) / proposition-oriented modality ($\pi_3$)</td>
<td>+</td>
</tr>
<tr>
<td>Spanish</td>
<td>Aspect ($\pi_1$) / tense ($\pi_2$) / participant-oriented modality ($\pi_1$)</td>
<td>±</td>
</tr>
<tr>
<td>Polish</td>
<td>1. According to Weist et al. and Smoczyńska: aspect ($\pi_1$) / tense ($\pi_2$)</td>
<td>±</td>
</tr>
<tr>
<td></td>
<td>2. According to Stoll and Bloom &amp; Harner: aspect ($\pi_1$) / tense ($\pi_2$) ±</td>
<td>?</td>
</tr>
</tbody>
</table>
The different studies on the acquisition of TMA show a heterogeneous picture. There is no clear universal pattern, although tense and aspect forms always occur early and evidentiality (π3) always occurs late. Furthermore, for a few languages, tense forms are claimed to function as aspect markers, whereas the reverse claim is never made.

On the basis of this first analysis, the languages that confirm the predicted order are Turkish, Warlpiri, West Greenlandic, Greek, Dutch, Japanese, and English. The different studies on the acquisition of TMA show a heterogeneous picture. There is no clear universal pattern, although tense and aspect forms always occur early and evidentiality (π3) always occurs late. Furthermore, for a few languages, tense forms are claimed to function as aspect markers, whereas the reverse claim is never made.

### Table: Acquisitions of TMA Across Languages

<table>
<thead>
<tr>
<th>Language</th>
<th>Acquisition order</th>
<th>Predicted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russian</td>
<td>1. According to Bar-Shalom: aspect (π1) / tense (π2) 2. According to Stoll and Gagarina: aspect (π1) / tense (π2)</td>
<td>±</td>
</tr>
<tr>
<td>Japanese</td>
<td>(Tense used as) aspect (π1) &lt; aspect (π1) / tense (π2) &lt; proposition-oriented modality (π3)</td>
<td>+</td>
</tr>
<tr>
<td>Georgian</td>
<td>Aspect (π1) / participant-oriented modality (π1) / tense (π2) &lt; evidentiality (π3)</td>
<td>±</td>
</tr>
<tr>
<td>Korean</td>
<td>1. According to Choi: evidentiality / proposition-oriented modality (π3) &lt; participant-oriented modality (π1) / tense (π2) &lt; aspect (π1) 2. According to Kim: participant-oriented modality (π1) / tense (π2) &lt; aspect (π1) &lt; evidentiality / proposition-oriented modality (π3)</td>
<td>±</td>
</tr>
<tr>
<td>Quiché</td>
<td>1. Aspect (π1) &lt; irrealis (π2) 2. Aspect (π1) &lt; quantification (π1/π2) &lt; proposition-oriented modality (π3)</td>
<td>+</td>
</tr>
<tr>
<td>Yucatan</td>
<td>Aspect (π1) &lt; tense (π2) &lt; proposition-oriented modality (π3)</td>
<td>+</td>
</tr>
<tr>
<td>Hebrew</td>
<td>Tense (π2)</td>
<td>-</td>
</tr>
<tr>
<td>Mandarin</td>
<td>Aspect (π1) &lt; participant-oriented modality (π1) &lt; hypothetical (π2)</td>
<td>+</td>
</tr>
<tr>
<td>Cantonese</td>
<td>Aspect (π1) &lt; participant-oriented modality (π1) &lt; evidentiality / proposition-oriented modality (π3)</td>
<td>+</td>
</tr>
<tr>
<td>Kaluli</td>
<td>Tense (π2) &lt; aspect (π1) &lt; evidentiality (π3)</td>
<td>-</td>
</tr>
</tbody>
</table>

Conclusions are all presented in the table. Finally, for Lithuanian, it is unknown to me whether the first TMA expressions in child Lithuanian should be considered lexical or grammatical, so that it is also unknown whether π1- and π2-operators appear simultaneously, or π2-operators appear as the first operators.
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Quiché, Yucatan, Mandarin and Cantonese. French might also belong to this group, according to the analysis in Clark (1985) and in Bronckart & Sinclair (1973). For several languages, $\pi_1$-operators do not appear before $\pi_2$-operators, but simultaneously with them. In most cases this concerns aspect and tense expressions: this holds for Sesotho, German, Swedish, Italian, Spanish, for French in the analysis of Kilani-Schoch (2003), Polish and Russian, depending on the analysis of the early forms, Georgian and Korean in the analysis of Kim (1997). Lithuanian might also belong to this group, although it is not clear whether the early modal forms are lexical or grammatical and it is also unknown whether Lithuanian has aspectual forms. All these languages support the hypothesis in that there is no stage in which $\pi_2$-operators are present, but $\pi_1$-operators are not. However, they do not show a clear distinction between $\pi_1$- and $\pi_2$-operators, whereas it was expected that $\pi_1$-operators are easier to acquire because they are communicatively more relevant and conceptually more concrete. Languages that present real counterexamples to the hypothesis are Finnish, Korean in the analysis of Choi (1991; 1995; 1997), Hebrew and Kaluli. In these languages, children go through a stage in which there are $\pi_2$-operators but no $\pi_1$-operators or in which there are $\pi_3$-operators but no $\pi_1$- and $\pi_2$-operators. How the results should be interpreted will be discussed extensively in the next section.

10.5 DISCUSSION

10.5.1 Introduction

There is a substantial number of languages that show an unexpected acquisition order of operators. As argued in 8.1 $\pi_1$-operators should be acquired before $\pi_2$-operators, and $\pi_2$ before $\pi_3$-operators (H6), but in many languages, $\pi_1$- and $\pi_2$-operators appear at the same time. In some languages $\pi_2$-operators appear before $\pi_1$-operators. These early $\pi_2$-operators are always tense expressions. In one language, Korean, $\pi_3$-operators appear before $\pi_1$- and $\pi_2$-operators according to the analysis of one researcher.

However, as argued in 10.1, the semantic function of the TMA forms in child language is crucial to testing H6, whereas the acquisition orders presented in Table 10-17 are based on studies that partly did and partly did not focus on the functions of child TMA forms. Although the data on TMA forms suggest that the patterns of acquisition are purely language-specific phenomena, I expect to find universal developments when the acquisition orders are

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20 English also belongs to this group. Cf. Chapter 8.
compared at the level of semantic functions of these forms. In this section, the data will therefore be re-examined, in order to assess whether there are universal patterns in the acquisition of functions of TMA expressions. The data across languages are, therefore, compared within specific semantic domains. First, the functions of aspect and tense expressions in child language will be investigated for each language in 10.5.2. Secondly, the crosslinguistic data on the acquisition of modality are discussed again in 10.5.3, in order to examine functional similarities between languages. The data in Korean will be subject to a reanalysis. The discussion will lead to a revised overview of acquisition orders in Table 10-18 in 10.6. There, the overview of the acquisition orders in the different languages will be based on the functions that children actually mark by their early TMA forms.

### 10.5.2 Acquisition of tense and aspect

In testing the order of acquisition of the markers at different levels, the meanings of the forms in the early stages of language acquisition are particularly important. In general, the early forms that children use are tense and/or aspect and for most languages, the prediction (H6, see 10.1) boils down to the question: is aspect (π₁) acquired before tense (π₂)? This question cannot be answered solely on the basis of the forms that children use, but the functions of these forms in child language also have to be taken into consideration. The question is whether there are universals in the contexts of use and in the meanings of the early TA forms. In Chapter 9 the hypothesis that early tense and aspect forms are used to encode event type was already rejected. However, there may be other universal uses and the co-occurrence of event types and TA forms may provide important information to establish the functions and contexts of use of TA expressions. If it turns out that there are universal uses of early TA forms, then the next question is how these early uses should be classified semantically. This will be the topic of 10.5.2.2.

#### 10.5.2.1 Functions of early TA forms

In this section, the functions of the early tense and aspect forms are discussed for each language, in the same order as in 10.3. The discussion is based on the relevant passages in 10.3.

**Turkish:** In Turkish, the first TMA contrast that is linguistically encoded is between the past marker -dI and the present progressive marker –fyor. The past marker refers to completed events or observable end states that hold at the time of speech. It is mostly used in combination with change of state verbs. The progressive marker is used to refer to ongoing states and events in the here-and-now, predominantly in combination with activity verbs and to a lesser
extent with stative verbs. A further contrast arises with the optative marker -\(\theta\)A that is used to indicate intention and plan immediate activity. Aksu-Koç (1988: 74) explicitly claims that the early tense/aspect forms are used to indicate aspect and not tense.

**Warlpiri:** The main contrast that is encoded in early child Warlpiri until about age 3;0 is the following: the past inflection marks the endpoint of an immediately completed event and is mainly used in combination with telic verbs; the non-past inflection is used to mark ongoing activity in the immediate context, mainly in combination with atelic verbs. Around 2;11 an additional distinction is made within the non-past inflection between present imperfective and immediate future, to mark intentional events.

**Sesotho:** Both aspect and tense markers are used from the start, but the functions of these forms are unknown.

**West Greenlandic:** Children under 2;6 mainly talk about the here-and-now. They describe actions taking place at speech time, by using zero-forms, the prospective (pre-states) and perfect (post-state). At 3;0, children have still difficulty describing past events. At this age, \(ssa\) is used to express intention of first person.

**Finnish:** In Finnish, the contrast between past and present tense forms seems acquired remarkably early, around 1;6, 1;7, as the child uses the forms contrastively. The function of the past tense markers however is usually to refer to immediate past events and to past events still continuing at the present. Only a few children occasionally use the past form to refer to more remote past events. Nearly all examples of past tense forms in Toivanen and Laalo are with telic (and often punctual) verbs, except for ‘was’, ‘slept’ and ‘remembered’. The non-past tense is used to refer to the present or immediate future events in the child’s surroundings or to the child itself.

What is more, in Finnish there are no simple aspectual inflections on the verb. The different viewpoints that the perfective-imperfective opposition in many languages represent may, however, in Finnish be established by the use of the partitive-case, an object marker which expresses non-entirety, either of the object or of the process in which the object is involved. This case marker is productively and very frequently used around 1;11, at the same age as the past tense marker and in about one quarter of the cases it denotes an incomplete action, such as an ongoing or a temporary process (Toivainen 1980: 128-29; 1997: 160). In (45) the child (1;11) is not looking at part of ‘it’, but the process of looking is described as partial. In (46), an example at 2;4, it is not the case that part of the guitar is given to Matti, but the giving is partially, it is only lending (Toivainen 1997: 160-61):
Unlike the partitive, the accusative case is used to refer to ‘an object or things as a whole entity and to the completion of the process depicted’ (Toivainen 1980: 135). It appears a few months later than the partitive, around 2;2.

