The Acquisition of Telicity in the Native Language

Η Κατάκτηση της Τελικότητας στη Μητρική Γλώσσα

Maria Kaltsa

A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Psycholinguistics at the Department of Theoretical and Applied Linguistics, School of English Aristotle University of Thessaloniki

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DEPARTMENT OF THEORETICAL & APPLIED LINGUISTICS
SCHOOL OF ENGLISH

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Declaration
This dissertation is my own work and includes nothing which is the outcome of work done in collaboration except where specifically indicated in the text and the acknowledgements. All mistakes remain my own.

Thessaloniki, June 2012
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## Abbreviations

<table>
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<th>Description</th>
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<tbody>
<tr>
<td>Acc</td>
<td>Accusative</td>
</tr>
<tr>
<td>ADD TO</td>
<td>Additivity - Dynamicity</td>
</tr>
<tr>
<td>ADJP</td>
<td>Adjectival Phrase</td>
</tr>
<tr>
<td>AgrOP</td>
<td>Object Agreement Phrase</td>
</tr>
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<td>AgrSP</td>
<td>Subject Agreement Phrase</td>
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<tr>
<td>Asp</td>
<td>Aspect</td>
</tr>
<tr>
<td>AspₜP</td>
<td>Causal Aspectual Phrase</td>
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<td>Aspectual Phrase</td>
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<td>AspₚP</td>
<td>Process Aspectual Phrase</td>
</tr>
<tr>
<td>AspₗQ</td>
<td>Quantity Predicate - Aspect</td>
</tr>
<tr>
<td>AspₗQ_MAX</td>
<td>Aspectual Maximal Projection of Quantity Predicate</td>
</tr>
<tr>
<td>beₗ</td>
<td>Be Located</td>
</tr>
<tr>
<td>CHESS</td>
<td>Checking Event Semantic Structure</td>
</tr>
<tr>
<td>Count</td>
<td>Countable</td>
</tr>
<tr>
<td>Direct</td>
<td>Directional</td>
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<td>DP</td>
<td>Determiner Phrase</td>
</tr>
<tr>
<td>e</td>
<td>event</td>
</tr>
<tr>
<td>EP</td>
<td>Event Phrase</td>
</tr>
<tr>
<td>F</td>
<td>Final Point</td>
</tr>
<tr>
<td>Fₙₙ(R)</td>
<td>Natural Final Point</td>
</tr>
<tr>
<td>I</td>
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<td>IMPERF</td>
<td>Imperfective Aspect</td>
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<td>MAP-E</td>
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<td>PlaceP</td>
<td>Place Phrase</td>
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<tr>
<td>PP</td>
<td>Prepositional Phrase</td>
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<tr>
<td>PP\text{\textunderscore PATH\textunderscore GOAL}</td>
<td>Prepositional Path Phrase denoting Goal</td>
</tr>
<tr>
<td>PP\text{\textunderscore PATH\textunderscore LOCATIVE}</td>
<td>Prepositional Path Phrase denoting Location</td>
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<tr>
<td>Progr</td>
<td>Progressive</td>
</tr>
<tr>
<td>R</td>
<td>Result State</td>
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<tr>
<td>S</td>
<td>Sentence</td>
</tr>
<tr>
<td>S\text{-Language}</td>
<td>Satellite-framed Language</td>
</tr>
<tr>
<td>s-o-q</td>
<td>subject-of-quantity</td>
</tr>
<tr>
<td>Spec</td>
<td>Specifier position</td>
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<td>SQA</td>
<td>Specified Quantity of A</td>
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<tr>
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<td>little v</td>
</tr>
<tr>
<td>V\text{-Language}</td>
<td>Verb-framed Language</td>
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<tr>
<td>VP</td>
<td>Verb Phrase</td>
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**Statistical Abbreviations**

<table>
<thead>
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<tr>
<td>%</td>
<td>percentage</td>
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<tr>
<td>df</td>
<td>degree of freedom</td>
</tr>
<tr>
<td>p</td>
<td>significance</td>
</tr>
<tr>
<td>t</td>
<td>\text{i}-test</td>
</tr>
<tr>
<td>\chi^2</td>
<td>chi-square</td>
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Abstract

The aims of the present thesis are to review the linguistic area of aspect and telicity and to investigate the acquisition of telicity in Greek. Telicity lies at the syntax-discourse interface and it is compositionally determined by the aspectual class of the verb, morphological aspect and the presence/absence of object and particles. Aspect in Greek is a grammaticalized, interpretable feature interacting with argument structure and interpretation and is morphologically expressed in a binary way, namely perfective and imperfective.

For the purposes of our research, we assumed that the mapping between syntax and arguments is mediated by grammatical aspect and we adopted an endpoint approach to telicity. According to the endpoint account, a sentence is interpreted as telic if the event is represented as having an endpoint beyond which the event cannot continue. The structures, we examined, include a specific object or goal as possible manifestations of an endpoint. The endpoint’s visibility was established within the sentence through grammatical means; that is the perfective marking of the verb makes visible the endpoint of the event, while the imperfective marking of the verb does not make visible the endpoint of the event.

The thesis explores both the comprehension and expression of telicity through acquisition data on activity and motion constructions. The research questions concern (a) the development of the interaction between the verb’s aspectual marking (perfective vs. imperfective) and the presence of a complement both being used to mark telicity compositionally in adult language, and (b) the developmental difference between activities and motion verbs in the comprehension and expression of telicity (DP vs. PP complements). In the comprehension study, we tested 150 Greek-speaking monolingual children aged 5 to 8 (three age groups) and in the production study 250 children aged 5 to 10 (five age groups). 40 adults also conducted both experiments for control purposes.

Due to telicity’s interface status, we expected a delay in acquisition, with grammatical aspect appearing early in development whereas telic/atelic interpretations turning adult-like quite late. We further hypothesized that the expression of telicity will be particularly problematic for motion verb constructions for our youngest participants. The results confirmed these predictions.
1 Introduction

The aims of the present thesis are to offer an overview of the linguistic area of aspect with special emphasis on telicity and to investigate the acquisition of telicity in Greek. The literature on aspect and telicity has provided a large number of definitions and analyses. The thesis will attempt to introduce some of these terms and identify the key aspectual oppositions applying to Greek in particular.

Aspect and telicity have been addressed both in lexical and syntactic terms. The literature presents the aspectual meaning of an utterance as the result of the composition of lexical and grammatical aspectual properties. Some studies focus on the lexical specification of verbs and the lexicon’s effect on the aspectual composition and other studies focus on the syntactic operations that derive telic or atelic interpretations. In the case of the later, the syntactic configuration is aspectually determined irrelevantly to the inherent aspectual properties of the verb involved; thus, implying that argument structure syntax and event structure interpretation go hand-in-hand. The differences in the theoretical perspectives in the literature suggest that the relation of aspect and telicity could concern either the lexicon-syntax or the syntax-discourse interface.

Due to this large spectrum of approaches, the term telicity is used rather loosely. Sometimes it is treated as a lexical feature that specifies verbs and in other occasions as a by-product of the syntactic computation. These inconsistencies in the literature give rise to the need to re-examine the definition of telicity, its lexical and syntactic encoding along with its interface status. To redefine telicity, we need to explore its relation to notions such as perfectivity and boundedness. Moreover, special attention will be given to the possible interaction of endpoint manifestations with the telic or atelic interpretation of an utterance.

Turning to the composition of aspectual meaning in Greek, we will present how aspect is grammaticalized and its relation to telicity. The interaction of aspect with the presence and the type of complements and adjuncts define the aspectual meaning of the predicate and the overall telic or atelic interpretation of it. This interaction will be examined through transitive activity and motion verb constructions with the former receiving nominal complements and the later prepositional complements. The idiosyncratic properties of motion verbs will be presented independently and the role of
aspect both in their syntactic derivation and in the interpretation of their prepositional complements will be explored.

Psycholinguistic research reflects this terminological and conceptual confusion of the aspectual domain. Developmental studies have examined the order of acquisition of aspect and tense, the availability of prelinguistic aspectuality and the relation between aspect and transitivity. The findings do not appear uniform across languages, not even within the same language at some occasions, pointing to the theoretical and methodological inconsistencies attested in the literature. Nonetheless, a considerable number of studies suggest that the age of 3 is a turning point in the acquisition of aspect, especially when a language provides clear telicity markers such as particles. Moreover, research shows that the aspectual marking of motion verb constructions and their telic or atelic interpretation appear quite problematic. This area of acquisition is relatively understudied in Greek, since only a few studies are found with inconclusive findings on how telicity operates in child language. The thesis will attempt to fill in this research gap with the exploration of activity and motion constructions in the comprehension and production of aspect and telicity.

The theoretical assumptions of the thesis will be that (a) telicity lies at the syntax-discourse interface; (b) telicity is determined by the interaction of different factors, such as the aspectual class of the verb, grammatical aspect and the argument structure and is, thus, compositional in nature; and (c) the employment of endpoints could account for the telic or atelic interpretation of utterances. The structures to be examined include a specific object or goal as possible manifestations of an endpoint. The endpoint’s visibility is established within the sentence through lexical and grammatical means; meaning that the perfective marking of the verb will make visible the endpoint of the event, while the imperfective marking of the verb will not make visible the endpoint of the event.

The complexity of telicity is expected to create a delay in acquisition, with grammatical aspect appearing early in development and the interpretation of telicity turning adult-like quite late. We anticipate that the expression of telicity will be problematic especially for motion verb constructions. The experimental study involves a comprehension experiment and a production experiment. In the comprehension experiment, we will manipulate the condition of aspect (perfective vs. imperfective) and we will measure the preferences of mapping on a telic or an atelic event. In the production experiment, we will manipulate the condition of telicity (telic vs. atelic) and we will measure the production of aspect and complements. The data will be discussed both
in relation to the theoretical framework assumed and in relation to the findings of other acquisition studies on aspect.

The thesis is organized as follows: Chapter 2 presents the background of aspect and telicity. In particular, Section 2.1 addresses the key notion of aspectual meaning through the examination of its types (lexical and grammatical) in Section 2.1.1 and its derivation in Section 2.1.2. Section 2.2 reviews the syntactic representation of aspect and the syntactic operations involved in the mapping of event structure. Section 2.3 re-examines the definition of telicity and its relation to perfectivity and boundedness and presents the endpoint account as a potential frame for the analysis of telicity. Section 2.4 establishes the morphological encoding of aspect in Greek and the interaction of aspectually marked activity verbs with nominal complements in the composition of telic readings. Section 2.5 presents the syntactic accounts for aspectually marked motion constructions and the role of prepositional phrases in their telic or atelic interpretation. Section 2.6 provides the theoretical approaches for the treatment of motions in Greek and Section 2.7 summarizes the theoretical background.

Chapter 3 overviews the acquisition studies on aspect in various languages and other psycholinguistic evidence on the treatment of motions. Specifically, Section 3.1 presents the early studies on the acquisition of aspect which addressed the aspect first hypothesis and Section 3.2 presents more recent studies on the acquisition of aspect which examined the role of transitivity and particle use in the development of telicity. Section 3.3 reports the psycholinguistic evidence in the perception and development of motions with emphasis on the findings for the development of prepositional phrases interpreted as goals and Section 3.4 summarizes the acquisitional findings. Chapter 4 outlines the theoretical assumptions and syntactic framework that will be adopted for the analysis of the data along with the main idea behind the experimental design.

Chapter 5 presents the design and results of the comprehension study. In particular, Section 5.1 formulates the predictions on the understanding of telicity and Section 5.2 describes the participants’ age groupings. Section 5.3 presents the materials that were formulated with the employment of an acceptability judgement task (Section 5.3.1) and a verbs’ frequency task (Section 5.3.2). The final set of experimental items is given in Section 5.3.3. Section 5.4 describes the procedure of the experiment and Section 5.5 the comprehension data. Sections 5.5.1, 5.5.2 and 5.5.3 present the data for intransitive, activity and motion constructions and Section 5.6 summarizes the key findings of the comprehension study.
Chapter 6 presents the design and results of the production study. Specifically, Section 6.1 formulates the predictions on the production of aspect and complements for telic and atelic events and Section 6.2 describes the participants’ age groupings. Section 6.3 presents the experimental items and Section 6.4 the procedure of the production experiment. Section 6.5 illustrates the filtering of the data on the basis of lexical choice (Section 6.5.1) and tense marking (Section 6.5.2) and the finalized data-set is given in Section 6.5.3. Section 6.6 demonstrates the aspectual marking of intransitives (Section 6.6.1), activities (Section 6.6.2) and motions (Section 6.6.3) and Section 6.6.4 summarizes the major findings on the use of aspect by Greek acquirers. Sections 6.6.5 and 6.6.6 show the overall complement use for activities and motions respectively and Sections 6.6.7 and 6.6.8 the joint use of aspectual marking and nominal and prepositional complements. Section 6.7 summarizes the findings of the production study.

Chapter 7 discusses the main findings along with the theoretical frame set for the analysis of the data. Specifically, Section 7.1 presents an overview of the experimental findings. Section 7.2 examines the theoretical background against the data and compares our findings to the conclusions drawn from other acquisition studies. Section 7.3 identifies the methodological limitations and future research questions a study in the area of telicity could address. Lastly, Chapter 8 concludes the thesis.
2 The Background of Aspect & Telicity

The linguistic area of aspect and telicity has stirred both a terminological and a conceptual confusion over definitions and analyses. The aspeetual distinctions being grammaticalized differently across languages have led to an overgeneration of terms describing its types, lexical features and grammatical properties. The present section will introduce some of these terms and will attempt to disentangle the key semantic and syntactic oppositions applying to Greek aspectuality in particular. The literature on aspect is voluminous and a short overview of it will not be able to do justice to it; instead, the attempt is to present those insights that will be subsequently incorporated into the account framing the data of the present thesis.

2.1 Aspectual Meaning

The aspectual meaning of a sentence relates to the information about a real world event and the speaker's point of view of it. Aspect offers a number of different ways of approaching the internal temporal organisation of this event. The type of aspectuality provided is twofold; lexical and grammatical. Lexical aspect, also referred to as situation type aspect or Aktionsart, conveys information on the properties of the verb, while grammatical aspect, also referred to as viewpoint type or morphological aspect, conveys information on the grammatical properties of the verb phrase. Lexical aspect provides the lexicalization of aspectual semantic distinctions that have cognitive counterparts and is universal, whereas grammatical aspect encapsulates the language specific grammaticalization of such distinctions. Aspectual meaning is compositionally determined on the sentential level by the features of the verb phrase (VP) and the properties of the arguments involved. Aspectual terms appear in the literature with slight differences in their use by different linguists depending on their background assumptions and the languages they work with. Thus, where necessary, the appropriate clarifications will be provided.
2.1.1 Lexical & Grammatical Aspect

In an attempt to define and regulate the categories of lexical aspect linguistic research has provided us with a variety of verb classifications. Vendler (1957) suggested the distinction of verbs into four time schemata; activities, accomplishments, achievements and states (1):

1. a. Activities
   “A was running at time t’” means that time instant t is on a time stretch throughout which A was running.

b. Accomplishments
   “A was drawing a circle at time t’” means that t is on the time stretch in which A drew a circle.

c. Achievements
   “A won a race between t₁ and t₂” means that the time instant at which A won that race is between t₁ and t₂.

d. States
   “A loved somebody from t₁ to t₂” means that any instant between t₁ and t₂ A loved that person.