**Lithuanian**: For Lithuanian, there is no information available on the contexts of use of the tense forms.

**Dutch**: In Dutch, at first the past participle (perfect) is used in contrast to root infinitives and the present tense to indicate the distinction between completed and non-completed events. The present tense is used to refer to ongoing events, whereas modal constructions and periphrastic future are used to express possible or necessary events. Blom (2003) refers to this opposition as realis-irrealis, but the term irrealis is used quite differently from the current study. The terms ‘possible’ and ‘necessary events’ refer to participant-oriented functions of ability, permission and intention. Only after 2;9, the formal opposition of tense forms seems to express a semantic opposition between past and present tense.

**German**: Before the age of 2;2, in German there is contrastive use of past participles, present tense and modal verbs. According to Bittner (2003), past participles occur in contexts related to perfectivity and the examples she presents (between 1;9 and 2;1) all seem to refer to a resultant state or immediate past. Behrens’ data (1993: 173-175) support the view that the past participle is very often used to refer to an immediate past event or to a post-state that is relevant at the moment of speaking. Behrens also found that past participles are predominantly combined with telic events and that there is often a proximal and causal relation between the past event and the present moment. These findings suggest that the early past participles in child German have a very restricted use and the question is whether their meaning is adultlike.

Behrens (1993) explicitly claims that the past participles (Perfekt) in German child language indicate past tense, like in adult German. She defends this position with several arguments that will be critically reviewed here. First, she looks at the use of copulas. Behrens (p.177) states that the use of copulas is the most clear indicator that tense marking is acquired, since the sole function of copulas is to encode deictic tense. Since in German past copulas and past
participles/Perfekt\textsuperscript{21} emerge simultaneously the past participles mark past tense immediately, like the past copulas. Behrens would indeed have a point (ignoring the fact that early past copulas are probably acquired by rote-learning and do not necessarily function to carry tense marking) if the past copulas were used productively and in contrast to the present copulas at the same time as past participles are used productively. However, her own data point to a different development of the two forms. In her discussion of longitudinal data, she shows that the past copula is in general acquired at least one or two months later than the past participle (e.g. p.79, 87, 103), and that it is used very infrequently (p.104) or not yet productively (p.94). Mills (1985) claims that the past copula is acquired later than the past participle and Bittner (2003) shows that the past copula is not used productively before 2;2, whereas the past participle is already productive at that age.

A further argument put forward by Behrens (1993) is that, if early past participles were used to indicate telicity (as claimed by the Aspect Before Tense hypothesis) whereas the auxiliary brought in the tense component, then a change in reference would be expected as soon as the past participles are used in combination with the auxiliary. This does, however, not occur in the data: the bare past participles and the complete Perfekt construction including the auxiliary are used with equal frequency in the same contexts, referring to immediate past results, as well as to remote or nonfactual results and to activities. Behrens concludes that from the beginning, the use of past participles is semantically target-like and therefore, it must reflect temporal (and aspectual) notions. However, target-like contexts of use cannot be considered independent evidence for target-like meanings.

Behrens finally argues that the forms in child language have adultlike tense semantics is that the co-occurrence of past participles and situation type does not clearly change in development. This would indicate that children in general have a preference for talking about resultative events, and that there is no change in the semantics of the past participle, from meaning ‘resultant state’ or ‘telicity’ to ‘past tense’. With respect to this last argument, it may be true for Behrens’ data on German that there is no substantial change in the relation between tense markers and situation type. However, for many other languages, such as shown for English in Chapter 9, the correlation in adult language between resultant states and past tense is less strong than in child language and I doubt whether this would not also be the case in German. The data used in Behrens’ study probably stop at a too early age to see the change.

\textsuperscript{21} The construction past participle + auxiliary is the default past tense marking in German, but in combination with telic situation type, it may indicate perfect or resultative aspect.
To conclude, Behrens’ arguments that early past participle forms in child German have adultlike tense semantics are not convincing. The crosslinguistic data show that the use of past participles in contrast to present tense forms in child German is very similar to the use of early TA forms in other languages. Past participles are at first only used to refer to resultant states or to immediate past events and present tense forms are used to refer to ongoing events or states. The semantic interpretation of this use will be discussed in 10.5.2.2.

**Swedish:** In Swedish, past participles (the Supine and the Perfect) contrast with present tense, like in the other Germanic languages and refer to stable and obvious outcomes of events that are relevant at the moment of speech. They typically combine with telic verbs. The present tense is used to refer to ongoing activities or current states. When the simple past comes in, it is used to refer to post-states and sometimes to remote past, but then, there is a clear trigger in the present context. A further contrast that comes in are modal verbs and intentional future to refer to intentional events or immediate future events.

**Greek:** In early child Greek, imperfective present forms mark ongoing events and states and perfective past forms are predominantly used for marking resultant states or immediate past reference. Somewhat later participant-oriented modality and the subjunctive/future particle begin to be used to indicate intentional events.

**French:** In French, past participles (of the passé composé, the perfect construction) are used to mark results or end states, and are mainly restricted to telic lemmas. The present tense form is used to refer to durative actions. The periphrastic future comes in a little later and is used to indicate intentional events. In the view of Kilani-Schoch (2003) the acquisition of aspect can only follow the mastery of different past tense forms, as these forms also mark aspectual meanings. However, in this statement, she ignores the fact that the aspectual senses of different tense forms also contrast with each other within the here-and-now. There is evidence that the first ‘tense’ forms in French, the past participle, the present tense and the periphrastic future, mainly contrast in their aspectual senses, rather than in their temporal senses. The first use of the past participle is to mark perfect aspect (end-states that hold in the here-and-now) and is in opposition to the present tense marker. The second contrast is also made within the here-and-now, between the present tense and the periphrastic future that refers to intended, immediate future events.

**Italian:** In Italian, past participles are mainly used with telic events to refer to clear results. They encode end states that are relevant in the here-and-now. In contrast, present tense forms are used for describing objects and events in the here-and-now.

**Spanish:** In Spanish, the first contrast is, like in the other Romance languages, between present tense, past participle and periphrastic future.
However, there is no clear information on the use of the forms in child language.

**Polish:** For Polish Weist et al. (1984) and Smoczyńska (1985) claim that aspect and tense are acquired simultaneously and immediately used independently: This claim is supposedly supported by the fact that children contrast perfective past and imperfective non-past forms: Weist (1986:364) states that if the imperfective form encodes non-completeness and the perfective form completeness, and children do not analyze the tense morphemes, then they would use the perfective non-past form for marking completeness (which in adult Polish marks future tense), and they do not. However, it is not necessarily the case that the perfective and imperfective form contrast at first in child Polish. An alternative analysis is possible, i.e., that the combined forms, imperfective present and perfective past, distinguish between endedness and ongoingness. This view is supported by the fact that the perfective and imperfective verb forms are scarcely used contrastively or not at all and seem to remain unanalyzed for a long time.22

Although it may be the case that in Polish imperfective past forms occur early, this does not necessarily indicate that children use tense and aspect independently. First of all, the imperfective in Polish does not mark imperfective aspect, but rather neutral aspect. Imperfective verbs may be complete or non-complete events. Furthermore, Stoll (2001) and Bloom & Harner (1989) found that Polish children predominantly use perfective past forms, in combination with telic events, and imperfective present forms, in combination with atelic events. The imperfective past rarely occurs. A possible re-analysis is that children mainly contrast perfective past forms with imperfective present forms, for marking the distinction between events that are ended and ongoing events. These forms contrast later with the perfective present forms (adult future tense) for marking immediate future or intentions.

**Russian:** As well as for Polish, it is claimed for Russian that children use tense and aspect independently. Bar-Shalom (2002) claims that children in Russian use both perfective and imperfective pasts. However, the perfective past forms outnumber the imperfective past forms by far. One of the children only uses three imperfective past forms between 1;7 and 2;4 (between 4 and 8% of all past verbs) whereas another child uses a few more imperfective forms: 1 at 1;7 (6% of all past forms), 9 between 1;8 and 1;9 (14% of all past forms) and 16 at 2;0 (27% of all past forms). The input distribution at 1;6 and 2;4 to this latter child has also been studied: at 1;6, 16% of the past forms are imperfectives and at 2;4, 24%. Bar-Shalom (2002: 334) considers this 8%

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difference normal variation, but without further study the conclusion is not justified that this difference does not reflect an increase in imperfective past forms in the input. Furthermore, although both aspects are used in different tenses before 2;0, contrastive aspectual uses for single lemmas occur only after 2;0. The earliest example found is at 2;2, *zakrasila* vs. *krasila* ‘painted’. Other verbs used contrastively in aspect are ‘draw’, ‘fall’, ‘cook’, ‘wash’, ‘buy’, ‘sleep’, ‘catch’, ‘give’. The use of imperfective past is thus sporadic in early stages, and past tense is mainly restricted to perfective forms, which is a similar pattern to other languages.

On the basis of the data of Stoll (2001) and Gagarina (2003, 2004) there is evidence that the combination of past and perfective is mainly used for marking completed, telic events, whereas the combination of imperfective and present is mainly used for marking ongoing events. When the combination of perfective with future comes in, it refers to immediate future or intentions.

**Japanese**: Japanese children first use the polysemous marker –*ta* (perfective aspect (*π*1)/past tense (*π*2)) mainly in combination with telic, punctual verbs to mark perfect aspect, signifying current relevance. It is used contrastively with non-past tense and progressive aspect, but there is no information on the use of these markers.

**Georgian**: In Georgian, children first contrast the perfective punctilliar past for telic events and the imperfective durative present for states and activities. Later, they acquire the future and optative for expressing intentions and desires.

**Korean**: The first contrast between TMA forms in Korean is between past tense, present tense, future and progressive. There is, however, no information on the children’s use of these forms.