(Vendler 1957: 149)

Vendler’s verb-time schemata suggest that activities are homogeneous, accomplishments have inherent duration, achievements require a climactic point in action with definite time instants and states involve no action and, consequently, their time instants are indefinite. Kenny (1963) agrees on the conceptual tools suggested by Vendler but merges accomplishments and achievements into one category named performances. Comrie (1976: 51) suggests that non-states, that is dynamic situations in his frame, are categorized into two types; events and processes, where the former is used to refer to a ‘single complete whole’ situation and the latter to a non-complete one. Mourelatos (1978) builds on the Vendler-Kenny typology and produces a trichotomy for non-states as it is shown in (2).
2. The air smells of jasmine.
Process: It’s snowing.
Development: The sun went down
Punctual Occurrence: He blinked.

(Mourelatos 1978: 423)

It is necessary to note that Mourelatos’ classification is not verb per se but a generalized one over situations. Bach (1986) remains close to the idea of classifying eventualities instead of verbs and adds one more level in his classification (3).

3. (Bach 1986: 6)
Bach (1986: 11) also identifies a function called homomorphism relating count elements to non-count ones specifying the former as bounded and discreet. With this addition, Bach recognizes a key property of eventualities, quantization, to which we will come back later in this section.

Smith (1991/1997) bases her terminology on Vendler’s work and develops a more detailed account on the lexical/temporal properties employed to classify situations. Smith (1997: 28-33) uses three features to classify situation types; stativity, duration and telicity, as shown in (4).

### 4. Situation Types & Features

<table>
<thead>
<tr>
<th>Situations</th>
<th>Static</th>
<th>Durative</th>
<th>Telic</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>[+ ]</td>
<td>[+]</td>
<td>[− ]</td>
</tr>
<tr>
<td>Activity</td>
<td>[− ]</td>
<td>[+]</td>
<td>[− ]</td>
</tr>
<tr>
<td>Accomplishment</td>
<td>[− ]</td>
<td>[+]</td>
<td>[+]</td>
</tr>
<tr>
<td>Semelfactive</td>
<td>[− ]</td>
<td>[− ]</td>
<td>[+]</td>
</tr>
<tr>
<td>Achievement</td>
<td>[− ]</td>
<td>[− ]</td>
<td>[+]</td>
</tr>
</tbody>
</table>

(Smith 1997: 30)

In line with (4), the feature of stativity categorizes the situations into states and events. On the one hand, the temporal schema of a state is a period of undifferentiated instances while that of an event is dynamic and it allows agency, activity and change of state. The feature of duration distinguishes durative events from instantaneous ones, that is, activities from semelfactives. The feature of telicity offers the possibility of reaching a goal leading to a change of state that comes with the completion of the event (Garey 1957: 106, also referenced by Smith 1997: 29). Telicity includes the initial (I) and final points (F) of the situation. In this sense, telic events have a natural final point ($F_{Nat(R)}$) and are finite, whereas atelic events are processes with no intrinsic final point. Consider the temporal schemata in (5):

### 5. Temporal Schemata of Situation Types

- **States**: (I) ______ (F)
- **Activities**: I ........... $F_{ARB}$

---

1 Aristotle (Metaphysics 1048b) introduced the telic-atic distinction with the terms *kinesis* and *energia*.
The Background of Aspect & Telicity

Accomplishments I .......... F_{Nat(R)}
Semelfactives I
Achievements ... I (R) ...
F

(Smith 1997: 37-58)

States are static with no internal structure and their duration is at least of one moment, as in be in Athens. Their temporal schema shows that (a) the initial and final points are not part of the state itself and (b) the period is not fragmented into stages. Smith (1997: 39-42) also notes that habitual predications, as in tigers eat meat, are also semantically stative since they do not involve successive stages but refer to a pattern of situations; note, however, that syntactic tests may show dynamism.

Activities, on the other hand, are durative with successive homogeneous stages; they involve physical or mental activity and have an arbitrary final point (F_{Arr}), as in laugh. Activities do not involve change of state. They may refer to a process that can reach a termination point but this termination point is only a temporal boundary for the activity (Smith 1997: 43-49). It is important to highlight that the type of argument (e.g. definiteness) and adverbial attached to an activity verb may alter the situation type of the sentence as we will see in detail in Section 2.1.2 and Section 2.2.

Accomplishments are durative and telic with successive stages leading to a change of state, as in build a house. The dots in the temporal schema, as with activities, represent the successive stages, the F_{Nat} the natural final point which marks the completion of the process and the R the new result state (Smith 1997: 49). The result states may be an affected object, as in damage a pot, a constructed object, as in write a letter, a consumed object, as in drink a glass of wine, an affected experiencer, as in amuse Mary, or a path-goal, as in walk to the lake (Smith 1997: 52). The properties of the object itself may affect the availability of a natural final point and, thus the object affects the situation type of the sentence (6).

6. a. walk the dog
   \[ V \ [ \text{-Telic} ] + \text{Nom} \ [ \text{+Count} ] \quad = \quad \text{VP} \ [ \text{-Telic} ] \]
   b. walk to school
   \[ V \ [ \text{-Telic} ] + \text{PP} \ [ \text{Directional} ] \quad = \quad \text{VP} \ [ \text{+Telic} ] \]
c. build a house
   \[ V \ [ +\text{Telic} \] + \text{Nom} \ [ +\text{Count} \] = VP \ [ +\text{Telic} \] \]

d. build houses
   \[ V \ [ -\text{Telic} \] + \text{Nom} \ [ \text{Mass} \] = VP \ [ -\text{Telic} \] \]

(Smith 1997: 73-74)

The situation type of the sentence can also be affected by adverbials such as *almost* as in *John almost opened the door* that render the utterance ambiguous over the adverbial reference to initial or final point (Smith 1997: 54).

Semelfactives are instantaneous atelic events, as in *knock*. They have no preliminary or result stages and their temporal schema shows the initial and final points available simultaneously. Comrie (1976: 42) introduced the term for situations that take place once (one single cough) and the term iterative for the repetition of it (a series of coughs). In Smith’s frame the iterative would be a repetitive activity since a durational adverbial or viewpoint/grammatical aspect can lead to a derived activity (Smith 1997: 56).

Achievements are instantaneous changes of state that result in a new state, as in *reach the top* (Smith 1997: 28). They are conceptualized as instantaneous with their temporal schema representing the initial and final points as simultaneous. Their result states may be an affected object, as in *break a cup*, a constructed object, as in *define a parameter*, a consumed object, as in *explode a bomb* or an affected experiencer, as in *see a comet* (Smith 1997: 61). Sometimes accomplishments and achievements may be confused due to the nature of the processes they refer to, as in *the ice melted*. If the process is understood as part of the event, it is an accomplishment, whereas if it is detached from the outcome, it is an achievement (Smith 1997: 63).

Sentential elements, other than the verb itself, as mentioned earlier, appear to affect the situation type. Grammatical aspect also builds on the aspectual interpretation of the sentence. Comrie (1976) suggests that grammatical aspect is categorized into four types (7).

7.
Perfective views the situation from the outside without providing information on the internal temporal structure of the situation by reducing it to a single point and suggesting that the action is completed (Comrie 1976: 4, 18). Perfectives are the “unmarked members” of any opposition based on perfectivity and denote actions as pure and simple (Comrie 1976: 21). Terminologically it should not be confused with the Perfect which is a tense.

Imperfective, on the other hand, refers to the internal structure of the situation and, thus, views the situation from within throughout its duration (Comrie 1976: 4). Habituality should not be confused with iterativity, which refers to the repetition of a situation. We need to note, however, that (a) if the situation is repeated a limited number of times, it can be referred to with a perfective form, and (b) a situation can be referred to by a habitual form without the involvement of iterativity as in he used to believe in ghosts (Comrie 1976: 27). The main feature of habituality, though, is the reference to an “extended period of time” that renders the particular property as a key attribute of the whole period (Comrie 1976: 28). Progressiveness is employed to denote eventualities that do not refer to the successive occurrence of distinct instances of a particular situation. Nevertheless, progressiveness and habituality are not necessarily incompatible; as we see in he used to be writing poems (Comrie 1976: 33). Moreover, the situation type of a verb may disallow the use of progressive forms. For example, stative verbs, like know, do not have progressive forms because their lexical specification prohibits any internal contradiction.

Smith (1991/1997) bases her viewpoint categories on Comrie’s (1976) proposition but extends them to three main types and reanalyses their key temporal properties. Grammatical aspect in her frame is categorized into perfective, imperfective and neutral viewpoints which represent the degree of visibility of a situation. Perfective
viewpoints provide both initial and final endpoints of a situation; imperfective viewpoints refer to the internal stages of a situation with no reference to any of the endpoints; and neutral viewpoints provide the initial point and one stage at least (Smith 1997: 93). Consequently, viewpoint types are the grammaticalization of aspectual information and, as such, they are language specific. (8) presents the general temporal schemata suggested for each viewpoint type:

8. General Temporal Schemata of Viewpoint Types

Perfective

I  F

///////////

Imperfective

I . //////////. . F

Neutral

I .

(Smith 1997: 103, 111, 123)

Perfective viewpoints present the situation as a “single whole”; they are informationally closed since both endpoints are available and regardless of any durational elements in the sentence they present a situation as punctual, as in (9) (Smith 1997: 103-104).

9. a. The king reigned for thirty years.
   b. I wrote the sonnet in five minutes.

   (Lyons 1977: 709, also referenced by Smith 1997: 104)

The type of endpoint, a perfective viewpoint provides, relates to the one available by the situation type; that is, situation types that bear the [+Telic] feature have natural endpoints, while situation types that bear the [-Telic] feature have arbitrary endpoints. In the case of the former the sentence provides a completion point (10) and in the later a termination point (11):

10. He finished the letter.
11. She stopped swimming.

(Examples modified from Smith 1997: 107)
 Imperfective viewpoints suggest no endpoints and the situation they refer to is incomplete and open coinciding with at least a part of its internal temporal schema, as in (12) (Smith 1997: 111).

12. He was sitting in a chair.

The neutral viewpoint is a default viewpoint with a positive value and bears neither perfective nor imperfective grammaticalized verbal morphemes (Smith 1997: 119). Neutral viewpoints are aspectually vague and they allow both open and closed interpretations of a situation. Their value is set and compatible with both interpretations and, thus, it is informationally open, weaker than a perfective since it licences open interpretations, and stronger than an imperfective since it licences closed interpretations, as in (13) (Smith 1997: 120).

13. Zhangsan dao jia de shihou, Mali xie gongzuo baogao (Mandarin) 
‘When Zhangsan arrived at home, Mali wrote/was writing the work report.’ (Smith 1997: 121)

In contrast to neutral viewpoints, both perfective and imperfective viewpoints may be marked bearing idiosyncratic properties that are language specific. Marked perfectives extend beyond the situation involving information on the temporal location of the event, as with the Perfect in English, while marked imperfectives focus on the preliminary or resultative stages, as in the team was reaching the top (Smith 1997: 111, 114). On the markedness of the grammatical aspect categories, Comrie (1976: 122) suggests that instead of strictly determined marked and unmarked categories we can establish the degree of markedness of each category which does not have to be the same and it is language specific. In particular, he points to five conditions applying on the markedness of an aspectual category: (a) the unmarked category can be used even for instances where the marked category would be suitable, (b) the marked category tends to present more morphological cues, such as irregularities, (c) if within a language certain verbs have only one morphologically marked aspectual form, while the rest of the verbs allow more forms, then the former morphological cue falls in the unmarked aspectual category, (d) frequency – even though a less valuable criterion – may be a lead on the marked/unmarked distinction, and (e) contextual information may set both categories as
unmarked, as is the case for the Russian aspectual system (Comrie 1876: 112-119). Besides markedness, in order to explain language specific properties of the viewpoint types, Smith (1991/1997) also introduces two pragmatic rules; the minimality and maximality principle that regulate the positive and negative focalization of the information visible by the viewpoint of the sentence. The minimality principle states that a speaker says only as much as he/she needs to, suggesting positive focus; the maximality principle states that a speaker says only as much as he/she can, suggesting negative focus (Smith 1997: 126).

Comrie’s and Smith’s theories are boundedness ones, since they introduce the notion of ‘bounds’ (initial/final points) to regulate the aspectual types. Categories alone, however, are not always enough to explain how aspect works at the sentential level and that is the reason why researchers have introduced frames of analyses that refer both to semantics and syntax (drawing either to one or both interfaces) to derive the aspectual interpretation of an utterance. Hence, instead of merely categorizing verbs into aspectual types other researchers have proposed that the semantic components of aspectual meaning build up aspect.

2.1.2 Deriving Aspectual Meaning

The categorization of verbs into aspectual types was replaced by an aspectual calculus by Dowty (1979). He introduced the aspectual semantics of the verbs into the syntax with the use of three aspectual operators; BECOME, DO and CAUSE. In this frame, the four aspectual classes of the verbs are derived from an underlying stative predicate and one or more aspectual operators. In particular, DO is used for activities, BECOME for achievements and BECOME, DO and CAUSE for accomplishments. Consider (14):

<table>
<thead>
<tr>
<th>14. Verbs &amp; Aspectual Operators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>State</strong></td>
</tr>
<tr>
<td>The linen is white = ([\text{white (linen)}])</td>
</tr>
<tr>
<td><strong>Activity</strong></td>
</tr>
<tr>
<td>John swims = ( \text{DO } [\text{John, swim (John)}] )</td>
</tr>
<tr>
<td><strong>Achievement</strong></td>
</tr>
<tr>
<td>The linen whitened = ( \text{BECOME } [\text{white (linen)}] )</td>
</tr>
<tr>
<td><strong>Accomplishment</strong></td>
</tr>
</tbody>
</table>
John whitened the linen = DO [John, whiten (John, whitening)] CAUSE [BECOME [white (linen)]]

(Dowty 1979, examples reported in Slabakova 2001: 26)

In (14), $V_n$ is the predicate and $a_1 \ldots a_n$ are the arguments, while the state is always the underlying starting point for the operations. The DO operator represents the volitionality of the subject and its role is relatively minor compared to the rest of the operators. For achievements, it is necessary for the object to undergo a change of state which is represented by the operator BECOME, while for accomplishments, the causation process is additionally required and it is represented by the operator CAUSE. Thus, Dowty’s definitions of the aspectual primitives put forward the need to redefine the internal semantic/syntactic operations that build up aspect compositionally.

Verkuyl (1972, 1993, 1999, 2005a & 2005b) develops a theory of compositional aspectuality employing two semantic features [+ADD TO] and [+SQA], which stand for ‘additivity’ and ‘specified quantity of A’ respectively, as shown in (15).

15.