**Quiché**: In Quiché, there is no tense marking, only aspect marking. Children first start with broad aspectual distinctions, expressed by the suffixes. Finer aspectual distinctions by prefixes are made later on. The first distinction is between perfect aspect (post-states) and progressive aspect (ongoing events). There is no specific information on the use of the forms by the children.

**Yucatan**: In Yucatan, there are many aspectual distinctions. At first, children only make a broad contrast by suffixes between incompletive aspect on the one hand, to refer to ongoing events, and on the other hand the perfect and completive for events just ended and the resultative for resultant states.

**Hebrew**: Hebrew formed a counterexample to the hypothesis (H6) because there are only tense operators in children’s speech. This is in fact not unexpected considering the TMA system in Hebrew. This system is very limited and the only *π*1-operator is a periphrastic portmanteau expression for imperfective past, a function in general acquired after ‘simple’ tense markers. However, there is evidence that early tense markers are not yet used to mark tense. Berman states that the past tense is at first only used with telic situation...
types, present tense with atelic situation types and future tense for marking immediate future. Only at 3;0, tense forms are used contrastively to mark deictic tense.

**Mandarin:** In child Mandarin there is a strong association between perfective aspect – *le* and telicity, and children mainly use this form to refer to punctual events with a clear result that has current relevance. It is used sometimes with activities, but then often in the so-called resultative verb constructions. It is used predominantly to refer to immediate past events, in order to call attention to a noteworthy change of state. The perfective contrasts with progressive aspect, that associates with atelic verbs and is used to indicate present ongoingness or involvement in an activity.

**Cantonese:** Unfortunately, there is no information available on the contexts of use of the early aspectual forms in Cantonese.

**Kaluli:** Schieffelin (1985) indicates that Kaluli children predominantly talk about what is observable (the here-and-now). They use the present tense to refer to ongoing events, the past tense to refer to completed events and the intention or ingressive (π) marker to talk about their own intentions.

To conclude, for seven languages of the 24 languages there was not enough information available on the contexts of use of early tense and aspect forms to be able to compare them to other languages. These languages (Sesotho, Lithuanian, Spanish, Georgian, Korean, Quiché, Cantonese) are therefore excluded from further analysis. The remaining 17 languages showed large similarities in the functions of the early tense and aspect forms. Children distinguish at first between, on the one hand, ongoing events and, on the other hand, events just ended or resultant states relevant to the present. This analysis is very similar to the one in Slobin (1985). A little later, they make an additional contrast to encode intentions or immediate future. It depends on their mother tongue which forms children use to encode these functions. The following patterns are attested. In languages that have a perfect construction (‘have’ + past participle) that is used frequently in the input, children make at first a contrast between the past participle and the present tense (German, Dutch, Swedish, French, Italian) for the distinction between events just ended or resultative states and ongoing events. A little later children acquire a periphrastic future form or modal auxiliaries to indicate intention. Secondly, in languages that obligatorily mark both tense and aspect (Polish, Russian, Greek), children make a contrast first between perfective past forms to refer to events just ended or resultant states and imperfective present forms to refer to ongoing events and states. Later, the perfective future tense is used to refer to

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23 Spanish shows a similar formal contrast in the early stages of language acquisition, but there is not enough information available on the functions of these forms.
intentional actions. Thirdly, in languages that have basically aspectual distinctions (Yucatan, Mandarin) children first acquire a broad distinction between a form that marks ongoing events (zero form in Mandarin) versus one or more forms that mark events just ended. More fine-grained distinctions, including reference to intentional events, are in general acquired later. Fourth, in languages that have a basic tense distinction only (Finnish, Warlpiri, Hebrew), non-past or present tense forms are used in contrast to past forms to refer, on the one hand, to ongoing events and, on the other hand, to events just ended or resultant states relevant to the present. Later, children acquire the forms to encode intentional acts. Finally, in my sample, there are languages that have independent morphemes for encoding tense and aspect. In these languages, children first acquire the past tense, perfective or perfect form to encode events just ended in contrast to other events (Turkish, West Greenlandic, Japanese). The encoding of reference to ongoing events and intentions is acquired somewhat later. The data on English, in Chapter 8, are in accordance with this picture. Here, the progressive and present tense are used to refer to ongoing events or states, whereas the past tense is used to refer to events just ended and resultant states relevant at present. The prospective, future and modal auxiliaries, mainly in combination with first person, are used to refer to intentions.

In sum, depending on the language, the forms used for encoding ongoing events are present tense, progressive, imperfective or present imperfective, hereafter referred to as “imperfective” forms. Events just ended or resultant states are encoded by past, perfect, perfective or past perfective, hereafter referred to as “perfective” forms. In early acquisition, only one of the functions may be linguistically encoded, whereas the other function is left unmarked. A later contrast acquired is the encoding of intentional events by modal verbs, (immediate) future or prospective, hereafter referred to as “prospective” forms.

10.5.2.2 Universal acquisition order of tense and aspect functions

In the introduction to Part III the different semantic interpretations posed forward for early tense and aspect morphemes were briefly discussed. The two main approaches are that early tense and aspect morphemes encode situation type or that early tense and aspect morphemes are used with adultlike semantics from the start. Are the data in accordance with these interpretations?

The first approach, formulated in the Aspect Before Tense Hypothesis and the Prototype Account, claims that children’s tense/aspect forms express

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24 Child Quiche also shows a broad formal aspectual contrast at first and more fine-grained distinctions later, but there is not enough information on the functions of these forms in child language.
situation type or that their semantic representations are restricted to a specific situation type. It was already shown in Chapter 9 that this approach cannot be maintained for English. The crosslinguistic data in this chapter strongly support this conclusion with respect to all languages. Although certain combinations of tense-aspect-situation type are in fact more “natural” or less marked universally, the correlation between situation type and tense/aspect markers is not absolute in child language, in no stage, in none of the reported languages. Although at first the majority of verbs encoded for past tense are telic and punctual, children never exclusively combine past morphology with telic situations and not every past tense marker can be interpreted as referring to a visible result. There is clear evidence that children before 2;0 more spontaneously and more frequently refer to immediate past events (Toivainen 1980; Weist et al. 1984), but they do sometimes refer to (moderately) remote past events. On the other hand, not all present tense, imperfective or progressive markers are combined with states or activities. The fact that tense/aspect morphemes do occur with other than the prototypical situation type is evidence against the view that children encode situation type: why would children use linguistic forms so inconsistently, sometimes to encode telicity or stativity, but sometimes not? If in the child’s grammar a progressive or imperfective encodes the features [-telic, +dynamic] then how could it co-occur, though less often, with the opposite situation type [+telic]? Are the semantic representations sometimes “on” and sometimes “off”? A further problem not accounted for in all “situation-type”-approaches is the fact that children at a certain stage will have to reanalyze the tense/aspect forms and either change the semantics to the adult target, or, in the prototype approach, relax the semantic restrictions. Why, when, and based on what evidence would the child come to a reanalysis? For English, the Discourse Topic Hypothesis appeared to be a better explanation for the skewed distribution of event types over tense/aspect forms and this hypothesis presumably may also account for the distribution in other languages.

The second approach discussed in the introduction is that early tense morphology is used to encode tense from the start. The discussion on German and Polish in 10.5.2, however, has shown that this interpretation is also problematic. The major argument in favor of this approach is that early tense forms combine with different situation types: therefore, tense morphology should be used independently and encodes deictic tense. However, tense morphology is in all languages closely related to situation type or grammatical aspect and the markers do not seem to function very independently at all in the child’s system. Although the proponents of this approach are correct in that the rare uses in child language also have to be accounted for, they are probably too much ignoring the fact that children have a predominant use of the forms. This predominant use is productive in child language far before the other use and it
is central in the communication. It is claimed that the forms are used in an adultlike way, but the adult distribution is not discussed and there are no clear definitions of what is considered tense or aspect. Furthermore, this approach fails to explain why children, if they have mastered the adult semantics of tense forms, use it so rarely in an adultlike way.

So far it remains unsolved what the early oppositions encode. In order to answer this question, criteria are needed to decide which uses may be considered aspect and which uses tense. Most studies, however, lack a clear definition of tense and aspect. In this thesis (3.6), an adultlike use of aspect and tense was defined as follows: aspect operators select the part of the temporal structure of a property or relation—including the pre- or post-state, that is relevant to topic time. It is only this selected part of the temporal structure that is the predicated property or relation of the argument(s); tense operators locate the part of the event that is relevant to the discourse on the time axis in relation to a reference time interval, in general the speech time interval. The question is thus whether children primarily select parts of events that hold at topic time or whether they primarily encode the relation between the temporal location of the event and speech time.

On the basis of the crosslinguistic data on the acquisition of tense and aspect morphemes and the detailed study of English in Chapter 9, I will present an alternative model on the semantic development of tense/aspect morphology in child language that will address the question what children exactly encode. It adapts the ideas of the models of Christensen (2003) and Weist (1986), discussed in the introduction to Part III. It is formulated in terms of the definitions of tense and aspect in this thesis in order to be able to evaluate whether the uses in child language can in fact be considered marking either tense or aspect.

The theoretical approach to tense and aspect in this thesis will be repeated here in short (see Chapter 3 for the complete discussion). An important aspect in this approach is the notion of topic time (TT) from Klein, i.e. ‘the time span to which the speaker’s claim on this occasion is confined’ (1994: 4). Contrary to Klein’s view, I assume that the TT interval is not systematically encoded linguistically. Interlocutors mutually understand what is the TT by means of pragmatic and contextual clues, world knowledge about (the sequence and duration of) events, and possibly by linguistic information, such as adverbials, temporal clauses, and tense marking. This idea closely resembles that of Christensen (2003), who states that the temporal information conveyed in the grammatical tense system is vague and incomplete and that the speaker supplies additional temporal information, either by deictic (context, shared knowledge), anaphoric (subordinate clauses) or explicit (adverbial) specification. Her notion of deictic specification is in practice similar to mutual understanding by the
interlocutors. In contrast to Christensen’s approach, I assume that the additional temporal information does not serve to specify event time, but to specify TT.

The TT interval is the determining factor in deciding what part of an event structure is relevant to communication. Aspectual operators are used to explicitly select the part of an event structure that is predicated of the arguments, relevant to TT; for example, the progressive selects the middle part of the event, as this is the part that holds at TT, not its initial and terminal boundaries. The perfect selects the post-state of an event and a perfective selects the entire event structure. It is only the selected part of the event that holds at TT and that is assigned to the arguments.