Verkuyl proposes an aspectual composition determined by the lexical specification of the verb [+ADD TO] and the semantic property [+SQA] of the noun phrase. The [ADD TO] feature on the verb means additivity, in other words, dynamicity or progress, and its role is to subcategorize verbs into two classes: states and non-states. The [SQA] feature on the noun phrase (NP) determines the cardinality of the arguments both in the subject and object positions. The VP forms a complex semantic object that combines
The Background of Aspect & Telicity

with NP₁ that leads to a tenseless sentence (S) having its inner aspectuality determined. If all values are [+] then the interpretation of the whole sentence will be [+Telic]. Verkuyl's theory treats aspect in phases, distinguishing between inner and outer, where the latter refers to grammatical/morphological aspect. Additionally, telicity for Verkuyl is derived and it builds on aspect, rather than a lexical feature on which aspect is built on, leading to a redefinition of verb classifications, as shown in (16):

16. Verkuyl's Aspectual Classes

<table>
<thead>
<tr>
<th>[+/- SQA]</th>
<th>[- SQA]</th>
<th>[+ SQA]</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>Process</td>
<td>Event</td>
</tr>
<tr>
<td>[- ADD TO]</td>
<td>[+ ADD TO]</td>
<td></td>
</tr>
</tbody>
</table>

(Verkuyl 2005a: 23)

Tenny (1987 & 1994) too refrains from the Vendlerian situation types. She suggests that aspectual and syntactic processes interact and proposes the Aspectual Interface Hypothesis that relies on the semantic-to-syntax mapping of aspect, as shown in (17):

17. The mapping between cognitive thematic structure and syntactic argument structure is governed by aspectual properties. Only the aspectual part of cognitive (thematic) structure is visible to the syntax.

(Tenny 1987: 247)

In Tenny’s frame, the verb assigns the aspectual roles to its arguments via a set of linking principles. The aspectual properties that are syntactically mapped are delimitedness and affectedness. The term delimitedness is used instead of the term boundedness and it captures the telic-atelic distinction. To delimit an argument of the verb the role of ‘measure’ is assigned. Note that ‘measuring-out’ in Tenny’s frame is an aspectual process similar to that of an end-point in other aspectual theories. A linking principle, then, maps this ‘measure’ argument to an internal argument position; that is the direct object position, as shown in (18).

18. a. look up a word in the dictionary (Delimited)
    b. look out of the window (Non-Delimited)
Affectedness refers to the property of the argument that undergoes a change due to the event referred to by the verb, as in (19):

19. This door opens easily.

Quite importantly only internal arguments and not external or oblique arguments can ‘measure-out’ and delimit an event; meanwhile internal arguments that ‘measure-out’ an event may or may not delimit an event depending on the position of the object, as in (20):

20. a. She translated a poem. (Delimited)
   b. He drove the car. (Non-Delimited)

Similar to Tenny’s ‘measuring out’ property are the Gradual Patient thematic role suggested by Krifka (1986, 1989 & 1992) and the notion of ‘incremental theme’ put forward by Dowty (1991).

Krifka (1986, 1989, 1992, 1998 & 2001) proposes that the nominal arguments and the lexical semantics of the verb interact and that the predicates involved have a one-to-one relation to the participants denoted by the event. For these relevant objects in the construction, the thematic role of the Gradual Patient is introduced. The role of the Gradual Patient is to mediate between events and objects either by mapping-to-events (MAP-E) or mapping-to-objects (MAP-O). Thus, for an object as in drink a glass of wine, in the case of MAP-E, every part of the glass of wine being drunk is a part of the drinking event and, in the case of MAP-O, every part of the drinking event refers to a part of the glass of wine (example reported in Filip 1999). This thematic role was relabeled as ‘incremental theme’ by Dowty (1991). In Dowty’s theory incrementality is a key property of a Proto-Patient argument and it is directly related to the direct object position. Both for Dowty and Krifka², the incremental argument is any argument that provides a part structure suitable for an event measurement. Krifka further analyzes two properties of this predicate that will lead to the telic/atelic reading of the sentence; quantization and cumulation as shown in (21) and (22).

---

² Quite similarly Jackendoff (1996) identifies the properties of ‘measuring-out’ and incrementality as key aspectual properties. This interaction between the lexical structure of the verb and pragmatics is formalized for Jackendoff under the term ‘structure-preserving binding’.
21. \( \text{QUA}(P) \leftrightarrow \forall x, y [P(x) \land P(y) \rightarrow \neg y \leq x] \)

A predicate P is quantized if and only if no entity that is P can be a proper subpart of another entity that is P.

22. As soon as a cumulative predicate \( X \) applies to at least two events \( e, e' \) that are not contemporaneous, that is, for which there is an \( e'' \) with \( e'' \leq e \) and \( e' \ll e'' \), then it will be atelic.

(Krifka 1998: 207-208)

In Krifka’s frame quantized predicates are telic while cumulative predicates are typically atelic. Incrementality, however, is strictly controlled by mapping rules, as shown in (23):

23. Mapping Requirements
   
a. mapping to subevents, iff \( \forall x, y \in UP \forall e \in UE [R(x, e) \land y < Px \rightarrow \exists e'[e' < E e \land R(y, e')]] \)
   
   Whenever \( R \) holds for an object \( x \) and an event \( e \), then every proper part \( y \) of \( x \) stands in the relation \( R \) to some proper part \( e' \) of \( e \).

b. mapping to subobjects, iff \( \forall x \in UP \forall e, e' \in UE [R(x, e) \land e' \ll E e \rightarrow \exists y [y < P x \land R(y, e')]] \)

   Whenever \( R \) holds for an object \( x \) and an event \( e \), then every proper part \( e' \) of \( e \), stands in the relation \( R \) to some proper part \( y \) of \( x \).

c. uniqueness of events, iff \( \forall x, y \in UP \forall e \in UE [R(x, e) \land y \leq Px \rightarrow \exists ! e'[e' \leq E e \land R(y, e')]] \)

   The subevents that correspond to subobjects are unique.

d. uniqueness of objects, iff \( \forall x \in UP \forall e, e' \in UE [R(x, e) \land e' \leq E e \rightarrow \exists ! y [y \leq Px \land R(y, e')]] \)

   The subobjects that correspond to subevents are unique.

(Krifka 1998: 213, also summarized in Filip 2004: 4)

Krifka, nevertheless, notes that not all telic predicates are quantized and, consequently, telicity and quantization do not map directly on each other. He further proposes a dynamic theory of incrementality that involves notions like adjacency and movement to explain telicity (for a detailed account see Krifka 1998: 222-231).
Filip (1993, 1999 & 2004) adopts Krifka’s definitions of quantization and cumulation and redefines the perfective and imperfective operators that map eventualities to events. In particular, the perfective operator denotes events represented as “integrated wholes”; as a result, any eventuality denoted by a perfective verb will be telic (Filip 1999: 184). The imperfective operator relates eventualities to their parts, where the ‘part’ is in a “weak ordering relation” allowing the imperfective to be determined by contextual information (Filip 1999: 187). It should be pointed out that Filip’s proposal suggests a strong connection between perfectivity and telicity, which can be misleading; especially since not all perfectives are telic, it could be claimed that her theory overgenerates.

De Swart (1998) develops a frame of aspectual composition by introducing states, processes and events as ontological entities in the derivation of aspect. These ontological primitives determine the eventuality description which is derived compositionally (De Swart 1998: 348, 351). Her model can be represented in a structure with three levels for aspectual information, as shown in (24):

24. [Tense [Aspect* [eventuality description]]]

In line with Verkuyl’s and Krifka’s work, De Swart employs the property of homogeneity to distinguish states and processes and the property of quantization for events. The eventuality type may change from state or process, which she identifies as atelic predicates, to event, a telic predicate, when temporal modification applies. The function of a temporal modification, such as a durative adverbial, is an aspectual operator that alters the ‘basic’ event type into the ‘derived’ event type. Consider the example in (25):

25.  

<table>
<thead>
<tr>
<th>Basic Event Type</th>
<th>Derived Event Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Julia ran.&quot;</td>
<td>&quot;Julia ran for two hours.&quot;</td>
</tr>
<tr>
<td>Process</td>
<td>Event</td>
</tr>
</tbody>
</table>

The approaches presented in this section crucially add to the literature of aspect in suggesting the importance of the role of syntactic positions and semantic decomposition in the interpretation of aspect but do not necessarily provide a generalized enough frame that could be applied to any language and any verb type. Other
researchers have further explored the role of aspect in syntax by examining syntactic operations per se rather than the availability of aspectual features to verbs.

2.2 The Syntax of Aspect

Other current approaches to aspect, instead of identifying the lexical properties of verbs in relation to aspectual meaning, opt for a free projection of verbs into syntactic constructions. Thus, they allow the syntactic configuration to be aspectually determined irrelevantly to the inherent aspectual properties of the verb. Each frame shows a different degree of freedom for the verbal projection and introduces variant features and operations to derive the desired aspectual meaning. In a sense, these types of approaches to aspect reassign the composition of aspect from the lexicon to the syntactic computation.

Argument structure has been a major point of reference for these accounts in the generative framework. Hale and Keyser (1992, 1993a, 1993b, 1998, 2000a, 2000b & 2005) suggest that semantic properties related to aspect need to be integrated into the syntactic structure with syntactic operations overriding the sublexical processes. In particular, they assume that argument structure is a system of structural relations between lexical heads (nuclei) and their arguments and that this system is in an orthogonal relationship to aspect (Hale & Keyser 2005: 11, 41). Lexical properties do determine argument structure along with their syntactic configurations; but two unique syntactic functions that of complements and specifiers are key to Hale and Keyser’s frame. In generative syntax, a complement is the “unique” sister of a governing head and the specifier the sister to the projection of the head. They argue that argument structure is relatively autonomous with argument properties being strictly local and determined by complement and specifier syntactic relations. An interesting example of how a lexical/semantic property can be attributed to a syntactic configuration is provided in (26) and (27):

26. We keep the calves in the corral.
To account for these two structures, Hale and Keyser claim that the opposition in these types of verbs is regulated by the type of P-projection that their lexical structures allow. That is in (26) where a single P-projection is required, the verb falls under the ‘central coincidence’ verb category; while, in (27) where complex P-projections (consisting of a P with a second one as its complement) are required, the verb falls under the ‘terminal coincidence’ verb category (Hale & Keyser 2005: 40-41). Similarly, for a syntactic configuration that is interpreted in relation to an aspectual type (situation type in Smith’s terms), its arguments will be assigned a particular aspectual role, such as measure, path
etc. In this way, Hale and Keyser present a model that identifies argument structure as a distinct grammatical component but, crucially, do not specify the exact projections and VP properties related to aspectually relevant notions such as telicity.

Travis (1992, 1994 & 2010) provides an extended phrase structure model that accommodates the aspecual verb classification by Vendler (situation types for Smith) and argues that the object position is a derived one within the VP and undergoes movement to the specifier position of an aspectual functional category, AspP. Travis (2010: 13, 275-277) proposes an L(exical)-syntax distinct from the S(yntactic)-syntax, where the former provides a syntactic domain with idiosyncratic characteristics of the lexicon. Consider the structure in (28):

28.

Travis uses a Larsonian VP shell (see for extensive analysis Larson 1988) to build up a tree that generates positions for aspecual morphemes and theta role positions. The AspP is not a lexical category but a functional one within the VP. The node of Aspect (Asp)
has scope over the endpoint of the event but not over positions in the upper VP. The subject (Agent theta role) and the object (Theme theta role) are base-generated in the specifier positions of lexical categories and move for case reasons to the specifier positions of functional categories. In the case of a double object construction the Goal argument moves to the SpecAspP position, which is the derived object position. This Spec-Head relationship within a functional category can be quite appealing for an analysis of aspect and replicates Verkuyl’s suggestion of incorporating nominal features in the aspectual interpretation as we saw earlier in the present section. Travis, however, takes a step further in proposing a complete event structure, following Pustejovsky (1988 & 1991) and Higginbotham (1985). The upper VP is available for the causal part of an accomplishment, as in build a castle, and the lower VP for a resultative, as in a castle is built. Higher in the construction the EventP (EP) both selects a VP and binds an event-type theta role in the head V. In Travis’ frame the AspP has the very same properties, with the only difference being that AspP effects the telicity of the event, that is the availability of an endpoint, while EP has scope over the whole event. Moreover, Travis (2010) suggests that three positions may be available for telicity, as shown in (29), with their properties summarized in (30):
30. Three position of telicity

<table>
<thead>
<tr>
<th>$V_1$</th>
<th>Asp</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light Verb</td>
<td>Event-Related Category</td>
<td>Lexical Category</td>
</tr>
<tr>
<td>may have idiosyncratic meaning</td>
<td>closed class</td>
<td>open class</td>
</tr>
<tr>
<td>natural endpoint</td>
<td>productive meaning</td>
<td>may have idiosyncratic meaning</td>
</tr>
<tr>
<td>beginning endpoint</td>
<td>natural endpoint</td>
<td>natural endpoint</td>
</tr>
<tr>
<td>arbitrary bound</td>
<td>beginning endpoint</td>
<td></td>
</tr>
<tr>
<td>Above event-measuring DP</td>
<td>Same projection as event-measuring DP</td>
<td>Below event-measuring DP</td>
</tr>
</tbody>
</table>

(Travis 2010: 243)

We will return in the discussion of endpoints and telicity in the following section.

properties of the lexical entries (listemes). Within the XS-model, sentential meaning is the combination of syntactic structure and the interpretation it receives from the formal semantic component along with the values assigned by the conceptual system and the world knowledge available to the listemes, which act as modifiers in the structure (Borer 2005b: 9). Thus, the general scheme for event interpretation in the XS-model can be seen in (31):

\[
\text{Structure} \rightarrow \text{predicate/argument structure / event structure} \rightarrow \text{event interpretation} \rightarrow \text{meaning assignment to structure}
\]

(31) Structure $\rightarrow$ predicate/argument structure / event structure $\rightarrow$ event interpretation $\rightarrow$ meaning assignment to structure

(31) Structure $\rightarrow$ predicate/argument structure / event structure $\rightarrow$ event interpretation $\rightarrow$ meaning assignment to structure

(31) Structure $\rightarrow$ predicate/argument structure / event structure $\rightarrow$ event interpretation $\rightarrow$ meaning assignment to structure

(31) Structure $\rightarrow$ predicate/argument structure / event structure $\rightarrow$ event interpretation $\rightarrow$ meaning assignment to structure

(31) Structure $\rightarrow$ predicate/argument structure / event structure $\rightarrow$ event interpretation $\rightarrow$ meaning assignment to structure

Crucially, for this model, the burden of the computation lies at the properties of the functional items involved. The phrase structure is constrained in two ways; (a) all phrasal projections have an $X^{\text{MAX}}$ and an $X^{\text{MIN}}$, and (b) every phrasal projection has at most one specifier and one complement; note that the unique maximal daughter of $X^{\text{MAX}}$ is in a spec-head relation to $X^{\text{MIN}}$. It is this spec-head relation that Borer manipulates to derive aspectual meanings. Moreover, the model requires that aktionsart (situation types in Smith’s terms) is syntactically represented and it interacts strongly with the structure of the direct internal arguments, a notion identified by other researchers as well, as we saw earlier in Section 2.1.2. She further argues that only one such argument can interact with event structure. In relation to telicity, she proposes that the property of quantity is key to aspectual constructions, similarly to Verkuyl’s suggestion. Consider (32):

\[
\text{Asp}_{Q}^{\text{MAX}} \quad \text{Spec} \quad \text{Asp}_{Q} \quad \text{VP} \quad \text{Subject-Of-Quantity} \quad \text{Asp}_{Q} \quad \text{Quantity Predicate}
\]

(32) Asp$_{Q}^{\text{MAX}}$ Spec Asp$_{Q}$ VP Subject-Of-Quantity Asp$_{Q}$ Quantity Predicate

(32) Asp$_{Q}^{\text{MAX}}$ Spec Asp$_{Q}$ VP Subject-Of-Quantity Asp$_{Q}$ Quantity Predicate

(32) Asp$_{Q}^{\text{MAX}}$ Spec Asp$_{Q}$ VP Subject-Of-Quantity Asp$_{Q}$ Quantity Predicate

(32) Asp$_{Q}^{\text{MAX}}$ Spec Asp$_{Q}$ VP Subject-Of-Quantity Asp$_{Q}$ Quantity Predicate

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(32) Asp$_{Q}^{\text{MAX}}$ Spec Asp$_{Q}$ VP Subject-Of-Quantity Asp$_{Q}$ Quantity Predicate

(32) Asp$_{Q}^{\text{MAX}}$ Spec Asp$_{Q}$ VP Subject-Of-Quantity Asp$_{Q}$ Quantity Predicate
The architecture of $\text{Asp}_Q^{\text{MAX}}$, as shown in (32), offers a specifier position to the DP (or its copy) and it is interpreted as the subject-of-quantity (s-o-q) and $\text{Asp}_Q$ along with its c-command domain as a quantity predicate. These quantity predicates essentially predict the availability of a telic interpretation by measuring out the object and delimiting the event. However, Borer proposes that the aspectual functional heads above the VP are more than one; they are in fact three so as to accommodate other interpretational necessities. At the bottom of the tree she identifies the functional head $\text{FP}_{\text{EX}}$, where EX stands for Existential, and higher than the aspectual head, the functional head $\text{AspP}^{+\text{OR}}$, where OR stands for Originator (or EP – Event Phrase – in her latest work). The $\text{AspP}^{+\text{OR}}$ is assigned the interpretation of the subjects of transitives and unergatives (for an extensive analysis see Borer 1998 & 2005b). Objects whose quantity value is marked as minus will not activate an aspectual projection leading to an atelic interpretation, and only the referential non-specifics will move to $\text{FP}_{\text{EX}}$. Objects whose quantity value is marked as plus will move to $\text{Asp}_Q^{\text{MAX}}$ and receive a telic interpretation. An example of a quantity transitive is offered below in (33):

33.