The definition for tense presented in this thesis is that tense locates the event in time with respect to the speech time interval (and not the TT, as Klein proposes), but only the part that is relevant to TT. Whenever the present tense is used, the relevant part of the event overlaps the speech time interval (ST). Whenever the past tense is used, the relevant part of the event is anterior to ST. Whenever the future tense is used the relevant part of the event is posterior to ST. The perfect and prospective in this approach indicate that the post-state or the pre-state of the event are located in time with respect to speech time.

What is it, then, that children need to learn? They need to learn:

- that parts of event structures need to be selected for building up an adequate description of the property or relation ascribed to the arguments;
- that there are different event structures;
- that TT may shift;
- that event time needs to be encoded; and
- that TT sometimes needs to be specified linguistically.

How do children enter their way into this system? The first clues that children have are real world events, linguistic forms in the input and their co-occurrence. Imagine the world from the child’s perspective. A prototypical moment in his or her world may look like Figure 10-3. In this figure, at five o’clock, which is the present, the blocks have just fallen down, the child is intending to play with lego soon, and in the background the child’s parents are talking and drinking coffee. Earlier the same afternoon, at two o’clock, the child played on the slide. The lines below the picture represent the relations between the time intervals of the different events, speech time (ST) and topic time (TT).

The TT interval is overlapping speech time; it is in the present. As discussed in Chapter 9, children at first predominantly talk about the here-and-now, that is, the TT is nearly always located in the present. The temporal location of TT is very trivial to children: it is by default in the present. As children under 2;0
hardly ever spontaneously refer to other times than the here-and-now, I assume that they are hardly or not at all capable of distinguishing between different TT intervals. They are egocentric and cannot yet think of other worlds than those they observe themselves to talk about; these observations mainly concern the

![Diagram](image.png)

**Figure 10-3.** Typical relations between event time, speech time and topic time in the child’s world

physical world, or their own intentions or needs. Now and then, memories about a past event are triggered. As TT is not indicated in any way by the child in this stage, the interlocutor has to interpret what time interval the child is talking about on the basis of shared knowledge or experience.

Within the TT interval of the here-and-now, children experience differences between events and the way they are described. Some events are ongoing at the moment one wants to talk about it (‘daddy and mommy drinking and talking’), other events are just ended at the moment one wants to talk about it (‘blocks falling down’), and still other events are about to happen at the moment one wants to talk about it (‘playing with Lego’). The child has to choose linguistic elements for referring to them. In the first stage, before about 1;9, children use
verbs as names for events. Although they use different verb forms, and although early inflected verb forms are in general appropriately used, they are unanalyzed and the different forms do not correspond yet to any systematic semantic distinction.

In the next stage, because the child is constantly confronted with a co-occurrence of linguistic forms and different event types, a relation between form and function will emerge. The crosslinguistic data clearly indicate that, between about 1;9 and 2;0, children across languages distinguish with their early linguistic forms between on the one hand events that have just ended or resultant states, and on the other hand events that are ongoing. They systematically use an “imperfective” form (present, imperfective, present imperfective or progressive) for states or activities that they perceive right now (father drinking, mother talking), a “perfective” form (past, perfective, past perfective, perfect or resultative) for events that have just ended or that caused a present result (blocks fell / fallen). Dependent on the language, children start to use the “perfective” form in opposition to a non-finite form, the “imperfective” form in opposition to a non-finite form, or both the “perfective” and the “imperfective” form in opposition to each other. Slightly later, between about 2;0 and 2;6, children also start encoding intended events. They use modal, prospective or future forms for this purpose (wanna/gonna play with lego).

It is in this stage, in which conversation is predominantly restricted to talking about the here-and-now, that there is the strongest association between situation type and tense and aspect markers and there is not yet much contrastive use. Often the same lemmas are used with a single TMA expression. This is not the result of a semantic representation restricted to certain situation types, but a natural interaction of real world events in the here-and-now and the linguistic forms used to refer to these events. Real world events that have some extension in time, such as drinking, talking, sitting, overlap the here-and-now and the most common ways to describe them are by activities, states or nonpunctual telic events and the appropriate linguistic forms for referring to them are, depending on the language, a present, progressive or imperfective form. Real world events that happen in a moment, such as something falling, are already ended once one may comment on it. The most common way to describe them is by telic situation types and the appropriate linguistic forms for referring to them are, depending on the language, a past, perfective or perfect form. Events that are conceived of as establishing a certain change in the world or that have a salient result as their endpoint (telic situation types) are probably interesting topics for the child to talk about, hence the strong correlation between “perfective” forms and telic situation types. Finally, intentional events
may be of all types and there is no strong correlation between grammatical form and situation type.

In early child language, TT is thus by default located in the present, overlapping speech time and the majority of the events referred to is by default located in this here-and-now topic time. There are, however, distinctions between the events that take place at topic time, the here-and-now: there are events that have just ended or that are resultant states of previous events, there are events that are ongoing and there are events that are about to occur. In other words, different phases of events hold in the here-and-now: the post-state, the intermediate interval or the pre-state (see 3.3.2). In this interpretation, early TA forms are thus used to encode aspectual distinctions.

Although children’s TT is by default located in the now, occasionally, children are confronted with TT in the past or in the future: triggers in the context make the children remember some moderately remote past event, or, quite often, their parents initiate this topic. In Figure 10-3, a parent might ask: What did you do this afternoon? This helps the child (referred to as scaffolding) in talking about the past event of playing on the slide. The child may respond to the question with for example play(ed) with Anna / slide / hurt my foot or other descriptions. Now, the conversation is oriented towards the past, the parent has located TT at a time interval in the past. It is also possible that TT is located at a (moderately remote) future time interval, but these instances are even more rare. Only when TT is in the past or in the future, and deliberately, instead of by default, located in the present, then the function of deictic tense may develop. When TT is in the non-present, it has to be indicated that the part of the event relevant to the TT interval, is located prior to or after speech time. In most situations of early child conversations, however, TT is in the here-and-now and the temporal location of the relevant part of the event is also by default in the here-and-now. There is no explicit marking of temporal location, since there are no contrasts that need to be marked. Deictic tense semantics can be ascribed to children’s tense forms only when children use it to prevent ambiguities about the temporal location of an event: this happens only when children actively differentiate in the location of TT. As long as children do not distinguish between TTs productively, or, in other words, if they do not regularly initiate conversations about past events or future events, it is meaningless to contribute tense semantics to the children’s forms, as they do not yet function that way.

As the data show, children’s spontaneous conversations are predominantly about the here-and-now; they use tense/aspect expressions to encode events just ended / resultant states and intentions to immediate future more consistently and much more frequently than to encode (fairly) remote past or future events. The predominant function of early grammatical tense/aspect
markers is thus an aspectual function. They encode what part of the event structure holds at (the default) TT, which is the here-and-now. Children's first use of TA morphemes is to make a distinction between a “perfective” and “imperfective” selection of the event structure and the next distinction is a “prospective” selection. The functions are in between quotation marks, as I do not want to claim that the markers function exactly the same as a perfective, imperfective or prospective marker within a specific adult system. For example, the “perfective” form in child language may select the complete event structure or the post-state, whereas in adult languages this job may be divided between two or three different forms (for example, a perfective past and a perfect or resultantive expression). The form that is most frequently used in the input, is probably the one that children acquire first. Children crosslinguistically thus start with the linguistic encoding of a distinction between “perfective”, “imperfective” and “prospective” aspect, using different language-specific forms. Early grammatical tense/aspect markers predominantly encode which part of the event structure holds at the default TT, which is the here-and-now. The productive encoding of these aspectual contrasts is acquired much earlier, around 2;0, than the productive encoding of temporal contrasts, around 2;6.

The aspectual distinctions are at first only made consistently and frequently for the TT interval in the here-and-now and not yet for other TTs. Note that the first stage resembles Weist's (1986) event-time system, although the interpretation is quite different: in his analysis, children mark that event time (ET) is before, after or simultaneous to ST, whereas reference time (RT) is simultaneous to ST. In my approach to tense and aspect, I state that in the early stages TT overlaps ST, and that the early distinctions mark the different phases that hold at TT, and not yet the relation between ET and ST. In the very same stage in which aspectual functions of tense/aspect forms are acquired for present TT, lies the origin of the development of tense semantics.

Tense forms will develop tense semantics in use because of two developmental trends. First, the child has already learnt through experience that an observable resultant state is originates in a preceding event. The preceding event is often but not necessarily brief in time, and in a sense, a tense/aspect marker used in the description of this event is ambiguous in whether it refers to the post-state, to the preceding event or to both. What are the implicatures of the grammatical form and what are the conventionalized parts of the semantics? Languages differ in whether they apply separate forms for past tense, perfective and perfect aspect and children find out about the exact mapping of their forms in contexts where the time gap between the event, the resultant state and the here-and-now becomes larger or where there is no clear resultant state. On the other hand, children are stimulated to talk about real past events, either by scaffolding by their parents or by their own vivid
memories. As there is no or only a weak connection between these remote past events and the here-and-now, focus is completely drawn to a TT interval in the past. The occasional occurrence of TTs in the past and of growing time gaps between event, result and here-and-now, helps the child infer where the boundaries are of the use of a morphological form in his own language.

A similar story holds true for the early marking of events about to occur. It gradually develops into distinct marking of prospective aspect and participant-oriented modality on the one hand and future tense marking on the other hand. This development is closely related to the capacity of the child to plan ahead and to think of the future. A first step is the marking of own intentions in the immediate future. When the time gap between intention and actual event becomes larger and children are confronted more often with reference to real future events, they find out that there are distinct forms for prospective aspect and future tense or that a particular form is also apt for reference to more remote events.25

Early tense morphemes in child language thus function as grammatical aspect markers. In my view, they need not be reanalyzed entirely in a later stage: at first, tense morphemes (or tense-aspect combinations, such as the perfective past in Slavic languages and Greek) express only part of their potential semantics. They do not yet have the complete target-like function, but only the part of the semantics or possible implications of the adult meanings of the form that are most relevant to the communication of a child. The form can naturally come to include other functions as these other functions may already be implied by the earlier semantics. The child has to learn that the form expresses additional senses, closely related to the senses already acquired by the child, or that the combinations of the form with different event-types determine which implications exactly hold. The most drastic reanalysis a child may need to make is that the meaning with which the morpheme was used is only a (dominant) implicature of the target meaning and not the meaning itself. Extension or specification of meaning arises when children’s conversation topics begin to vary more often and more actively. This gives them the opportunity to add uses and semantic specifications on the basis of pragmatic inferences.