(Borer 2005b: 85)
In (33), AspQ projects to assign accusative case and the listeme merges to become its specifier. If the listeme expands as a quantity DP, it will assign range to \([\lambda_{\text{AspQ}} \cdot e \gamma]\) and the quantity predicate forms. The other argument will be merged no higher than the specifier position of the TP to receive its case and will, then, move to the specifier position of EP to license EP by assigning range to \([e \gamma]\). The object argument will be the subject-of-quantity and the subject one will be the originator which will \(\epsilon\)-command the internal argument (subject-of-quantity). Thus, Borer offers an account on the following arguments:

34. a. The semantics of event structure is read off the syntax of functional structures with specific range assigned to each head.

b. For telic interpretations, such range assignments are met in certain syntactic configurations, that of a specifier-head agreement, as in the following structure:
\([\lambda_{\text{AspQ}} \cdot \text{DP}^{\lambda} [\lambda_{\text{AspQ}} \cdot e \gamma]]\).

c. Quantity is a property syntactically represented and semantically interpreted in line with that syntactic structure and no role is played by the lexical properties of the items involved. Arguments are simply event participants. Note that the term quantity refers to the “existence of quantifiable divisions” both for nominals and events.

(simplified from Borer 2005b: 121-122)

Ramchand (1993, 1997 & 2008) reanalyses the role of syntax in the derivation of aspect proposing the First Phrase Syntax model. Her model opposes to aspectual theta role theories which rely on the lexical determination of aspect that directly specifies the argument structure of the predicate. She highlights that lexical predicates typically demonstrate argument structure flexibility that can not be accounted for, as in John broke the vase, the vase broke, John walked (Mary to the store). Moreover she points out that the existence of telicity does not actually imply the existence of an internal argument as in John stood up in a second; and the existence of an internal argument does not obligatorily imply a telic reading, not even when it is quantized as in John pushed the cart for hours. Even verbs that express a change of state do not necessarily entail the attainment of a final state as with widen, harden, descend and rise. There are, however, instances where object properties can affect telicity; (a) in a transition that relates to the object’s material extent, then quantizedness will produce a telic entailment, as in the mangoes ripened in the sun, (b) in
a transition that relates to the object’s change of location, then only the specification of a final location will create telicity, as in *John pushed the cart to the end of the garden*, and (c) in a transition that relates to the object’s change of state, then only the specification of the final relevant state will create telicity, as in *Mary dried the cocoa beans bone dry in only 12 hours* (Ramchand 2008: 28).

To account for such aspectual constructions, Ramchand (2008) redefines the division of labour between lexicon and syntax for event structure with First Phrase Syntax. In First Phase Syntax, Ramchand argues for an “unstructured” view of the lexicon (following Goldberg 1995, Marantz 1997 & Borer 2002 among others) and a minimalist computational system that provides three sub-event projections. The lexical item compiles cross-modular information, such as phonological, conceptual, encyclopaedic, semantic and syntactic information. It is syntactic information, however, that allows the connection of encyclopaedic lexical content to the semantic skeleton with the mediation of the syntactic computation. Syntactically, a lexical item is specified with (a) a number of interpretable category features, and (b) information on whether/if any of the category features are [+MOVE]. Thus, the lexical items do not project in the first phase syntax in their totality. In the Minimalist Program (Chomsky 1995, 1998 & 1999/2001), the syntactic structure builds up derivationally via operations Merge and Move along with full interpretation at the interfaces. On these grounds, Ramchand (2008) suggests that the three eventive functional heads (v, V, R) carry interpretable features that activate event composition. Consider the structure in (35):

35.
According to (35), the verb phrase offers three aspeclical projections each one being a possible subpart of an event and does not necessarily need to be licensed. Structure cannot be licensed unless there is an interpretable feature in the same phrase (on the lexical item) which will check it via agree (syntactic licensing). Each head requires a filled specifier position (they all have an [+EPP] feature) but an argument can be in more than one Spec position (cf. van Hout 1996 & 2000a). These Spec positions are interpreted systematically by the general semantic component as: initiator, undergoer and resultee (from top to bottom). In detail, the vP provides the causative part of the event and it licenses an external argument that is its ‘subject’ of cause (NP_3). The projection of the vP is available only when the causer is available. The VP determines the type of process or change the ‘subject’ of process (NP_2) undergoes; in other words, it provides the predicate with dynamicity. The RP identifies the ‘telos’ or ‘result state’ of the event and licenses an argument as the ‘subject’ of result (NP_1). The projection of RP, however, is conditional; it is part of the structure only when “the result state is explicitly expressed by a lexical predicate” (Ramchand 2008: 40). Therefore, any aspeclical boundedness that can be generally inferred will not activate the RP projection. This is a point of departure for the first phase syntax model by Ramchand compared to the syntactic suggestions presented earlier. The consequence of this choice has significant implications for the treatment of...
notions like telicity. In particular, Ramchand notes that telicity that emerges due to the entailment of DP structure will not trigger the projection of RP if the verb is not lexically specified as a result state. In addition, elements such as auxiliaries and PPs outside the first phase syntax can act as modifiers over result states. To summarize, first phase syntax builds freely without interference from the lexicon other than feature-related information and the output is verified at the interface. Thus, Ramchand offers a strict event compositional component which feeds off the syntactic representation with the use of a set of features responsible both for the argument structure syntax and event structure interpretation.

2.3 Defining Telicity

Telicity as a term has been used rather loosely in the literature and the definitions it has received cover a large spectrum of theoretical approaches. As we saw in earlier sections it is treated sometimes as a lexical feature that specifies verbs and in other occasions as a by-product of the syntactic computation. There are, nonetheless, a number of questions that need to be addressed when attempting to define telicity. To start with, is it a linguistically relevant notion? Is it an attribute of the event description or the event itself? If there is some sort of mapping, that is, is there a strict correspondence between the sentence and the real world event? And in the case we accept telicity as a property available in language, how is it derived? Which interface is involved in its derivation? The lexicon-syntax interface or the syntax-conceptual-intentional one? In our discussion we will assume that telicity is indeed a linguistic relevant notion and that there are linguistic features that manipulate the availability/mapping of telicity.

In the literature, three telicity tests have been employed to determine whether a predicate is telic or not. Borik (2006: 23-27) summarizes these tests and quotes the most commonly used examples along with them. The adverbial modification test uses ‘frame’ and durational adverbials to discriminate between telic and atelic predicates (Verkuyl 1972, Dowty 1979 & Hinrichs 1985 among others). Consider the examples in (36):

36. a. Mary drove the car for / *in an hour.
   b. Mary ran a mile *for / in an hour.
The acceptability of a ‘frame’ adverbial, such as in an hour in example (36b) shows that the predicate is telic; while the acceptability of a durational adverbial, such as for an hour in example (36a) shows that the predicate is atelic.

The conjunction test also involves two temporal modificators that are conjoined and they refer to two subsequent temporal units. The test points to the interpretational differences between telic and atelic predicates (Verkuyl 1972 & 1993). Consider the examples in (37):

37. a. Mary drove her car on Monday and on Tuesday. (Ambiguous)
   b. Mary ran a mile on Monday and on Tuesday. (Non-ambiguous)

(37a) is an example of an atelic predicate that may receive two possible interpretations. One interpretation would be that Mary drove continuously during the two days, meaning that we have one ongoing eventuality; and the second interpretation would be that Mary drove on Monday, she stopped and then she drove again on Tuesday, meaning that there were two distinct eventualities. In the case of (37b), however, only one interpretation is available. The interpretation that arises is that of two distinct eventualities, Mary running a mile on Monday and another one on Tuesday. Thus, the ambiguity of (37a) is considered to be a trait of an atelic predicate.

The progressive entailment test illustrates the different logical inferences licensed by telic and atelic predicates (Dowty 1979, Hinrichs 1985 & de Swart 1998). In particular, an atelic predicate morphologically marked as past progressive entails the truth of the same predicate morphologically marked as simple past; this entailment, however, does not apply in the case of telic predicates. Consider the examples in (38):

38. a. Mary was driving the car. \(\rightarrow\) Mary drove the car.
   b. Mary was running a mile. \(-/\rightarrow\) Mary ran a mile.

In (38a), the progressive atelic predicate can entail the truth of the following sentence, meaning that Mary did drive the car; whereas in (38b) the progressive telic predicate does not license such an entailment, meaning that Mary did not run the whole mile. Consider, though, what happens when the past progressive is substituted by present progressive in (39):
Dowty (1979) used the present version of the progressive entailment test to illustrate what is commonly referred to as the ‘imperfective paradox’. In (39a), the atelic predicate allows the entailment of the present perfect form, while, in (39b), the telic one does not. These tests have been strongly criticized in the literature and there seems to be an oversimplification over the defining criteria of telicity across languages (for Russian see Borik 2006). Consequently, diagnostics of this type do not seem to be the answer and we need to get back to the theoretical frames that treat telicity within aspect.

Quite often telicity is misconceived as an interchangeable term to perfectivity. Guéron (2008) argues for the distinctiveness of the two notions basing her argumentation on the interaction of morpho-syntax in the temporal construal. Her proposal of the event roles assigned in distinct syntactic domains is in line with syntactic theories put forward by Borer (2005) and Ramchand (2004), as they were presented in Section 2.2. Similarly, Guéron (2000, 2004, 2005 & 2008) assumes a phasal framework (Chomsky 1998) that divides the sentence into two syntactic domains, the vP and TP domains, where in the former the information merged has a spatial construal and in the latter a time-related construal. This premise is condensed in the interface constrain given in (40):

40. At the interface between Syntax and Conceptual-Intentional component of mind, the situation the vP describes must be placed in the spatial expanse and in the time interval of the speaker’s world (or in the space-time world accessible to the speaker).

(Guéron 2008: 1817)

The event roles introduced by Guéron for the built up of the construction are divided into two categories the spatial ones, Instrument and Manipulator, and the temporal ones, Trigger and Controller. The Manipulator, Trigger and Controller event roles may refer to the same argument. Consider the structure in (41):

41.
Every DP receives its event roles via feature checking and every lexical predicate (N, V, A or P) is lexically specified for spatial aktionsart (akt.) The [-EXT(ended)] akt. feature corresponds to a single point of space and the [+EXT(ended)] akt. feature to a plurality of points of space. (A)telicity characterizes the spatial configurations in the vP which may or may not be bounded to a final spatial state; whereas (im)perfectivity characterizes the (un)bounded time interval in T that is in a predicate relation to the configuration in vP (Guéron 2008: 1822). Consequently, lexical items merged in the vP have spatial content that may be restricted only by the real world and thus (a)telic spatial configurations are expected to be available to any language. Grammatical morphemes merged in TP, on the other hand, have no spatial content, and are as a result independent to telicity, they are not affected by the real world experience and may be lacking in a language. However, to satisfy the interface constrain in (40), Guéron claims that a grammar must have an aspectual operator which merges with T in syntax (or LF) to create a time interval with a perfect structure allowing the speaker to end the event. In Guéron’s approach both inherent lexical information and aspectual morphemes appear in the derivation with telicity being specified by the availability of a final spatial state. The interference of the lexicon is flexible enough to provide the necessary information and at the same time
constrained within the first phase; whereas syntax interacts at all stages with the conceptual-intentional component ensuring an optimum interpretation.

Besides perfectivity, another notion that is confused with telicity is boundedness. Depraetere (1995 & 2007) clarifies the use of terms such as endpoint, terminal point and temporal boundary. She claims that although endpoints are involved in situations, they are not necessarily of the same type and they affect the interpretation of a sentence differently. (A)telicity relates to inherent or intended endpoints and (un)boundedness to temporal boundaries. A sentence will be telic if the situation is described as having a natural/inherent or an intended endpoint beyond which the situation can not continue (Depraetere 1995: 3). The examples in (42a) and (42b) are telic and in (42c) and (42d) are atelic:

42. a. The bullet hit the target. \hspace{1cm} \textit{telic – natural endpoint}
   b. Sheila deliberately swam for 2 hours. \hspace{1cm} \textit{telic – intended endpoint}
   c. Sheila lives in Vienna. \hspace{1cm} \textit{atelic – no endpoint}
   d. Sheila is working in the garden. \hspace{1cm} \textit{atelic – no endpoint}

   (Depraetere 1995: 3)

A sentence will be bounded if the situation is described as having reached a temporal boundary irrespectively of whether an inherent or intended endpoint is available. In other words, the temporal boundary may coincide with an endpoint but this does not affect its boundedness. A sentence will be unbounded when no such temporal boundary is provided. The sentence in (43a) is bounded with an adverbial functioning as a temporal boundary, the sentence in (43b) is bounded with tense marking functioning as a temporal boundary and the sentence in (43c) is unbounded with no temporal boundary:

43. a. Judith played in the garden for an hour. \hspace{1cm} \textit{bounded – adverbial as a boundary}
   b. I have lived in Paris. \hspace{1cm} \textit{bounded – tense as a boundary}
   c. She is writing a nursery rhyme. \hspace{1cm} \textit{unbounded}

   (Depraetere 1995: 3)

Additionally, a sentence may represent a situation with either a left-hand (44a) or right-hand boundary (44b), or as bounded at both sides (44c):

44. a. The bullet hit the target.
   b. Sheila deliberately swam for 2 hours.
   c. Sheila lives in Vienna.
   d. Sheila is working in the garden.

   (Depraetere 1995: 3)
44. a. Suddenly, he was fast asleep.
   b. I appreciated his presence until he told me he hated Jews.
   c. I worked in the garden from 2 till 5 o'clock.
   