After the early stage (up to about age 2;6) in which children have acquired aspectual marking for the here-and-now and deictic tense has begun to develop, children become more flexible and proficient in changing TT. At first, they do not need to vary it very often. Their attention and memory span is in general

25 Note that I do not claim that the child restricts future forms at first to immediate future events because of his semantic representation, but simply because more remote future events are not yet part of his conversation topics and are probably not conceptually established. The semantics of the form at any moment cover the remotest future notion that the child has.
restricted to situations in the here-and-now. External cues can trigger past memories, but they are scarce. More and more, children remember past events and they come to find past events interesting conversation topics. Now, TT is no longer only simultaneous to the present and present tense forms are now used to encode that the relevant parts of the events are overlapping ST. Among the first combinations of tense and aspect that are used productively are present progressives, present perfects and present prospectives (between about 2;3-2;6).

Children steadily become more proficient in thinking and talking about events outside the here-and-now and their conceptualization of events becomes more structured and complex. This raises the need to mark different phases within a displaced TT, in other words, they start indicating which phases hold at TTs dissociated from the here-and-now, that is, they start to combine tense and aspect in the past, by using past imperfective forms. These combinations emerge between about 2;9 and 3;3.

Children now thoroughly develop the ability to help their interlocutors to establish TT. Between 2;6 and 3;0, they start presenting cues for the addressee, such as time adverbials (explicit specification) or temporal clauses (anaphoric specification), although they do not always use them correctly or unambiguously (cf. Christensen 2003, 10.3.6.2). First adverbials seem to concern aspectual distinctions but later on, time distinctions are also encoded.

The emergence of explicit specification of time strongly indicates that children have understood the need to mark the concept of time linguistically. Further conversation topics that arise between 2;6 and 3;0 are 'hypothetical situations' and 'general comments on the world'. The TT is an extended time interval that overlaps the present.

Children advance in manipulating combinations of aspect, tense and situation types in order to create a linguistic representation of the world in the way they want it. The last developmental steps in the field of tense and aspect, that only arise after 4;0, is the acquisition of the combinations of post-states and pre-states, located in the past or in the future (similar to Weist's free reference time system), such as will be/was going to, had/will have –ed, and the introduction of a second deictic centre at TT: the future in the past.

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26 This is supported by reports on the acquisition of adverbs, for example in Warlpiri (Bavin 1992: 361), children use jalangyu 'now' and nyurn 'complete, ready' first, around 3;8, then ngaka 'soon'. The form nyurn-wiyi for 'in the distant past' emerges later, and first refers to immediate past before it comes to refer to distant past (around 6;0). This pattern strongly resembles the development of temporal adverbs in Polish (Weist & Buczowski 1987) where first the adverbs 'already', 'now' and 'soon' are used, then immediate past or future adverbs like 'yesterday', 'today' and 'tomorrow' and finally adverbs with remote time reference. In Swedish (Christensen 2003: 58) the pattern is similar: children start out with 'now', 'soon', 'later' and 'again'. After that they start using 'yesterday', but in a sense of general past reference, not specifically to refer to the day before this day.
The development proposed here resembles the stage model of Weist, but has a principally different approach to aspect and tense. Behrens (1993: 186-7) rightly argues that Weist’s stage model is unsatisfactory in that it assumes that linguistic encoding is a good indicator of conceptual development, since her data show that there is a considerable time gap between the first reference to non-here-and-now and linguistic encoding of these notions. What I have tried to describe are principally the stages of the acquisition of the linguistic system, how children learn what needs to be encoded linguistically, rather than reflecting the stages of cognitive development. I assume that there is a time gap between the development of concepts and the recognition and consistent application of linguistic encoding of those concepts. I agree with Behrens that there is no new temporal concept when children start using tense morphemes to express time: however, I do think that children acquire a new linguistic insight, namely that they have to encode tense. In Behrens’ own words, children show an ‘increase in grammaticality’ during development. They do not acquire the concept of time around age 2;6, but they do acquire the capacity to linguistically encode tense around 2;6, on the basis of form-function correspondences in the input.

10.5.2.3 Conclusion

After re-analyzing the early tense and aspect morphemes according to function, there appear to be striking similarities across languages. It appeared that across languages, children make a distinction between a “perfective” form and an “imperfective” form to distinguish between events just ended or resultant states and events that are ongoing in the here-and-now. A further contrast arises when children start using a “prospective” form for referring to intended events. The exact forms that are used for these functions are dependent on the language they are acquiring. In this analysis, tense and aspect forms in early child language are predominantly and productively used to encode aspectual contrasts (π1). With respect to H6, this means that children first use π1-operators with scope over the predicate, and only later π2-operators with scope over the predication. These findings support H6. In contrast to a formal comparison of early TMA expressions across languages, the functional comparison has shown that there are universals in the development of tense and aspect systems. This was already hypothesized by Slobin (1985). The interpretation of the forms put forward in this section will lead to a revised overview of the acquisition order of TMA expressions in 10.6.
10.5.3 Acquisition of modality

The reanalysis of the use of tense and aspect morphemes has shown that there are remarkable crosslinguistic similarities in the acquisition of tense and aspect if the functions and use of the forms are compared and not the language-specific forms. The universal acquisition order appeared to support H6. In this section, a closer look at the acquisition of modality and related senses of future tense (π3), irrealis (π2) and evidentiality (π3) is presented, in order to find out whether there are also general trends in this domain. H6 predicts that modal expressions with narrow scope (participant-oriented modality, π1) are acquired before operators with medial scope (event-oriented modality, π2) and these are in turn acquired before operators with wide scope (proposition-oriented modality, π3). This order is in accordance with the claims in the literature (see introduction to Part III) that deontic modality is acquired before epistemic modality. First, in 10.5.3.1, the acquisition of Korean will be discussed and the early forms will be reanalyzed. In 10.5.3.2 an overview will be presented of the acquisition of modal meanings in each language in order to see whether there are universals. Finally, in 10.5.3.3, the explanations for the acquisition order proposed by Stephany (1986) and Papafragou (1998; 2000) will be evaluated (see the introduction to Part III).

10.5.3.1 Reanalysis of Korean

Before the overview will be presented, Korean will be re-examined first. For Korean, there was an unexpected acquisition order in the acquisition of TMA morphemes (10.3.9) according to Choi's analysis (1991). In her view, children use epistemic modality (proposition-oriented, π3) from a very early age, expressed by sentence ending particles (SE’s). However, I have some objections to Choi's analysis. Firstly, her definitions of the SE’s involved are not uncontroversial (cf. Martin 1992) and do not convincingly cover the children’s uses, and secondly, she has applied the labels ‘evidentiality’ or ‘epistemic modality’ too easily in her definitions.27 Her data and analysis will be discussed now in detail.

Firstly, Choi claims that –ta is used to refer to information new to the child, unassimilated in his knowledge system and that –e is used to refer to information already assimilated in the child’s knowledge system. However, the example that Choi provides to illustrate the function of –e is not very convincing, consider (47) (ex.15, 1995: 184):

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27 Choi compares her semantic classification of the SE’s to the analysis of DeLancey (1986) for Tibetan. He indicates however that the respective morphemes do not indicate a true evidential contrast, as they do not differentiate in degrees of certainty of knowledge.
(47) Situation: TJ (2;2) is in the middle of a book, but doesn’t want to read anymore. TJ closes the book.

eps-e
Not-exist-SE
‘no more’

Choi claims that the information expressed in (47) is old to the child as ‘the information that the child conveys has been established in her mind before actually saying it’ (1995: 185), but what is the evidence for this? A major problem with this analysis, especially for the use of –e, is that it is inconsistent. It is unclear why there would be a relation between Choi’s definitions and the contexts of use of the two forms: –ta would be used mainly for describing a scene in a picture as the child is looking at it, for events or states that the child has just observed and for commenting on the existence of an event/object; –e would be used to give information about a past event/state, to convince the addressee of an event or to talk about intended, negated or make-believe events and in questions to verify the truth of the proposition (see 10.3.9). For example, Choi suggests that a question for verification relates to already available knowledge and reference to a scene in a picture to non-available knowledge, but she does not motivate why this would be the case. Moreover, the contexts of use of the two forms are partly overlapping: in 5% of the cases, –ta is used in contexts that are claimed to be related to assimilated knowledge and in 36% of the cases –e is used in contexts that are claimed to be related to non-assimilated knowledge. There is thus no clear opposition in meaning.

Secondly, according to Choi, the functions of –ta and –e are evidential, and mark the status of the information as unknown or known to the speaker. However, evidentiality and epistemic modality have to do with expressing the source of the information or the commitment of the speaker to the truth of the proposition in order to indicate the reliability of the proposition or the responsibility of the speaker for the truth. Both –ta and –e in Choi’s approach do not express any of these functions. Choi (1995: 169) also notes that these SE’s are interrelated with discourse-pragmatics and in my view this function is much more important in the children’s uses. The suffix –ta may simply function as an emphatic marker28 whereas –e is the neutral utterance ending. Two alternative analyses have as much explanatory power as Choi’s own analysis. First –ta could be used for ongoing states and events, whereas –e is used for non-ongoing states and events. Second, the suffixes could be related to the

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28 This analysis would be in accordance with Kim’s analysis (1997) who claims that –ta is mainly used with the existential verbs for ‘exist’ and ‘not.exist’ and that its use is closely related to a certain degree of exclamation. Ab, yeppu-ta ‘oh be.pretty.DECL’ (=Oh, (it is) pretty (!)).
notions of topicality and focality: Choi states that –ta is mainly (83%) used when new topics are introduced during interaction, non-contingent to previous discourse, whereas –e functions in discourse (61%) to contribute more information on the current topic (1997: 109-13). To resume, there is not enough justification that the children’s uses of –ta and –e express (non-)integrated knowledge. Furthermore, if –ta and –e do express (non-)integrated knowledge, then it is still not an evidential or epistemic notion, in the sense that the source of knowledge is expressed in order to provide the reliability status of the proposition.