   (Depraetere 1995: 3)

Unlike boundedness, the telicity of a sentence is not affected by progressive marking, as shown in (45):

45. a. John opened the parcel. \hspace{1cm} \textit{telic – bounded}
   b. John was opening the parcel. \hspace{1cm} \textit{telic – unbounded}
   
   (Depraetere 1995: 5)

A change in boundedness, however, may lead to a change in the (a)telic interpretation of a sentence, as shown in (46):

46. a. John read a book. \hspace{1cm} \textit{telic – bounded}
   b. John read books. \hspace{1cm} \textit{atelic – unbounded}
   
   (Depraetere 1995: 5)

Lastly, boundedness is not necessarily established by progressive marking. Even though, it does so in most occasions, there are instances where the sentential context implies a bounded reading, as in (47):

47. A: Why are your hands so dirty?
   B: I’ve been playing in the mud. \hspace{1cm} \textit{bounded}
   
   (Depraetere 1995: 5)

The effect of NPs and PPs\(^3\) on (a)telicity and (un)boundedness is also of interest. The properties of the NPs effect telicity directly but boundedness only indirectly. In particular, if a NP turns an atelic sentence into a telic one and this sentence is not morphologically marked as progressive, the sentence will be bounded. Consider the examples in (48):

\(^3\) An extensive overview of the role of directional PPs in motion verb construction will be provided in a following section.
48. a. Petrol was leaking out of the tank. \[atelic – unbounded\]
b. The petrol was leaking out of the tank. \[telic – unbounded\]
c. The petrol leaked out of the tank. \[telic – bounded\]  
(Depraetere 1995: 9)

The influence of directional PPs on the boundedness of a sentence works similarly. The addition of a directional PP to an atelic sentence, changes the sentence into a telic one and subsequently it offers a bounded reading as long as the sentence is not morphologically marked as progressive. Note, however, that this effect may be overridden if the NP’s number is bare plural. Consider the examples in (49):

49. a. John pushed the cart.
\[\text{[– Progr.][– Direct. PP]} \rightarrow \text{atelic – unbounded}\]
b. John pushed the car into the barn.
\[\text{[– Progr.][+ Direct. PP]} \rightarrow \text{telic – bounded}\]
c. John was pushing the cart into the barn.
\[\text{[+ Progr.][+ Direct. PP]} \rightarrow \text{telic – unbounded}\]
d. John pushed carts into the barn.
\[\text{[– Progr.][+ Pl. NP][+ Direct. PP]} \rightarrow \text{atelic – unbounded}\]  
(Depraetere 1995: 11)

The role of quantified NPs in (a)telic sentences was further examined by Depraetere (2007) through the case of numerical NPs. Consider the sentences in (50a) and (50b):

50. a. John smoked five cigarettes. \[\text{[– Progr.][+ Numerical NP]}\]
b. John was smoking five cigarettes. \[\text{[+ Progr.][+ Numerical NP]}\]

Depraetere (2007: 250-252) suggests the assessment of these sentences in two possible contexts. In context (a), the scope of intention is clear, in the sense that from the beginning of the situation the exact number of cigarettes to be smoked is determined. In this context, (50a) is telic and bounded. In context (b), the situation is over and we can count the number of cigarette stubs left; thus, the numerical NP is the result of a counting process and not an inherent endpoint. Context (a) permits the use of the progressive form, as in (50b), but context (b) disallows it. Consequently, the non-
progressive sentence would be bounded in both contexts but telic only in context (a), since the numerical in context (b) would only function as the boundary to the situation, see (51):

51.

<table>
<thead>
<tr>
<th>John smoked five cigarettes.</th>
<th>Context (a)</th>
<th>Context (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>factual boundary</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>inherent endpoint</td>
<td>+</td>
<td>–</td>
</tr>
<tr>
<td>bounded</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>telic</td>
<td>+</td>
<td>–</td>
</tr>
<tr>
<td>progressive acceptability</td>
<td>+</td>
<td>–</td>
</tr>
</tbody>
</table>

(Depraetere 2007: 252)

Therefore, numerical NPs for Depraetere do not automatically imply that the sentence is telic, as other researchers have claimed (Krifka 1992, Ramchand 1997 & Smith 1997 among others). Instead, she proposes that a sentence with a numerical NP is telic, if this numerical NP is an inherent endpoint. An account of telicity based on inherent endpoints needs to further clarify how an inherent endpoint is manifested within a sentence. Depraetere (2007) indicates the following as such manifestations:

52. Possible Inherent Endpoints

a. The lexical semantics of the verb suggesting an inherent endpoint, as in find, sneeze, explode.

b. A PP that functions as an inherent endpoint, as in be drove the car into the garage.

c. The contextual knowledge shared by the discourse participants, without it being referred to explicitly, as in be sang understood as be sang a song.

d. A (in)definite article NP that is contextually given as a natural endpoint to a situation, as in drink a glass of wine, read the book.

e. An NP with a cardinal number functioning as an inherent endpoint when it is in the scope of a mutually manifest intention, as shown earlier.

(simplified from Depraetere 2007: 255-256)

This approach preserves a number of syntactic criteria and at the same time appears to be more flexible to possible readings available to a single construction,
suggesting no strict correspondence between eventualities and their descriptions. One could say that Depraetere’s proposal lacks the theoretical formality provided in other accounts, such as Borer’s, Ramchand’s and Travis’, as we saw in Section 2.2. However, it pinpoints at the necessity to clarify what a natural inherent endpoint is and the need to incorporate the conceptualization of a telic situation into an endpoint account. This theoretical implication will be a key notion in the discussion of the data of the present thesis.

2.4 Greek Aspect & Telicity

In Greek, the aspectual typology is rather rich since aspectual forms are available in all tenses and moods and across voice and person distinctions (see Mirambel 1959, Hesse 1980, Joseph 1983, Joseph & Philippaki-Warburton 1987, Tsimpi 1990, 1992, 1996, & Tsangalidis 1993 among others). Greek verbs are overtly inflected for tense and aspect. In (53), we see the perfective and imperfective past and non-past options available (see Mackridge 1985 and Holton et. al. 1997):

53. a. graf-o
    write-imperfective-non-past
b. grap-s-o
    write-perfective-non-past
c. e-graf-a
    write-imperfective-past
d. e-grap-s-a
    write-imperfective-past

(examples modified from Giannakidou 2003: 109-110)

In (53), the inflection on the verb root marks aspectuality both in the past and non-past forms. Aspectual choice is, thus, unavoidable in Greek for all tenses, including the future. In the present thesis, though, when using the term perfective aspect, we will refer to the morphological aspectual marking of instances such as (53c) and the term imperfective aspect for instances such as (53d), that is past-reference only.
Viewpoint aspect is quite prototypically manifested in the types suggested by Smith (1991/1997). In particular, Greek perfective and imperfective viewpoints are in line with Smith’s definitions, with the former referring to completed occurrences and the later to a variety of imperfective aspectual meanings as they are exemplified in (54):

54. a. perfective viewpoint – single occurrence
   na mu grapsis
   ‘Write to me (a least once)’

b. perfective viewpoint – punctual
   o Nikos klidhose tin porta, petakse to klidhi kj efige
   ‘Nikos locked the door, threw away the key and left.’
   (Xydopoulos 1996: 133, also reported in Tsangalidis 1999: 173)

c. imperfective viewpoint – habitual
   evlepa tileorasi tis Kiriakes
   ‘I used to watch TV on Sunday.’

d. imperfective viewpoint – continuous
   akuge musiki oli mera
   ‘He was listening to music the whole day.’

e. imperfective viewpoint – progressive
   o Spiros kimotan otan arxise o sizmos
   ‘Spiros was sleeping when the earthquake started.’

f. imperfective viewpoint – iterative
   i Maria tilefonuse olo to proi
   ‘Maria was calling the whole morning.’

g. imperfective viewpoint – durative
   i ergates eskavan epi tris ores
   ‘The workers were digging for three hours.’
   (Tsangalidis 1999: 174)

Viewpoint types in Greek also show a straightforward correlation with quantification. According to Parpotté (1988), perfective aspectual marking can be analyzed as count-quantified event predications and imperfective aspectual marking as mass-quantified state or activity predications. In other words, perfective aspect marks the occurrences of individuated events and countability may be available, whereas, imperfective predicates
“behave analogously to nouns denoting stuffs” (Parpotté 1988: 455, also quoted in Tsangalidis 1999: 177). With regard to the interaction of situation types and viewpoint aspect, Parpotté (1988) notes that viewpoint aspect can induce changes on the verb types. In particular, perfective aspect can induce state-achievement and state-accomplishment transitions and imperfective aspect can induce accomplishment-state transitions with states and activities remaining unaffected, as shown in the following examples in (55):

55. a. perfective → state – achievement transition
   Ton Jani ton aghapisa molis ton idha  
   ‘I loved John the moment I saw him’

b. perfective → state – accomplishment transition
   Ti stighmi pu kiriarcise to misos, ola xathikan  
   ‘The moment hatred dominated, everything was spoilt.’

c. imperfective → accomplishment – state transition
   Otan imun micros anevena ta skalopatja kathimerina  
   ‘As a child I ascended these stairs daily.’

d. imperfective → state unaffected
   O iljos vasilevi dhitika  
   ‘The sun sets in the west.’


Parpotté (1988) concludes that situation type aspect in the case of Greek is not particularly relevant to the analysis of aspectuality since viewpoint aspect can override them.

Mozer (1994a & 1994b), Philippaki-Warburton et al. (1994), and Chila-Markopoulou and Mozer (2001) have further examined the aspectual typology of Greek and the possible interactions between situation and viewpoint types. Mozer (1994a: 54-55) provides examples of Greek verbs that fit the Vendlerian classification of verbs, as shown in (56).

56. Greek Verbs & the Vendlerian Typology

<table>
<thead>
<tr>
<th>State</th>
<th>ksero, pistevo, eho, agapo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>trexo, perpato, kolimpo</td>
</tr>
</tbody>
</table>
The Background of Aspect & Telicity

Achievement
anagnorizo, brisko, xano, genieme, petheno

Accomplishment
zografizo ena pinaka, xtizo spiti, ravo ena fustani

Nonetheless, Mozer (1994a) highlights the effect of object predicates to the classification of verbs into the respective situation type categories (57).

57. a. activity & non-quantized object  →  activity
   xtizo spitia
   ‘build houses’

b. activity & quantized object  →  accomplishment
   xtizo spiti
   ‘build a house’

      (Mozer 1994a: 84)

Moreover, depending on the type of viewpoint aspect Mozer (1994a) identifies a number of restrictions on the type of predicate they are allowed to receive, such as pragmatic restrictions, as in (58). She also isolates instances where aspect interacts with the aspectual marking of na-predicates, as in (59).

58. a. ?Kathe fora pu pethene o Azor, stenaxoriomastan poli
    ‘Every time Azor was dying, we would get really upset.’

b. Kathe fora pu pethene ena apo ta zoa mas, stenaxoriomastan poli
   ‘Every time one of our pets was dying, we would get really upset.’

59. * Fovithika na kathomai se ekeino to parko.
   * ‘I got scared to sit in that park.’

      (examples modified from Mozer 1994a: 124-125)

Besides perfective and imperfective aspectual marking, the perfect has received special attention in the literature (see Alexiadou et al 2003, Giannakidou 2001, 2002, 2003, Iatridou et al 2001/2003, Iatridou 2000, Mozer 1988, 2003, Psaltou-Joycey 1991 and Veloudis 1990, 1993, 2003 among many others). The arguments over its status refer to two opposing views; the one suggesting that it is a third type of aspect and the other that it is a tense. The main arguments for its being a type of aspect are: (a) its temporal reference coincides with other verb forms referring either to a past event with present
relevance or as ‘extended-now’; (b) it is regularly acknowledged as a present perfect and the temporal classification of present, past and future perfect implies that the whole spectrum is a ‘non-temporal’ category; (c) the linking of two temporal points involves continuation and consequently duration; (d) historically, it has been claimed to be grammatically unstable since there have been instances when it was replaced by aorist-type pasts, suggesting that the distinction between the two is not necessary. Moreover, Chantraine (1927) suggests that the three Indo-European stems of the verb are the perfective, imperfective and perfect with some forms surviving into Classical Greek (Mozer 2003: 238). The main arguments for its being a tense are: (a) it is defined as linking the past with the present and all its uses derive from this defining feature; (b) inserting the perfect into the perfective-imperfective aspectual opposition would be redundant since the imperfective can accommodate events with an onset in the past and the perfective can accommodate the completion part of events; and (c) in Greek the perfect is formed with the use of the perfective stem of a verb, signifying that perfect is to be identified with the perfective domain (Mozer 2003: 238-239). In consideration of the above arguments, we will assume that the perfect is a tense and the perfective-imperfective opposition is the only viewpoint aspectual distinction that holds in Greek.

The morphological manifestation of aspect in Greek is a point of no contradictions for researchers since aspectual meaning is grammaticalized as we saw earlier in the present section. Telicity, however, is a notion of debate as it is not grammaticalized and it is compositionally determined as we will see in detail later on. The literature on Greek telicity has focused on the properties of objects and the possible interpretations available depending on its features.

The interaction of viewpoint aspect with the presence and the type of complements and adjuncts define the aspectual meaning of the predicate and the overall telic or atelic interpretation of an utterance (Horrocks & Stavrou 2003). Activity verbs, as they are defined by Smith (1991/1997), are inherently atelic but with the addition of a specific direct object, they turn into accomplishments and acquire a telic interpretation (Mozer 1994a, Chila-Markopoulou & Mozer 2001). Consider the examples in (60):

60. a. Zoghrafise ton/enan pinaka.
   painted-PERF the/a-ACC picture
   ‘(S)he painted a picture.’

b. Zoghrafize ton/enan pinaka.
The Background of Aspect & Telicity

painted-IMPERF the/a- ACC picture
‘(S)he was painting a picture.’

(Tsimpli & Papadopoulou 2006: 1598)

(60a) receives a telic interpretation due to the fact that the boundary imposed by the
perfective aspect coincides with the natural endpoint of the activity (Horrocks & Stavrou
2003: 292). (60b), on the other hand, is interpreted either as atelic or telic. The telic
reading of (60b) would be available in two cases; (a) if we consider the painting as the
endpoint of the event, and (b) if the predicate has a habitual interpretation (Chila-
Markopoulou & Mozer 2001: 141, also referenced by Tsimpli & Papadopoulou 2006:
1598).

In the case of bare nouns at the object position, Chila-Markopoulou & Mozer
(2001) point out that activity verbs followed by non-specific bare nouns are atelic
regardless of aspectual marking, as shown in (61):

61. I Eleni zoghrafize/zoghrafise portreta.
the Eleni painted-IMP/ painted-PERF portraits
‘Eleni was painting portraits.’

(example modified from Tsimpli & Papadopoulou 2006: 1598)

Note, however, that in the case of imperfective aspect a permanent property of the
subject is implied which is not available with the perfective aspectual marking since the
latter establishes an endpoint to the situation. The role of bare nouns is further discussed
by Sioupi (2005).