The third SE that Choi discusses, –ci, is said to express shared certainty of the truth of the proposition. However, the use of this certainty marker is quite different from markers such as English must. With –ci the evidence is available to both speaker and hearer and the marking of certainty is not important to the addressee as a factor of how reliable the information is. As children use it commonly in yes/no questions or as answers to questions, it seems to function for them as a tag-question or answer, seeking or providing confirmation.

Choi claims for the fourth SE –tay, that it expresses hearsay (it is said that / I heard that), an evidential category. It should be used for (i) telling the listener what the child believed a third party said or felt or (ii) reporting what a third party just said. The children always seem to assume that the addressee does not know the information (Choi 1997: 117). Papafragou (1998: 385) considers the occurrence of –tay as a genuine change in quality because it marks the beginnings of a representational conception of the mind, since it attributes thoughts, utterances and emotional states to others. I would agree with Papafragou if –tay was really used as a marker of hearsay. However, the children (as in adult Korean (Martin 1992: 801)) do not use it as a hearsay marker, but as a reported speech marker (x said that), which is quite a different and in a sense, less sophisticated use. Describing that a third party said something or quoting speech of someone else (= indirect/reported speech, quotative), is different from marking the source of information as hearsay for the sake of reliability, the source of information (evidential). Children use it simply to describe the real world or imaginary event that x said/says that… and describe this event by using –tay. This use is not different from other languages, where intonation or verbs of saying may be used for this purpose. For many languages it has been reported that direct and indirect speech markers occur early, and –tay has this function in Korean child language, see (48):

(48) Situation: TJ (2;4) looking at a picture of Ernie jumping.

\[ \text{pul ayaya ba-n-tay.} \]

Foot awawa do-PRS-SE

‘He says his feet are hurt.’
The only correct interpretation is that Ernie says that his feet are hurt, and not that one says that Ernie’s feet hurt, which would be the gloss for the hearsay interpretation. The different uses of –tay should therefore be taken into consideration. The data suggest that children only use it in the reportative function, and not in the evidential hearsay function.

Finally, the use of –ta with high pitch (type 2) was used later according to Choi (1995: 196) to mark that the information is new to the addressee, such as, when showing a new bracelet: ‘I have a bracelet-ta’. However, an alternative, less complex analysis is equally well possible, in that the child uses –ta as an emphasis marker, as was already suggested for the early uses of –ta, without high pitch, i.e., where it is used in contexts of showing something exciting or interesting to the addressee. This information is indeed unknown to the addressee, but that is to be expected when the child wants to make impression with a new object or some other news. Choi may have noticed correctly that the form occurs in contexts of new information, but the question is whether it in fact marks this information status.

Choi indicates that the acquisition of SE’s is not so different from other languages. In the first stage –ta is used only for referring to the here-and-now. After that, –e and –ci are acquired for describing past events. The fact that SE’s occur early is probably the result of perceptual saliency, since SE’s occur at the end of the sentence and since they are obligatory and therefore frequent in the input to children. Furthermore, SE’s have a relatively high degree of semantic transparency in that agent-oriented and epistemic meanings are distinguished morphologically, the former mainly expressed in complement structures, the latter mainly by SE’s (Choi 1997: 118). The relative early emergence of the epistemic or evidential markers compared to other languages is also caused by the fact that epistemic meanings mostly investigated for other languages ‘relate to the status of knowledge that results from reasoning by the child which is relatively independent of a particular discourse-interactional context.’ The function of Korean SE’s is quite different in this respect, since discourse-interactional factors are important, the primary function of SE’s being ‘to exchange information and construct shared knowledge among conversation participants’ (Choi 1997: 119).

A problem with Choi’s analysis of the children’s speech is that she considers the contexts of use similar as to what is linguistically encoded. She therefore

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29 Cf. Papafragou (1998: 385-86): ‘What the utterances with –ta share is that they describe things a child might consider new, important or, in general, emotionally exciting, things which she wishes to ‘brag about’. (…) it by no means implies that the child is in a position to detect partial knowledge in the hearer.’
concludes that the children acquire ‘epistemic meanings related to different degrees of assimilation of knowledge in their minds, different sources of information, and the knowledge status of the listener’ (1995: 199). However, an alternative analysis seems possible, that is equally well compatible with the contexts of use that Choi describes. In my view, a Korean child first distinguishes between an emphatic and a neutral sentence ending particle, –ta vs. –e, instead of marking new versus old knowledge. The use of –ci may be used to mark a conclusion or request for confirmation, often in questions and in answers to questions, and not to mark certainty of shared knowledge.30 The marker, –tay is mainly used as an indirect speech marker and not to mark hearsay, and finally –ta (type 2) is still used as an emphasis marker and not as marking new information to the listener. The contexts of these uses are compatible with the functions in adult language, i.e. the contexts of use are similar and the children’s functions can be incorporated easily in the adult uses. Choi (1995) herself acknowledges that:

the perceptual contexts provided an important basis for the children’s acquisition of epistemic meaning of SE suffixes. (…) –ta was used with situations that the child experienced at the time of speech, and –ci was often used when the evidence was clearly present in the extralinguistic context. Also, -tay was used to relay information about a referent that was present in the immediate context. Such an evidential component which is related to the here-and-now probably influenced the early acquisition of these forms. (p.199)

She also notes that –ci was rarely used by the children in the function of marking certainty based on inference and the indirect speech function of –tay ‘was not fully developed in the children’s speech’ (p.199).

In conclusion, there are alternative explanations possible of the early SE’s in child Korean. In this reanalysis, the SE’s are used to express emphasis, neutral SE, conclusion or request for confirmation, or direct speech marker. In these reanalyzes, the markers do not express evidentiality (π3) or proposition-oriented meanings (π3), but rather serve interpersonal functions, that are in FG located at the Interpersonal Level (see 2.2). This means that they fall outside the category of TMA operators like in the analysis of Kim (1997). In conclusion, the acquisition order of forms in Korean is in accordance with H6: past tense (π2) and volition (participant-oriented modality, π1) are acquired first, followed by progressive aspect (π1), present (π2) and future tense (π2).

30 This use is comparable to the interjection hé? in Dutch or you know in English.
10.5.3.2  Universals in the acquisition of modality

Now that Korean is semantically reanalyzed, an overview can be presented of the information on the acquisition of TMA in each language. The languages are discussed in the same order as in 10.3.

**Turkish:** In Turkish, the optative marker –yA is acquired before age 2;0 for expressing desire and intention (participant-oriented modality, π1 or prospective aspect, π1). Evidential functions (π3) of -mIş are acquired much later, indirect evidence around 4;0 and hearsay after 4;6.

**Warlpiri:** Children in Warlpiri first acquire the expression for immediate future/prospective/intention, around 2;11. A little later, at 3;0, future tense begins to be used. One of the evidential modality markers appears early (2;8), but does not yet express evidentiality.

**Sesotho:** Children at 2;1 use expressions for intention and/or future tense. At 2;5, the potential marker ka is used for expressing ability.

**West Greenlandic:** The modal expressions used by children in West Greenlandic are obligation (π1) at 2;2, disposition (π1) at 3;1, volition (π1), ability (π1) and future (π2) at 3;4 and at 4;7, volition (π1) and evidentiality (π3).

**Finnish:** At 1;8, children use the non-past occasionally to refer to immediate future tense and the simple obligation marker to express obligation (π1). At 2;7, the complex periphrastic construction for obligation is acquired. The irrealis (π2) is encoded from 2;10.

**Lithuanian:** Already before 2;0, children use ‘can’, ‘want’, and occasionally the form for future tense. The function of the future tense forms in child language is unfortunately not discussed in the literature.

**Dutch:** At circa 2;0, children use their first modal verbs for participant-oriented modality (π1): wil ‘want’, kan/kan niet ‘can/can’t’ (ability, root-possibility), moet ‘have to’, mag ‘may’ (permission). Prospective/intentional future (π1/π2) appears between 2;0-2;6. The past tense is used for pretend play at first. Predictive future tense (π2/π3) is acquired after 4;0.

**German:** Around 2;0, the first modal verbs appear to express participant-oriented modality (π1): muss ‘have to’, soll ‘shall’, darf ‘allowed to’, kann ‘can’, mag/möchte ‘like/would like’, will ‘want’. The future tense (π2) is acquired around 3;0.

**Swedish:** Between 2;0-2;3, children acquire the modal verbs kan (inte) ‘can(not)’ and vill (inte) ‘(don’t) want’ for ability (π1) and volition (π1), respectively, and somewhat later ska + infinitive for prospective/intentional future (π1/π2). Probably around the same time event-oriented modality (π2) is used by the children: root-possibility, permission and obligation, in combination with man ‘one’. The predictional future (π2) comes in much later, around 3;0. It is used frequently only around 4;8.
Greek: Before 2;0, there is participant-oriented modality (π1) expressed by the auxiliary boró ‘can, may’ and by a precursor of the subjunctive and future particle. This particle is mainly used to express the child’s intentions, the obligations of the addressee or to ask permission (π1). Around 2;4, the modal auxiliary prépi is used to express obligation. After 2;10, future tense (π2) is clearly distinguished from modality. Only after 3;6 the auxiliary boró is used to express epistemic possibility (π2).

French: There is only scarce information on the acquisition of modality in French. The verb vouloir ‘want’ is one of the most frequent verbs between 2 and 4 years old and experiments have shown that the comprehension of deontic modality (π1/π2) develops before the comprehension of epistemic modality (π2/π3).

Italian: An experiment on the comprehension of deontic and epistemic modality in Italian shows that children understand deontic modality (π1) before epistemic modality (π3).

Spanish: In Spanish, children acquire the modal auxiliaries poder ‘can’ and querer ‘want’ for participant-oriented modality (π1) before age 2;0. The periphrastic future is at first used to express intention (prospective, π1). Only later, it becomes a real future tense marker (π2).

Polish: Modal meanings in Polish are expressed by lexical verbs and by a few impersonal constructions (event-oriented). There is no information on the acquisition of these forms. The inflectional perfective future is acquired before age 2;0, whereas the periphrastic imperfective future is acquired around 2;0. Already from 2;0, children make reference to hypothetical events. However, linguistic encoding of hypothetical (π2) emerges around 3;0 and is only frequent around 5;0. Counterfactual reference (π2) emerges later than hypothetical.

Russian: Russian children, like Polish children, acquire the perfective future before 2;0 and the imperfective future around age 2;0. There is no further information available on the acquisition of modality and related senses in Russian.

Japanese: Around 2;0, the desiderative –tai emerges (volition, π1), between 2;0 and 2;6 the intensive –so (prospective, π1?) and around 3;0 the expression for obligation –nakya (π1). From experiments on the comprehension of epistemic (π3) and evidential (π3) particles it appeared that children around 3;6 understand the epistemic particles, whereas the evidential particles are only understood around 5;6.

Georgian: The first modal expressions in child Georgian are the forms for ‘want’ and ‘don’t want’ (volition, π1). The optative and future are acquired before 2;0 and express at first desire and intention (π1). Evidentiality (π3) is acquired later, but the exact age is not mentioned in the literature.
Korean: In Korean the first modal expression is acquired at 1;10, for expressing permission (π1). Around 2;0, the future tense emerges. Between 2;1 and 2;5 several modal expressions are acquired, for volition, obligation, weak obligation, prohibition, ability and intention. Children use an uncertainty marker productively at 2;7 and they do not yet use evidential constructions productively around 3;0. The early sentence ending particles, analyzed by Choi as epistemic and evidential modal markers, have been reanalyzed as expressing interpersonal functions and fall outside the scope of this thesis.

Quiché: There is hardly any information available on the acquisition of modal expressions in Quiché, except that particles for expressing epistemic modality (π3) are acquired later than most other TMA expressions.

Yucatan: Around 2;1, the subjunctive suffix is used for prohibition (π1). The assurative future, expressing future tense (π2) and certainty (π3), is acquired around 2;4 and the desiderative (volition, π1) and obligative (obligation, π1) come in later. The exact use of the assurative future by the children is not investigated in detail.

Hebrew: The future tense in Hebrew arises around 2;6 and encodes immediate rather than remote future. There is no information on the acquisition of modal expressions in Hebrew.

Mandarin: Between 1;8 and 2;5, children acquire the expression for volition (π1). Between 2;3 and 3;2 the expressions for ‘can, might’ and ‘can, able to’ are acquired (π1). From age 2;0 Mandarin children make reference to hypothetical events (π2), but this is linguistically encoded only after 3;10.

Cantonese: Around 2;4, children use participant-oriented modal auxiliaries (π1) for ability/root-possibility, ability/intentional future and root-possibility/permission.

Kaluli: Before 2;6, children have started using different forms to express their own intended actions (π1). Evidential particles are already used before 2;6, but at first as markers of emphasis. From 2;8 children start using the forms to express evidential meanings (π3).

A general conclusion that follows from this overview is that the acquisition of modality is at present still a rather unexplored area. For most languages, there are no reports on the acquisition of modal expressions. However, the scarce data do bring to light some general trends. First, for all languages that we have data on, children use participant-oriented modality markers before 2;6, especially to express volition and ability, and to a lesser extent, obligation and permission. Second, for several languages it is reported that children use modal expressions or a future tense form to express their own intentions before these forms start to be used for future time reference. The reverse development is never reported. In some languages, children use evidential or epistemic markers before 2;6, but then, they seem to express emphasis, rather than the target
meaning. The only language for which this may not be the case is the assurative future in Yucatan that supposedly expresses a sense of certainty (π3). In a few languages it is reported that the children use an indirect or direct speech marker before 3;0, or a particle to ask for confirmation. These meanings do not belong to the Representational Level, but rather to the Interpersonal Level in FG. I assume that children in most languages will have means to express these functions, although it depends on the specific language whether they are expressed by a particle, an intonation pattern, an interjection, an adverb, a tag question, etcetera. For a few languages reference to hypothetical events is reported to occur from 2;0 already. However, the appropriate linguistic encoding only emerges after 3;0. Encoding of counterfactual events occurs later than of hypothetical events in all the languages in the sample.

The data on English in Chapter 8 correspond to this general picture. English children start out with participant-oriented modality before age 2;6. The prospective and the future tense for marking intention occur from about 2;6. The future time reference of a future marker emerges much later, from about 4;6. Event-oriented and proposition-oriented modality is used from about 3;6, but infrequently. Hypothetical marking also occurs from about 3;6 or 4;0, whereas counterfactual expressions are used later, from about 5;0.

10.5.3.3 Explanations of acquisition order

Comparable to the prediction of the Scope Hierarchy (H6), it is claimed in the literature that deontic modality (π1/π2) is acquired before epistemic modality (π2/π3). In the introduction to Part III two explanations have been discussed that account for this acquisition order. Stephany (1986: 393) claims that the acquisition order is a logical consequence of Piagetian cognitive development. She predicts that between the age of 2 and 3 years children may start referring to potential future events. Only around age 7 or 8 will children begin to understand epistemic modality and not before 11 or 12 will they develop the capacity of hypothetical reasoning. Papafragou (1998; 2000) seeks the explanation for a later development of epistemic modality in the development of a theory of mind. She claims that in order to understand epistemic or evidential modal markers, a child needs a theory of mind. Only after 3;0, the theory of mind is developed to such an extent that children will be capable of using subjective epistemic expressions.

The claims that follow from both accounts are rather different, especially with respect to the age at which epistemic and evidential expressions may be expected to emerge. To what extent are the explanations in accordance with the data in 10.5.3.2? Both Stephany and Papafragou are right in that deontic modality is acquired before epistemic modality. However, the ages at which epistemic modality is predicted to emerge are not corroborated by the data.
Stephany (1986) predicts that the earliest epistemic expressions involve future potentiality, between 2 and 3. If she understands the encoding of intentional events by ‘future potentiality’, then her prediction is perfectly correct. If she means real future tense reference by this term, then the ages are set too early for many languages. The other predictions of Stephany are clearly not supported by the data. Stephany’s prediction is that epistemic modality (undecidability) does not occur before 7 or 8, whereas for the languages that we know of, epistemic modality comes in around 4;0 already and in some languages even earlier. The prediction that hypothetical reasoning only occurs from age 11 is quite wrong. In Finnish the irrealis is linguistically encoded from age 2;10, in Polish from 3;0, in Mandarin from 3;10, and in English from between 3;6 to 4;0.

Papafragou’s claim (1998; 2000) that epistemic modality only occurs after 3;0 is in general supported, but there are two exceptions: In Yucatan, the assurative future which encodes certainty is used before 2;6 and in Kaluli, evidential expressions are used from 2;8. A further argument against Papafragou’s account is that the experiment of Matsui et al. (subm.) on Japanese showed that there was no correlation between comprehension of epistemic and evidential particles and performance on a theory of mind test (10.3.7). They concluded that the explicit knowledge about theory of mind that is necessary to pass a false-belief task is not required for understanding epistemic modality as expressed in the particles, which is based on implicit or unconscious understanding of someone else’s mind. This is supported by the fact that Matsui et al. did find a correlation between the development of an explicit theory of mind and the understanding of epistemic and evidential lexical verbs, in contrast to particles. Although Papafragou’s theory sounds plausible, the data do not straightforwardly support her claim. It is possible that there are correlations between theory of mind and epistemic expressions at a more refined level of analysis. Both the use of modal forms and the component parts of a theory of mind need to be investigated in more detail in order to support this view.

10.6 CONCLUSION

The discussion of the functions of TMA forms in the children’s speech (10.5.2.1) leads to a revision of Table 10-17. Table 10-18 presents the acquisition orders of TMA in the different languages, based on the functions that the forms fulfil. For a few languages, there was not enough information available on the functions of the earliest TMA forms. This concerns Sesotho,
Table 10-18. Revised overview of acquisition orders of TMA in the languages of the sample

<table>
<thead>
<tr>
<th>Languages</th>
<th>Acquisition order</th>
<th>Predicted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkish</td>
<td>(Tense used as) aspect (π₁) &lt; (tense used as) tense (π₂) &lt; habitual (π₂) &lt; evidentiality (π₃)</td>
<td>+</td>
</tr>
<tr>
<td>Warlpiri</td>
<td>(Tense used as) aspect (π₁) &lt; (tense used as) tense (π₂) &lt; evidentiality (π₃)</td>
<td>+</td>
</tr>
<tr>
<td>Sesotho*</td>
<td>Aspect (π₁) / tense (π₂)</td>
<td>±</td>
</tr>
<tr>
<td>West Greenlandic</td>
<td>Aspect (π₁), participant-oriented modality (π₁) &lt; habitual (π₂) &lt; tense (π₂) &lt; evidentiality (π₃) &lt; iterative (π₁)</td>
<td>+</td>
</tr>
<tr>
<td>Finnish</td>
<td>(Tense used as) aspect (π₁) &lt; (tense used as) tense (π₂) / aspect (π₁) &lt; participant-oriented modality (π₁) &lt; irrealis (π₂)</td>
<td>+</td>
</tr>
<tr>
<td>Lithuanian*</td>
<td>Participant-oriented modality (π₁ or lexical?) / tense (π₂)</td>
<td>± or − ?</td>
</tr>
<tr>
<td>Greek</td>
<td>(Aspect/tense used as) aspect (π₁) / participant-oriented modality (π₁) &lt; tense (π₂) &lt; event-oriented (π₂) / proposition-oriented modality (π₃)</td>
<td>+</td>
</tr>
<tr>
<td>Dutch</td>
<td>Aspect (π₁) &lt; participant-oriented modality (π₁) and (tense used as) aspect &lt; (tense used as) tense (π₂)</td>
<td>+</td>
</tr>
<tr>
<td>German</td>
<td>Participant-oriented modality (π₁) / (tense used as) aspect (π₁) &lt; (tense used as) tense (π₂)</td>
<td>+</td>
</tr>
<tr>
<td>Swedish</td>
<td>1. (Tense used as) aspect (π₁) &lt; (tense used as) tense (π₂)</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>2. Participant-oriented modality (π₁) &lt; event-oriented modality (π₂)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Prospective (&quot;intentional future&quot;) (π₁) &lt; future (π₂)</td>
<td></td>
</tr>
<tr>
<td>French</td>
<td>1. (Tense used as) aspect (π₁) &lt; (tense used as) tense (π₂)</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>2. Participant- or event-oriented modality (π₁/π₂) &lt; event- or proposition-oriented modality (π₃)</td>
<td></td>
</tr>
<tr>
<td>Italian</td>
<td>1. (Tense used as) aspect (π₁) &lt; (tense used as) tense (π₂)</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>2. Participant-oriented modality (π₁) &lt; event-oriented modality (π₂) / proposition-oriented modality (π₃)</td>
<td></td>
</tr>
<tr>
<td>Spanish*</td>
<td>Aspect (π₁) / tense (π₂) / participant-oriented modality (π₁)</td>
<td>±</td>
</tr>
<tr>
<td>Polish</td>
<td>(Aspect + tense used as) aspect (π₁) &lt; tense (π₂)</td>
<td>+</td>
</tr>
<tr>
<td>Russian</td>
<td>(Aspect + tense used as) aspect (π₁) &lt; tense (π₂)</td>
<td>+</td>
</tr>
<tr>
<td>Japanese</td>
<td>(Tense used as) aspect (π₁) &lt; aspect (π₁)/ (tense used) &lt; proposition-oriented modality (π₃)</td>
<td>+</td>
</tr>
</tbody>
</table>
### Languages and Acquisition Order