Sioupi (2002a, 2002b, 2005 & 2012/in print & in prep.) discusses the properties
of the object in activity verb constructions and the relation of aspect and telicity in
Greek. She argues for the separate treatment of aspect and telicity and focuses on the
independence of perfectivity from telicity. (A)telicity for Sioupi relies on the properties
of the object and in particular on the nature of its determiner. She claims that a VP that
consists of a DP argument with an indefinite determiner will be interpreted as telic,
whereas the same VP with a bare singular count noun at the object position will be
interpreted as atelic. Her conclusions are drawn on the basis of data on VPs with verbs
of creation and consumption. Consider the examples in (62):
According to Sioupi (2005), the utterances in (62a) and (62c) will be interpreted as atelic and the utterances in (62b) and (62d) will be interpreted as telic. Contra Chila-Markopoulou & Mozer (2001), who suggest that perfective aspect in activity verbs imposes telicity, Sioupi (2005) proposes that viewpoint aspect does not interfere with (a)telicity. She further follows Horrocks and Stavrou’s (2007) suggestion on the role of delimitedness in place of telicity, to whose approach we will refer in detail in Section 2.6. For Sioupi (non)-delimitedness is captured by the perfective-imperfective aspectual distinction, with the eventuality in imperfective aspect being non-delimited and in perfective delimited independently of the nature of the object.

Tsimpli and Papadopoulou (2006) take a step further in the research of Greek aspect and telicity and investigate the interaction between viewpoint aspect and argument realization. They examine the relationship of aspectually marked verb forms and null objects with an indefinite, non-specific interpretation. Object omission in Greek is possible with both perfective and imperfective viewpoints. Tsimpli and Papadopoulou suggest that imperfective aspect favours object omission more than perfective aspect, basing their analysis on the difference in the syntactic representation of overt direct objects with perfective and imperfective verbs. The economy in the derivation of the two constructions seems to be the key factor in the interpretive difference found for the two types of aspect.

In Greek, specific object arguments are necessarily overt in sentences with transitive verbs, while objects with non-specific reference may be omitted. Null objects are found in cases of NP-ellipsis (Giannakidou & Merchant 1997 and Panagiotidis 2003) when the object is contextually given, as in (63):
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63. Efere o Andreas merika vivlia? Ne, efere.
   bring-PERF the Andreas some books? Yes, bring-PERF
   'Has Andreas brought any books? Yes, he did.'

(example modified from Tsimpli & Papadopoulou 2006: 1599)

Recently, research on event structure proposed the Argument Realization Principle (ARP) according to which at least one argument needs to identify each subevent of the event structure (see Grimshaw & Vikner 1993, van Hout 1996, Rappaport-Hovav & Levin 1998, 2001 and Wright & Levin 2000). However, according to Tsimpli and Papadopoulou (2006) the Greek data show flexibility with object omission even with verbs expressing accomplishments and regardless of aspectual marking, as in (64):

64. O Petros ehtise/ehtize sti Halkidhiki.
   the Petros build-PERF/ build-IMP in-the Halkidhiki
   'Petros built in Halkidiki.'

(example modified from Tsimpli & Papadopoulou 2006: 1601)

Thus, the aspectual differences in Greek do not affect the grammaticality of sentences that involve object omission. Specifically, the interpretations that are available are the following (65):

65.

<table>
<thead>
<tr>
<th>VP</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ PERFECTIVE, Overt Object (DP)</td>
<td>Telic</td>
</tr>
<tr>
<td>+ PERFECTIVE, Null Object</td>
<td>Atelic</td>
</tr>
<tr>
<td>- PERFECTIVE, Overt Object (DP)</td>
<td>Atelic</td>
</tr>
<tr>
<td>- PERFECTIVE, Null Object</td>
<td>Atelic</td>
</tr>
</tbody>
</table>

(Tsimpli & Papadopoulou 2006: 1599)

To account for the above interpretational differences, Tsimpli and Papadopoulou adopt the Transitivity Requirement (TR), according to which an object position is included in VP independently of the verbal lexical choice (see Basilico 1998, Bowers 2002, Erteschik-Shir & Rapoport 2004, Hale & Keyser 1993, Pirvulescu & Roberge 1999 and Roberge 2002). They also adopt Basilico’s account on the interpretive differences between
predicates focusing on the verb event and predicates with individuated objects. Individuated objects are merged in the specifier position of the TransP (Transitive Phrase) whereas non-individuated ones are merged in the lower VP. Tsimpli and Papadopoulou (2006) claim that Trans carries the aspectual feature of [+/- PERFECTIVE], following similar approaches put forward such as Borer’s (1994, 2004 & 2005). Consider the structures in (66) and (67):

66. [+PERF] verb construction

\[
\begin{array}{c}
\text{vP} \\
\text{Subj} \quad \text{v'} \\
\quad \text{v} \\
\quad \text{TransP} \\
\quad \text{Obj} \quad \text{Trans'} \\
\quad \text{Trans} \\
\quad \text{VP} \\
\quad \text{V'} \\
\text{V} \quad \text{Complement}
\end{array}
\]

67. [-PERF] verb construction
(66) and (67) show that aspect has an effect on argument realization since the direct object of a Trans[+PERF] and a Trans[-PERF] verb have different base-generated positions. The object of a Trans[+PERF] verb is merged in the specifier position of the TransP, while the object of a Trans[-PERF] verb is merged in the lower VP. Movement of the direct object from the specifier position of the lower VP to SpecTransP is necessary for case reasons. The difference in the merging position of the direct objects leads to the telic or atelic interpretations of a construction depending on the type of viewpoint aspect. With regard to null objects, the interpretation will be atelic irrespectively of the aspectual form of the verb and their structure will correspond to that of (68).

68.  
+ PERFECTIVE, Null Object  
- PERFECTIVE, Null Object  

(simplified from Tsimpli & Papadopoulou 2006: 1605)
The differences in the derivation of aspectually marked constructions with overt and null complements will result in a difference to the degree of preference of null objects with imperfectives. This suggestion by Tsimpli and Papadopoulou (2006) is based on the Merge + Move versus the just Merge option for the overt direct object. Specifically, both Merge and Move are required with imperfective constructions whereas only Merge is needed with perfective ones. Additionally, following Brody (1995) and Chomsky (1986) they assume that the (a)telic interpretation will be determined at the LF interface, depending on the chain formed in each case; imperfective structures will involve two copies and perfective structures only one copy. Thus, the interpretation will be telic with an overt DP complement and atelic with a null one. The differences in the preferences of these constructions were experimentally tested and the findings verified their hypothesis (an account of their data is provided in Section 3.2). This account of the interaction of aspect and argument structure in Greek is one of the major theoretical assumptions which we will adopt for the analysis of the present dissertation’s data.

Tsimpli et al (2010) further examine the role of other sentential elements in the composition of aspectual meaning and the effect this interaction has in the syntactic configuration. Specifically, they examine the merging options for adverbial clauses in relation to aspect. They argue that in Greek the connectives, 

\textit{enō} (‘while’), \textit{kathos} (‘as’) and \textit{afu} (‘after/since’), are sensitive to aspectual features since they are specified in terms of the aspectual feature \textit{boundedness}. The feature of \textit{boundedness} specified in the lexicon imposes certain s-selectional properties on its complement. Note that the latter also includes the aspectual marking of the verb. In other words, the connectives that are specified as \textit{[−BOUNDED]} will be compatible with imperfective aspect, while the connectives that are specified as \textit{[+BOUNDED]} will be compatible with either type of aspect; perfective by default and imperfective when interpreted habitually (Tsimpli et al 2010: 664). Consequently, when introducing a certain adverbial clause, certain constraints on the aspectual specification of the VP will be activated in order to be interpreted accordingly. Thus, the role of aspect is captured through the dependency between the connective and the verbal domain with the peripheral or central nature of an adverbial implying a different merging position in the computation (for the detailed account on the properties of these adjunction positions see Tsimpli et al 2010: 660-662).
2.5 Motion Verbs & Aspect

Motion VP constructions have received special attention in the literature of aspect with regard to their syntactic representation and the role of PPs in the composition of aspectual meaning. To understand fully how a motion verb operates, it is necessary to have a closer look at what a motion verb is and how it differs from the rest of activity verbs.

Talmy (1985 & 2000) identifies five semantic elements that constitute the domain of meaning of a motion verb; ‘Motion’, ‘Path’, ‘Figure’, ‘Ground’, ‘Manner’ and ‘Cause’. In his approach, a “situation containing movement or the maintenance of a stationary location” is understood as a motion event (Talmy 1985: 60). Any basic motion event has an object (the ‘Figure’), that is moving (‘move’) or is located (‘be’ as in ‘be located’) with respect to another object (the ‘Ground’). The element ‘Path’ is the course followed or the location occupied by the ‘Figure’ in relation to the ‘Ground’. ‘Motion’, with capital ‘M’, refers to the event itself; whereas, ‘Manner’ and ‘Cause’ are analyzed as distinct external events. Consider the examples in (69):

69.  |
<table>
<thead>
<tr>
<th>Manner</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>motion</td>
<td>The pencil rolled off the table.</td>
</tr>
<tr>
<td>location</td>
<td>The pencil lay on the table.</td>
</tr>
</tbody>
</table>

(Talmy 1985: 61)

Depending on how and if these elements are lexicalized in each language, we get motion categories that conflate ‘Motion’ and ‘Manner’ or ‘Cause’, ‘Motion’ and ‘Path’, and ‘Motion’ and ‘Figure’. The language families that are typical examples of these categories are provided in (70).

70.  |
<table>
<thead>
<tr>
<th>Language/Language Family</th>
<th>Type of Conflation in the Verb Root</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indo-European (all?) (except Romance)</td>
<td>‘Motion’ and ‘Manner’ or ‘Cause</td>
</tr>
<tr>
<td>Chinese</td>
<td></td>
</tr>
</tbody>
</table>
Specifically, for the first type of conflation English offers motion verbs both with manner and cause conflation, as shown in (71):

71. a. be\textsubscript{L} + Manner
   The rope hung across the canyon from two hooks.
b. move + Manner
   The rock rolled down the hill.
c. move + Cause
   I knocked the nail into the board with a mallet.

(Talmy 1985: 62-63)

In the second typological pattern, the verb root expresses both the ‘Motion’ and the ‘Path’. If ‘Manner’ or ‘Cause’ is expressed in the sentence, it does so independently, that is with an adverbial or a gerund. Consider the examples in Spanish in (72):

72. a. Move + Path
   La botella entró a la cueva
   the bottle moved-in to the cave
   ‘The bottle floated into the cave’
b. Move + Path + Manner (independent constituent)
   Saqué el corcho de la botella retorciéndolo
   I\textsubscript{A} moved out the cork from the bottle twisting it
   or
   Retorcí el corcho y lo saqué de la botella
   I twisted the cork and it I\textsubscript{A} moved out from the bottle
‘I twisted the cork out of the bottle’

c. Move + Path + Cause (independent constituent)

Quitó el papel del paquete cortándolo

I moved off the paper from the package cutting it

‘I cut the wrapper off the package’

(Talmy 1985: 69-71)

In the third typological pattern, the verb root expresses both the ‘Motion’ and the ‘Figure’. One of the few forms of this pattern that appear in English is given in (73), along with a more typical example with extensive usages in Atsugewi, a Hakan language of northern California, in (74).

73. It rained in through the bedroom window.

74. Motion + Figure: verb roots of Motion in Atsugewi

- hp - for a small shiny spherical object (e.g. a round candy) to move/be-located

*; * for a smallish planar object that can be functionally affixed (e.g. a stamp, a button) to move/be-located

-caq- for a slimy lumpish object (e.g. a toad) to move/be-located

-swal- for a limp linear object suspended by one end (e.g. a shirt on a clothesline) to move/be-located

-qput- ‘for loose dry dirt to move/be-located’

-sta + ‘for runny icky material (e.g. mud) to move/be-located

(Talmy 1985: 73)

Talmy’s highly influential typology of motion expressions (Talmy 1985 & 2000), additionally, focused on the dichotomy of verb-framed languages (V-languages) and satellite-framed languages (S-languages). Verb-framed languages express ‘Path’ as a semantic component of a motion verb while satellite-framed languages express ‘Path as a ‘satellite’. A ‘satellite’ can be a free word or an affix. Consider the example of a verb prefix as a ‘satellite’ in German and the example of a preposition in English:

75. Verb: *brechen* + Satellite: *entzwei* → Verb Complex *entzweibrechen*

Der Tisch brach entzwei.
‘The table broke in two.’

76. I ran out of the house.

(Talmy 1985: 103)

The sub-classification of motion verbs was further examined in the work of Zubizarreta and Oh (2007). Zubizarreta and Oh (2007) examine motion verb constructions by distinguishing between two types of manner-of-motion verbs; those that can take a ‘distance’ complement, as in run a mile and those that cannot, as in *wander a mile. In English, both types of motion VP constructions may be ambiguous between a locative and a directional reading depending on the preposition involved, as shown in (77), the inherent properties of the motion verb, as shown in (78), and the verbal morphology with the preposition, as shown in (79):

77. a. John ran into / out of the room. (only directional)
   b. John ran inside / outside / in the house (locative or directional).
78. a. John ran / walked in / inside the house. (locative or directional)
   b. John danced in / inside the house. (only locative)
79. a. John’s running (in) to the house (directional)
   b. John’s running in / inside the house (locative)

[examples from Zubizarreta & Oh (2007), adapted by Tsimpi & Papadopoulou (2009: 195)]

The syntactic representation of motion constructions is accounted for Zubizarreta and Oh (2007) through the interaction of the inherent motion verb properties, such as directed motion, and the aspectual marking of the sentence; where the latter also defines the status of the PP involved. Thus, the structure of a motion verb encoding ‘path’ and directed motion in the perfective form will have its PP in the complement position functioning as the endpoint to the motion event. Consider the structure in (80):

80.

\[\text{\footnote{For an overview on the lexical and structural derivation of paths, following theories such as Jackendoff's (1996) and Hale and Keyser's (1992), see Zagona (2005).}}\]
With regard to crosslinguistic data, Zubizarreta and Oh (2007), highlight the fact that Germanic languages, but not French or Spanish, allow the directional and telic reading with manner-of-motion verbs whereby the PP_{PATH} is a complement. Such an option is available when it is parametrically acceptable for a language to allow compound formation in the syntax of the V-V type. Moreover, they argue that this compounding involves two verbs with the first specified for ‘manner’ and the second for ‘directed motion’. The latter is phonologically null and selects the PP_{PATH} as a complement to the whole V-V compound. It should be noted that for some languages, such as French and Spanish, directed motion can be expressed periphrastically, with a gerund or with a specified preposition.

The syntactic literature of aspectually marked motion constructions has also focused on the derivational steps and the landing site of the PPs suggesting that adjunct PPs will appear higher in the tree construction and complement PPs lower in the tree, in a landing site reserved for a goal interpretation. Specifically, returning to the arguments on the syntactic configurations of aspect and telicity, Thomson (2006) and MacDonald (2008), following Tenny’s (1987) and Borer’s (2005) claim that external arguments can not affect the telicity of an utterance, they propose that a complement constituent is necessary for a telic interpretation. Consequently, only a limited syntactic space is available for elements to contribute to the aspectual interpretation of the predicate. If this hypothesis holds, we expect that external arguments, locative PPs and Cause can not contribute to the aspectual composition. The domain of the aspectual interpretation available to motion constructions is shown in (81):

---

5 The same approach on the treatment of PPs in motion constructions can be found in several languages (e.g. for Norwegian see Tungseth 2005).
Syntactic approaches seem to agree on the premise that the lowest PP position needs to be reserved for a telic reading of a motion construction.