<table>
<thead>
<tr>
<th>Languages</th>
<th>Acquisition order</th>
<th>Predicted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Georgian*</td>
<td>Aspect (π₁) / participant-oriented modality (π₁) / tense (π₂) &lt; evidentiality (π₃)</td>
<td>±</td>
</tr>
<tr>
<td>Korean*</td>
<td>Participant-oriented modality (π₁) / tense (π₂) &lt; aspect (π₁)</td>
<td>±</td>
</tr>
<tr>
<td>Quiché*</td>
<td>1. Aspect (π₁) &lt; irrealis (π₂)</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>2. Aspect (π₁) &lt; quantification (π₁/π₂) &lt; proposition-oriented modality (π₃)</td>
<td>+</td>
</tr>
<tr>
<td>Yucatan</td>
<td>Aspect (π₁) &lt; tense (π₂) &lt; proposition-oriented modality (π₃)</td>
<td>+</td>
</tr>
<tr>
<td>Hebrew</td>
<td>(Tense used as) aspect (π₁) &lt; (tense used as) tense (π₂)</td>
<td>+</td>
</tr>
<tr>
<td>Mandarin</td>
<td>Aspect (π₁) &lt; participant-oriented modality (π₁) &lt; hypothetical (π₂)</td>
<td>+</td>
</tr>
<tr>
<td>Cantonese*</td>
<td>Aspect (π₁) &lt; participant-oriented modality (π₁) &lt; evidentiality (π₃) / proposition-oriented modality (π₃)</td>
<td>+</td>
</tr>
<tr>
<td>Kaluli</td>
<td>1. (Tense used as) aspect (π₁) &lt; (tense used as) tense (π₂)</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>2. Aspect (π₁) &lt; evidentiality (π₃)</td>
<td>+</td>
</tr>
</tbody>
</table>

**Note.** *For these languages, there is not enough information available on the function of early tense and aspect expressions.*

Lithuanian, Spanish, Georgian, Korean, Quiché and Cantonese. These languages are marked by an asterisk. Outcomes that differ from Table 10-17 are presented in bold in the rightmost column.

It appears that when H6 is tested on the semantic functions of forms, there are no real counterexamples to the hypothesis. Children start out with π₁-operators or with forms that function as such. In five languages, Sesotho, Lithuanian, Spanish, Georgian and Korean, children acquire tense forms at the same time as aspect or participant-oriented modality forms, but for these languages there was not enough information available about the semantic function of the TMA forms in early child speech. In several languages children go through a stage in which they use tense forms predominantly and productively only with the function of aspect operators (π₁). The arguments for this interpretation were presented in detail in 10.5.2.2. Only in a later stage the tense forms are used with tense semantics. For two of these languages, however, Hebrew and Kaluli, it may still be the case that children go through a stage in which they use π₂-operators, but no π₁-operators, namely, as soon as they start using the tense forms with tense semantics. In Hebrew, as there are hardly any π₁-operators, the children might then have a TMA system that only contains tense operators (π₂). For Kaluli, there is not enough information to determine whether children start using the tense forms for tense semantics...
before, after or simultaneously to the acquisition of aspect forms for encoding aspect. Further research on both languages is needed in order to establish the exact order of acquisition.

The analyses of the longitudinal production data in this chapter have shown that although the specific TMA forms to be acquired vary from language to language, there are remarkable similarities where it concerns the functions of these forms. In many languages the first verbal distinctions concern illocution: children use different forms to mark imperatives and non-imperatives. The non-imperatives are declaratives and interrogatives. Children do not always use the correct adult forms to encode the different illocutions, but they do show a systematic relation between form and function. For some languages it is reported that there are neutral or all-purpose forms such as bare stems or root infinitives, but in languages that do not have a substantial amount of bare forms in the input, children use only (unanalyzed) inflected forms right away.

In the non-imperative forms, children across languages start differentiating before the age of 2;0 between, on the one hand, events that have just happened or resultant states of earlier events and, on the other hand, states and events that hold at the moment of speech. I have argued that children’s productive use of tense/aspect morphology at this stage encodes the phase of an event that holds at TT, that is, grammatical aspect. Children use different grammatical forms for encoding this distinction, depending on the language they learn, but the variation is not arbitrary. Events that have just happened and resultant states are described by perfect, resultative, perfective or (recent) past tense morphology; events that are ongoing are described by progressive, imperfective or present tense morphology. The “perfective” forms (past participle, past tense or perfective) co-occur often, but not only, with (punctual) telic events with a clear result such as ‘fall’ and ‘break’. The “imperfective” forms co-occur in general with states, activities (including semelfactives) and durative telic events. If in the input a present tense or imperfective form is mainly used for stative situations whereas a progressive form combines with dynamic situations, then children equally make this distinction and they rarely make errors. Although the correlation between tense/aspect and event type is strong, it is not absolute and it cannot be maintained that children’s early inflections would grammatically encode situation type. Although aspectual distinctions are encoded consistently before temporal distinctions, the more sophisticated uses of aspect, for example perfect aspect in combination with past and future tense, develop until after 4;0.

Further notions that are encoded early in many languages are the modal notions of inability (‘can’t’) and volition (‘wanna’). They are mainly used for self-reference.
A third aspectual contrast that seems to appear early in all languages, between about 2;0 and 2;6, is reference to events that are about to occur. These events are in general intentions of the child. Expressions used for this function are prospectives, (immediate) future markers, mainly with first person subjects, or modal markers for volition, intention or obligation. No correlation is found for intentional events and situation type.

Although the early “perfective” forms are predominantly and productively used to refer to observable events in the here-and-now, “perfective” forms are not restricted to referring to events in the immediate past or to events with a clear result. Children from about age 2;0 use them incidentally to refer to more remote past events. Most frequently, the topic is initiated by their parents and/or there is a concrete observable trigger in the present nonlinguistic context that reminds the child of the earlier event. From about 2;6, children’s spontaneous references to past events increase. For several languages it is noted that early past forms refer to events in fantasy or play or occur in stories.

From the start, there is no one-to-one relation between form and function. Different forms may be used for one reference type. In languages that have bare stems or infinitives, these forms co-exist for a long time (up to about 3;0) with verbs that are encoded for TMA and they are used to refer to different types of events. Children do not change the uses of their early forms but rather, they increasingly use the appropriate, adultlike forms.

Between 2;6 and 3;0, tense is encoded more and more consistently. Children more frequently and spontaneously refer to remote past events and they present clues for their addressees that indicate the temporal location of TT. Furthermore, children acquire a second or third form to differentiate functionally between different “perfective” senses such as past tense and perfective, perfect, or resultative aspect. Children that acquire languages with a remoteness distinction for past tense, now also use the remote past tense marker. The frequency of imperfective or progressive past markers increases and in periphrastic aspectual constructions the auxiliary is realized much more often. Modal auxiliaries are in general combined with infinitives.

Reference to generic and habitual states also emerges in this period. Present tense forms with a habitual interpretation are used for this goal. Reference to past habitual events by past habitual or imperfective past forms in general occurs later. Linguistic encoding of future time reference and of reference to hypothetical or non-actual events seems to develop after 3;0. Pluperfects are acquired very late in all languages, in general after 3;6. Evidential or epistemic forms are sometimes reported to emerge between 2;6 and 3;0 but then, their semantics do not yet seem to be adultlike, but rather to express emphasis. Targetlike use of evidential and epistemic distinctions seems to occur after 3;6 or later, although not much information is available about these forms.
The experimental results are less uniform, even within one language. In general, basic tense (past, present, future) and aspect distinctions (perfective, imperfective) seem to be understood around 2;6-3;6, but are not errorless. The youngest children in the experiments are, however, around 2;6, so that the earliest stages of the acquisition of TMA fall outside the scope of the studies. Comprehension of aspect is unfortunately only examined for aspectual distinctions in past tense forms. More complex distinctions such as perfect and pluperfect seem to be acquired later, after 4;0, but the exact age of acquisition is dependent on the language. Reference to remote past or future events is understood later than reference to immediate past and future events.

Comprehension of deontic modal markers seems to be established before epistemic modal markers and tests on the comprehension of evidential and epistemic modal markers in general revealed poor comprehension, even after 4;0. Why there is such a big time gap between the comprehension in the experiments and the productive use in spontaneous data is unclear.

In general, H6 is confirmed and satisfactorily accounts for the acquisition pattern of TMA functions: in the early stage of verbal use, before 2;0, children encode aspectual (π1) phases in the here-and-now and use markers of participant-oriented modality (π1) to indicate volition and ability. In the next stage, children learn to distinguish between different TTs, their conversation is about different time intervals. They now start to encode temporal reference (π2). The origins of tense marking are already before 2;6, but only after 2;6, children more spontaneously and frequently refer to non-present TTs: now tense morphemes become meaningful in an adult-like way and tense is encoded consistently. Between about 2;6 and 3;0, children begin to learn to converse about the world as it is. They make generic and habitual statements, for example by the use of present tense forms or event-oriented deontic modality (π2). From about 3;0 they begin to use expressions of irrealis (π2) and event-oriented epistemic modality (π2) for referring to non-actual events. They also start using past habitual (π2) for referring to past events. Finally, there is some evidence that children after 3;6 or 4;0 learn to indicate the reliability of their statements and the responsibility they take for what they say, by using evidentials (π3) and proposition-oriented modality (π3).