Folli and Ramchand (2005) consent on this premise too but further propose that a more restrictive grammar with a strictly controlled lexical specification is required to account for the parametric variation the motion VPs exhibit. In particular, they argue that the argument structure properties of the original verb are altered both in nature and number. For example, a verb like *run*, in first phase syntax, would be specified as \([v_i, V_i]\) allowing one argument only. If a goal PP is to be added, the first phase syntax will introduce the RP. The availability of the Resultee specifier position offers an additional argument to the construction, provided that it bears Resultee semantics; in other words, the new argument has to be a participant that reaches a final location which will be the result of the running. Consider the structure in (82), which is based on the first phase syntax model presented in (35):
However, not all prepositional phrases are part of the first phase syntax. The nature of the prepositional and R licensing heads are language specific. Consequently, when addressing telicity, it is obligatory to distinguish between the temporal boundedness that arises due to the addition of adjuncts that are added after the construction of the first phase syntax and the temporal boundedness arising from the RP inclusion within the first phase. Another factor to be considered is the lexical specification of the preposition itself.

Following the syntactic propositions of van Riemsdijk (1990), Koopman (2000), Kracht (2002), van Riemsdijk and Huybregts (2002) and Svenonius (2004) and their semantic counterparts by Zwarts and Winter (2000) and Zwarts (2005), Ramchand (2008) converges to the idea that the P head must be decomposed into Path and Place, with the Path head embedding the PlaceP in the structure, as shown in (83):

83.
PathPs can be (un)bounded and their role is determined by the embedded PlaceP, in that Path heads may be characterized as TO for expressing goal, FROM for expressing source and VIA for expressing the route of a motion event. The following examples illustrate these options:

84. a. in the house — PlaceP
   b. into the house — bounded TO PathP
   c. toward the house — unbounded TO PathP
   d. under the bridge — PlaceP or bounded VIA/TO PathP (ambiguous)

(Ramchand 2008: 110)

In the verbal composition, PathPs will be the complements of a proc head. Thus, motion VP constructions resemble the activity VP constructions with quantized objects, meaning that a bounded PathP will provide a goal-motion reading (85a-b); whereas an unbounded one or a PlaceP will not (85c-d).

85. a. Mary danced to the store. — goal of motion
   b. Mary danced into the room. — goal of motion
   c. Mary danced towards the bridge. — directed path
   d. Mary danced in the park. — location of motion

(Ramchand 2008: 111)

Zwarts (2008) extends on the typology of directional prepositions and introduces a very interesting analogy to aspectual properties. Locative prepositions will be necessarily atelic, while directional prepositions will be either telic or atelic depending on the type of path
involved. A path has a starting point and an endpoint. Consequently, paths that express endpoints will be telic. Consider the following categorization of directional prepositions with the positive part (+) indicating the position of the motion event in relation the starting and final points and X a pattern repeated:

86. Classes of directional prepositions

<table>
<thead>
<tr>
<th>Preposition Type</th>
<th>Connectivity</th>
<th>Cumulativity</th>
<th>Reversibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source Prepositions</td>
<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Goal Prepositions</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Route Prepositions</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Comparative Prepositions</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Geometric Prepositions</td>
<td>(no diagram)</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Periodic Prepositions</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>

(Zwarts 2008: 84)

In order to redefine the criteria that would license a telic interpretation, Zwarts (2005 & 2008) proposes that the directional prepositions have to be reclassified on the basis of three properties; connectivity, cumulativity and reversibility. Connectivity establishes the relation of the starting point and the endpoint; cumulativity establishes the common spatial property of the starting point and the endpoint; and reversibility establishes that a preposition is not polarized. Thus, the new classification of directional prepositions would be the following:

87. Four types of directional prepositions

<table>
<thead>
<tr>
<th>Type</th>
<th>Source, Goal</th>
<th>Route, Geometric</th>
<th>Comparative</th>
<th>Constant, Periodic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connected</td>
<td>no</td>
<td>Yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Cumulative</td>
<td>no</td>
<td>No</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Reversible</td>
<td>no</td>
<td>Yes</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Transitions</td>
<td></td>
<td>Cycles</td>
<td>Progressions</td>
<td>Continuations</td>
</tr>
</tbody>
</table>
Out of the three properties, Zwarts (2005 & 2008) argues that cumulativity is the crucial property for the aspect of directional prepositional phrases and uses the in/for test to demonstrate it. Non-cumulative PPs will make a sentence telic (88a-b) and cumulative PPs will make it atelic (88c-d).

88. Alex walked…
   
   a. to the house/out of the house in an hour. → telic
   b. over the hill/around the village in an hour. → telic
   c. towards the coast/up the hill for hours. → atelic
   d. along the river/around and around the house for hours. → atelic

Zwarts (2008) basically attempts to draw a parallel between the aspectuality of prepositions and the aspectual classification of verbs, to which he explicitly refers to in his work, as shown in (89) and (90) below.

89. >>>>>>>>>>>>>>>>> Decreasing Directionality >>>>>>>>>>>>>>>>>
   
   Non-cumulative Path    >    Cumulative Path    >    Place
   to, across                             towards, along             in, under

90. >>>>>>>>>>>>>>>>> Decreasing Dynamicity >>>>>>>>>>>>>>>>>
   
   Achievements               >    Degree-achievements    >    Activities
   Accomplishments                    Semelfactives

The literature on motion constructions highlights the compositional nature of aspectual meaning and the role of aspectual marking and PP complements in their syntactic derivation and telic or atelic interpretation. It is also evident that they allow great parametric variability and, hence, a discussion on the Greek motion verbs and their relation to aspectual marking is essential for an informed analysis of data in the present thesis.
2.6 Greek Motion Verbs & Aspect

In Greek, Horrocks and Stavrou (2007) discuss the relation of the grammaticalization of aspect and the absence of goal readings for adjunct PPs by reintroducing the terms terminativity, delimitedness and telicity. Contra Smith’s (1991/1997) account of aspect, they define terminativity as a lexical property (similar to situation types in Smith’s frame), delimitedness as the property assigned by perfective/imperfective aspectual marking and telicity as a property referring to the whole VP rather than a feature of the lexicon. In particular, terminativity captures the lexical aspectual properties of the verbs and categorizes verbs into two types; terminative and non-terminative ones. Terminative verbs are inherently directional and they receive obligatory complements denoting goals/destinations as in come, go and arrive. Non-terminative verbs denote non-directed open-ended movements and tend to imply a locative reading as in swim (Horrocks & Stavrou 2007: 637). The (non)-delimited interpretation of a situation is subject to the availability of external bounds; a situation perceived as a single whole with visible beginning and end will be expressed with perfective aspect in Greek and it will be delimited, whereas, a situation perceived in terms of some internal contour and with no bounds will be expressed with imperfective aspect and it will be non-delimited (Horrocks & Stavrou 2007: 638). Telicity is derived on the basis of the above two notions and is defined in (91):

91. A telic event is one with a natural culmination in which some process incrementally approaches, and finally reaches, its inevitable end-point. Telic events are intrinsically directed towards a goal, attainment of which entails a change of location or state in an affected entity signalling the completion of the event. Atelic events are not directed towards a goal, they are processes or activities with no intrinsic final points.

(Horrocks & Stavrou 2007: 638)

Additionally, in order to explain the differences in the aspectual composition of motion verbs, they adopt the Unaccusative Hypothesis (see Levin 1993, Levin & Rappaport Hovav 1995, Folli & Ramchand 2001 and Chierchia 2004 among others). In light of this framework, non-terminative motion verbs denoting open-ended situations and, thus,
suggesting an atelic interpretation, may be interpreted as telic if we add a goal PP, as in (92):

92. a. Bill swam in the sea (for hours).  →  open-ended  →  atelic
    b. Bill swam to the island (in five minutes).  →  goal PP  →  telic

(Horrocks & Stavrou 2007: 607)

This reallocation in the aspectual nature of the verbs has been employed so as to explain the diversity in the motion data crosslinguistically. According to Horrocks & Stavrou (2007), however, this does not seem to be the case in Greek. Consider the sentences in (93):

93. a. O Orestis kolibise sto nisi (P se + def. article to > sto)
    the Orestis swim-PERF at-the island
    ‘Orestis swam on/near the island.’
    b. O Orestis kolibise pros to nisi
    the Orestis swim-PERF towards the island
    ‘Orestis swam towards the island.’
    c. O Orestis kolibise mexri/os to nisi
    the Orestis swim-PERF as far as the island
    ‘Orestis swam as far as the island.’
    d. O Orestis kolibise jia to nisi
    the Orestis swim-PERF for the island
    ‘Orestis swam for the island.’

(examples modified from Horrocks & Stavrou 2007: 611-612)

The verb *kolibo* (‘swim’) is a motion verb that does not entail a path-to-goal component. Moreover, they consider the preposition *se* as a non-directional one with a locative interpretation only (a point to which we will refer to in Section 4), rendering the sentence in (93a) necessarily atelic. They further note that manner of motion verbs can not entail a ‘completed path’ even though there are prepositions that express direction of movement, as shown in (93b-d). Hence, to account for the telicity shifts, Horrocks and Stavrou (2007) assume that manner of motion verbs have a dual classification in the lexicon,
following Levin and Rappaport Hovav (1995), and they propose a lexical rule linking
frame suggesting the following possible structures:

94. Motion Structures

a) non-terminative V
   (unergative)
   e.g. walk
   
   b) terminative V
   (unaccusive-resultative)
   e.g. walk to the bus stop
   
   c) non-terminative V
   (unergative, but with some
    inherent linear directionality)
   e.g. run
   
   d) terminative V
   (unaccusive-resultative)
   e.g. walk in the park
   
   e) non-terminative V
   (simple activity)
   e.g. paint the floor white
   
   f) terminative V
   (causative-resultative)
   e.g. wipe clean

(95) a. Perpatise sto kentro.
   [-terminative, Perfective, PP = simple location]
   walk-PERF in-the centre

---

6 For a detailed discussion on resultative construction see Kratzer (2004) among many others.
‘(S)he walked in the centre.’

b. Perpatuse sto kentro. [-terminative, Imperfective, PP = simple location]
   walk-IMPERF in-the centre
   ‘(S)he was walking in the centre.’

c. Pidhikse sti thalasa. [+terminative, Perfective, PP = result location]
   jump-PERF in-the sea
   ‘(S)he jumped in the sea.’

d. Pidhuse sti thalasa. [+terminative, Imperfective, PP = result location]
   jump-IMPERF in-the sea
   ‘(S)he was jumping/used to jump in the sea.’

(modified from Horrocks & Stavrou 2007: 627-628)

The verb in sentences (95a) and (95b) is of low directionality, whereas the verb in sentences (95c) and (95d) is of high directionality and allows an unaccusative reading that is a goal interpretation for its PP. The perfective aspectual marking of (95a) and (95c) provides the external bounds of the situation with (95a) simply ending the activity without a natural culmination and (95c) having its goal and the bound imposed by aspect coinciding. Only the latter is eligible for the telic interpretation. In (95b) and (95d), the imperfective marking suggests an internal viewing of the situation with continuous/progressive or habitual/repetitive readings. In both cases the interpretation of the sentences will be atelic.

To summarize, Horrocks and Stavrou’s (2007) main suggestions on the treatment of motion verb constructions in Greek are: (a) the aspectual character of the lexeme is predetermined either as terminative or non-terminative; (b) aspectual stems (perfective or imperfective) are inserted into the syntactic computation; and (c) the overall aspectual value is lexically and morphologically ‘built-in’ and as a result these are the only available readings (Horrocks & Stavrou 2007: 629).

Contra Horrocks and Stavrou (2007) who focus their analysis at the lexicon-syntax interface, Tsimpli & Papadopoulou (2009) suggest that the (a)telic characterization of a predicate involves mainly the syntax-discourse interface. Specifically, they discuss the mapping between syntax and argument structure (see Section 2.2) and the effect of aspectual features on the predicate’s interpretation and argument licensing. They assume that aspectual properties are syntactically represented, and, consequently, argument structure is controlled by aspect; however, they argue that the (a)telic interpretation of an
The Background of Aspect & Telicity

utterance belongs to a higher level of representation, namely the syntax-pragmatics (discourse) interface. The interface is the locus of integration of the grammatically encoded and contextually provided information. Therefore, aspect is an interpretable feature relevant to the syntax-discourse interface providing the categorical judgments on the verb’s (im)perfectivity and the syntactic positions for the arguments; whereas the interface itself provides a strong or weak preference for the (a)telic interpretation of the event (Tsimpli & Papadopoulou 2009: 192-193). The interpretative distinction for motion constructions that is added on the above is that of PPs. A PP\textsubscript{PATH} may receive two readings, a locative or a directional one, depending on the aspctual feature specification of the verb and its complement/adjunct argument status.

Tsimpli and Papadopoulou (2009), following Talmy (1985), assume that motion verbs are activity predicates that, conditions permitting, may receive an accomplishment reading and their subcategorization depends on their compatibility with a PP\textsubscript{PATH} in the complement position. In particular, they distinguish them into three categories; unambiguously locative manner of motion verbs without directed motion, as in (96a), unambiguously non-locative manner of motion verbs with directed motion, as in (96b-c), and ambiguous manner of motion verbs between locative and non-locative readings, as in (96d-e):

\begin{align*}
96. \text{a. I Maria xoreve / xorepse (mesa) sto spiti.} & \rightarrow \text{Unambiguously Locative} \\
& \text{the Maria dance-IMP/ dance-PERF (inside) \_the house} \\
& \text{‘Maria was dancing/danced inside/in/*/to/*into the house.’} \\
\text{b. I Maria pije / pije (mesa) sto spiti.} & \rightarrow \text{Unambiguously Non-Locative} \\
& \text{the Maria go-IMP / go-PERF (inside) \_the house} \\
& \text{‘Maria was going/went inside/into/to the house.’} \\
\text{c. I Maria ebene / bike (mesa) sto spiti.} & \rightarrow \text{Unambiguously Non-Locative} \\
& \text{the Maria enter-IMP / enter-PERF (inside) \_the house} \\
& \text{‘Maria was entering/entered inside/into/to the house.’} \\
\text{d. I Maria etrex (mesa) sto parko.} & \rightarrow \text{Ambiguous} \\
& \text{the Maria run-IMP (inside) \_the park} \\
& \text{‘Maria was running inside/in/to/*into the park.’} \\
\text{e. I Maria etrekse (mesa) sto parko.} & \text{the Maria run-PERF (inside) \_the park} \\
& \text{‘Maria ran inside/in/into/to the park.’}
\end{align*}
The unambiguously locative verbs have no directional feature. As a result their PPs can only function as locative modifiers in the adjunct position of an unergative construction. Note that the aspectual marking does not affect the interpretation of the event. According to Tsimpli and Papadopoulou (2009), inherently directional motion verbs, following Zubizarreta and Oh (2007), will also not be affected by aspectual marking, since their PPs are interpreted as non-locative in the complement position. Nevertheless, the ambiguous motion verb category allows distance complements, as in *trexo ena mili* (‘run a mile’) and both telic and atelic readings are available. In the case of the imperfective aspectual marking, as is shown in (96d), the ambiguity is between two atelic interpretations; the locative and the directional. In the case of the perfective aspectual marking, as is shown in (96e), the ambiguity is between the telic (goal reached) and atelic (locative or directional) readings. Thus, Tsimpli and Papadopoulou (2009) suggest that in Greek grammatical aspect alone does not impose a telic or atelic interpretation. Let’s turn now to the syntactic representation of the above notions. Consider the following structures:

97. Perfective Motion VP Construction

```
vP
   | Subj
   | v'
   | v
   | AspP
   | Spec
   | Asp'
   | Asp [+PERF] VP
   |   |
   | V''
   | VP PP_PATH
```
98. Imperfective Motion VP Construction

(Tsimpli & Papadopoulou 2009: 203, emphasis added & minor change)

The construction in (97) and (98) are in line with Zubizarreta and Oh’s analysis regarding the compositional nature of manner and directed motion. In the case of perfective aspectual marking, as shown in (97), the complement PP receives either a directional or a telic reading but not a locative reading since the directed motion feature would be lacking. In the imperfective motion construction, however, the PP has a VP-adjunct status allowing an atelic directional reading but not a telic one, as shown in (98). This is the case due to the fact that imperfective aspect denotes an unbounded event and as such it cannot account for a telic interpretation. Perfective aspect, on the other hand, allows the rise of a telic reading to the utterance, with the representation being identical to the directional reading, but crucially the difference involves the syntax-discourse enrichment whereby the goal PP is also understood as the reached endpoint of the motion event. Tsimpli and Papadopoulou (2009) claim that this difference with regard to the involvement of the interface, and the (a)telic options available, is to account for the preference association found between perfectiveness and telicity. The account by Tsimpli and Papadopoulou (2009) is a less strict version of the syntactic frames developed to account for aspectual distinctions such as Ramchand’s (2008) and Borer’s (2005), and it will be adopted for the analysis of our data.
2.7 Summary

Section 2 presented an overview of the linguistic area of aspect and its interaction to telicity by reviewing some of the definitions and analyses proposed in the literature. It identified the key aspectual oppositions applying to Greek with special reference to transitive activities with specific quantized DPs and motions with PP-Goals. Moreover, the role of aspect in syntax was examined in the light of syntactic operations and the lexical specification of verbs that introduced inherent aspectual properties as triggers of argument structure syntax and, consequently, event structure mapping. Due to the diversity of the theoretical approaches, the term telicity appeared to be used rather loosely. Sometimes it was identified as a verbal lexical feature and other times as a by-product of the syntactic computation. An endpoint account, however, was shown to bring together the syntactic encoding of aspect and the interface properties of telicity. Specifically, the interaction of Greek aspect and complements, as endpoint manifestations, was demonstrated in light of endpoint resolution suggesting a compositional understanding of telicity.
3 The First Language Acquisition of Aspect

Section 2 has shown that the linguistic research on aspect and telicity in syntactic and interface terms appear to raise a number of questions with regard to their nature and language encoding. This terminological and conceptual puzzlement could only be transferred to the acquisition studies of these phenomena leading initially to a limited interest towards the particular domain of research and only recently to a new attempt to readdress the notion of aspect on the basis of psycholinguistic data. The present section will introduce some of the acquisitional accounts available in the literature referring to Greek and other languages and will attempt to highlight the problematic areas of past research that could be further redeveloped in future experimental studies. Note that the terms are used as reported by each author.

3.1 Early Studies on the Acquisition of Aspect

Language acquisition theories tend to group around two poles; the nativist and functionalist perspective. Nativists argue that certain principles and mechanisms of language are innate; in other words, there are language components that are biologically pre-wired and the task of the learner is to figure out their instantiation in his/her own language (see Bickerton 1981 & 1984a), or there are specific linguistic principles that are genetically predetermined (see Chomsky 1975, 1981 & 1990). On the other hand, functionalists argue that language is not an innate faculty but rather a communicative device, the acquisition of which is to be examined along with cognitive development (see Givón 1979 & 1995 and DeLancey 1998). In the latter frame, the task of the learner is to calculate the patterns in the linguistic input and decipher the form-meaning mappings that apply in his/her language (see Bates & MacWhinney 1982 & 1987, Bowerman 1985 and Li et al. 2000). The issue of language innateness is quite old and not within the scope of the present thesis. However, it generates a number of interesting research question with regard to the acquisition of aspect and telicity. If lexical aspect (situation aspect in Smith’s (1991/1997) terms) is crosslinguistically available, does this imply that the semantic features formulating these verb categories are innately available? In the case that they are innate, is the acquisition of aspect uniform across languages?
Acquisition studies have proposed a number of theories; a quite influential theory labelled under various terms such as Aspect Before Tense, The Primacy of Aspect Hypothesis and Defective Tense Hypothesis, has been addressed in various languages along with Prototype Theory, (see Lakoff 1987, Clark 1989 and Taylor 1989), Language Bioprogram Hypothesis (see Bickerton 1984a, 1984b & 1988), and the Basic Child Grammar Hypothesis by Slobin (1985), which is a cognitive operating principles model.

Starting with the most prominent theory on aspecual acquisition, the Primacy of Aspect Hypothesis, Andersen and Shirai (1996) identify as its key premises the following:

99. Primacy of Aspect Hypothesis
a. Children first use past marking (e.g. in English) or perfective marking (e.g. in Chinese, Spanish) on achievement and accomplishment verbs, eventually extending its use to activity and stative verbs.
b. In languages that encode the perfective/imperfective distinction, imperfective past appears later than perfective past, and imperfective past marking begins with stative verbs and activity verbs, then extending to accomplishment and achievement verbs.
c. In languages that have progressive aspect, progressive marking begins with activity verbs, then extends to accomplishment and achievement verbs.

Progressive markings are not incorrectly overextended to stative verbs.

(Andersen & Shirai 1996: 533, also reported by Slabakova 2001: 104)

The idea that aspect may be acquired before tense appears early in the literature. The first experimental study by Bronckart and Sinclair (1973) investigated the use of grammatical aspect with 74 French-speaking monolingual children aged 2;11 to 8;7 years old. They examined the development of tense and aspect in relation to properties such as duration, the presence or absence of resultative states, repetitiveness and continuation. The children were presented with a situation, for example a horse jumping over a fence, and they were asked to describe the event. The results showed that perfective past forms (passé compose) were used for actions with clear results (e.g. go to the garage) and present forms (present) for durative events with no end results (e.g. swim in the basin). Imperfective past forms (imparfait) were only rarely used. Bronckart and Sinclair (1973) concluded that the age of 6 is a turning point in the acquisition of aspect. Before the age of 6 aspecual distinctions are employed to express the durative-non-durative differences
between eventualities but after the age of 6 their performance becomes more adult like. This tendency of the children to differentiate events on the basis of internal structure properties has been documented in other studies as well.

In Italian, Antinucci and Miller (1976) tested 1 English-speaking and 7 Italian-speaking children aged 1;6 to 2;6 on the use of perfective past tense forms (passato prossimo) with change of state verbs that denoted actions with clear results, such as fall, close, find and break. The children used activity and stative verbs only with imperfective past forms (imperfetto). Quite interestingly, though, they made inflectional endings of past participles agree in number and gender with the object of the verb. The children’s invention of a syntactic agreement rule that does not apply in the adult grammar was interpreted by Antinucci & Miller as an attempt by the children to focus on the object which was the result of the change of state denoted by the verb. They further claimed that such young learners are not cognitively prepared for treating inherent aspectual properties and they reported that this cognitive deficiency spans over a number of months.

A similar pattern was found with Turkish-speaking learners (Aksu 1978 & Aksu-Koç 1988). The past form for directly experienced events (-dll) was used with change of state verbs to indicate punctuality and resultative state, the past form for indirectly experienced events (-mlç) was used for accomplishment states and the progressive form (-lyor) for activities. Aksu argues that the precedence of aspectual differences over temporal ones shows up until the age of 4;6. Her latest work, which was a longitudinal study, also confirmed her earlier data.

The role of lexical aspect and its influence on the learner’s tense and aspect development in Greek was addressed by Stefany (1981 & 1997). Stefany categorized Greek verbs in three subclasses: statives (e.g. know), resultatives (e.g. fall) and non-resultatives (e.g. cry). Children were reported to use perfective aspect with resultative verbs and imperfective aspect with non-resultatives and statives. Additionally, past coincided with perfective aspect and present tense with imperfective aspect. Stefany attributed these patterns to the speech directed to children by their mothers.

One more of the early studies on aspect is a longitudinal study of 4 American/English-speaking children by Bloom et al. (1980). The ages of the children were 1;11 and 2;4. At the start of the study, their MLU (mean length of utterance) was between 1.5 and 2 and at the end of the study between 2.5 and 3. They observed that they only selectively inflected verbs depending on the aspectual category they belonged
to; the progressive marker (-ing) was used with activity verbs, past marking with achievement verbs and the present tense marker (-s) with durative verbs (for similar findings see Clark 1996).

Nonetheless, a number of studies argue against the Primacy of Aspect Hypothesis (see Weist et al. 1984, Smith & Weist 1987). Weist et al.’s (1984) longitudinal study examined 6 Polish-speaking children during four observation sessions in naturalistic settings. Three of the children were 1;7 to 1;9 years of age and the older three 2;0 to 2;2. The children’s responses were classified into the Vendlerian verb classes (situation type aspect in Smith 1991/1997) and were analyzed with reference to the past morphology used. The findings contradict the data reported in the previously mentioned studies; specifically, (a) the imperfective was used by the children, (b) the children contrasted perfective and imperfective aspectual marking on the same verbs, and (c) they indicated telicity regardless of whether a result state was available or not. Weist et al. (1984) also used a second task with two groups of 9 children each, aged 2;4 to 2;8 and 3;4 to 3;11. They employed an act out technique similar to the one used by Bronckart and Sinclair (1973) with items contrasting between telic and atelic situations. The findings confirmed the conclusions drawn from the longitudinal study suggesting that tense and aspect morphology is not redundant information to children and that, contra Bloom et al. (1980), the defective use of verbal morphology can not be attributed to cognitive limitations.

Studies under the Language Bioprogram Hypothesis argue that certain semantic distinctions are biologically pre-programmed, in the nativist sense, and consequently emerge early in the acquisition (Bickerton 1981 & 1984a). Bickerton suggested two innate aspectual distinctions; state vs. process and punctual vs. nonpunctual basing his claims on data from first-generation creole learners. He additionally re-addressed the data reported by the studies earlier in this section and proposed that the children’s preference to tense-aspect markers reflects these two innate aspectual distinctions.

A similar approach, entitled Basic Child Grammar Hypothesis was put forth by Slobin (1985). According to Slobin, “children come to the language acquisition task with a prestructured ‘semantic space’ containing a universal, uniform set of prelinguistic semantic notions; these notions, which are not biased toward any particular language, are ‘privileged’ for mapping onto grammatical forms in the process of language acquisition” (Li & Shirai 2000: 39). In this frame, the basic distinction is between process and result. Slobin advocates that such an approach adequately explains the data from a variety of
languages, such as Chinese (Erbaugh 1978 & 1982), English (Bloom et al. 1980), French (Bronckart & Sinclair 1973), Italian (Antinucci & Miller 1976) and Turkish (Aksu 1978).

More precise descriptions of aspectual categories appear at the study of Shirai and Andersen (1995). They investigated the transcribed speech samples of 3 English-speaking children, two of them aged 1;6 to 2;3 and the third 1;6 to 4;9. They coded the past and progressive verb forms for inherent aspectual class. Their data showed that initially past inflections were used for achievement verbs only and the emergence of progressive forms was not limited to activity verbs exclusively. The authors explained their findings in the light of Prototype Theory, which assumes a graded category membership. They proposed that young learners simply attach the past inflection to the prototype of the category past, due to the fact that the prototypes of past tense and perfective aspect are quite similar (759).

Lastly, Behrens (1993) conducted a more large scale corpus study on the acquisition of German aspect. She examined the production of 7 children aged 1;0 to 4;0 measuring tense use in reference to aspectual features. Behrens searched for the first references to pastness without the implementation of tense marking and found that at the age of 1;2 and earlier children have a basic temporal orientation of past and future. This finding suggests that a cognitive deficit hypothesis, as suggested in earlier accounts, could not hold. Additionally, children showed a preference of past marking on telic verbs, without it, however, being exclusive to telic verbs since past marking was found with activity and stative verbs as well. The data suggest that resultativity is not a semantic bias for past marking and, consequently, a semantic ‘pre-tuning’ is not required for acquisition.

The studies mentioned in this section opened up a new area of research in the domain of psycholinguistics. An interface phenomenon such as aspect, however, generates a number of limitations. The notion of aspect is not clearly articulated and terms are used without providing an adequate definition that applies to the particular language the data are drawn from. The differences in the age, they report as the turning point in acquisition, are indicative of the non-committal fashion in which aspectual distinctions are treated. More recent studies, though, do take some of these parameters into consideration.
3.2 Recent Studies on the Acquisition of Aspect

Recent studies have readdressed the notion of aspect and its acquisition offering more detailed descriptions of the phenomenon, testing the factors involved such as transitivity and object properties and selecting data through experimental studies with controlled settings.\(^7\)

Van Hout (1996, 1998, 2000b & 2004) advocates that acquisition data on aspect and telicity need to be seen through one basic question; how does a child acquire a verb and its aspectual properties? Van Hout (1998) proposes that the lexical primitives in the lexicon-syntax interface are obligatory the number of the event participants and the basic event type (249). She assumes that telicity lies at the lexicon-syntax interface and that telic and atelic readings rise via unaccusative and unergative constructions respectively. Consider the following examples in Dutch and their corresponding structures below:

100. a. Unaccusative

John is *urenlang / in 5 minuten naar het station gelopen.
John is *hours-long / in 5 minutes to the station walked
‘John walked to the station *for hours / in 5 minutes.’
b. Unergative
John heft de hele nacht /*in een uur gelopen
John has the whole night /*in an hour walked
‘John walked all night /*in an hour.’

(van Hout 2000b: 247)

101. a. Unaccusative Syntax \(\rightarrow\) Telic Interpretation

\(^7\) For online adult data on the interaction of aspect and telicity, see Pickering et al. (2006) and for corpus adult data, see Wulff et al. (2009).
Van Hout, following Grimshaw (1990) and Grimshaw and Vikner (1993), proposed the CHESS model (CHecking Event Semantic Structure) for the analysis of her Dutch acquisition data. This mapping system identifies the verb’s event type and the aspeectual features of the other predicates in the VP, along with the number of them involved in the event. The model predicts two structural positions for arguments; AgrS and AgrO, for subjects and objects respectively. The arguments in these positions refer to the event participants. The unaccusative construction captures the syntactic movement configuration of one-argument verbs, with the movement triggered when the predicate is telic. In other words, the telic event type features will be checked at the AgrOP (similarly to other syntactic accounts like Borer’s 1994). Consider the structure for a telic two-argument predicate in a transitive frame:

102. Transitivity & Strong Case Assignment
Van Hout (1998) suggests that there are both strong and weak cases for object arguments. In some languages, strong case is overtly expressed, as in Finnish, and in others it is not, as in Dutch.

103. a. Finnish – Strong Case
    Anne tappa vieraat.
    Anne meets guests-ACC
    ‘Anne meets guests.’

b. Finnish – Weak Case
    Anne tappa vieraita.
    Anne meets guests-PART
    ‘Anne meets some guests.’

    (de Hoop 1992: 63 – also reported in van Hout 1998: 255)

c. Dutch – Strong Case
    Maribel heeft in 10 minuten een hele appeltaart gegeten
    Maribel has in 10 minutes a whole apple-pie eaten
    ‘Maribel ate a whole apple pie in 10 minutes.’

d. Dutch – Weak Case
    Maribel heeft urenlang appeltaart gegeten
    Maribel has hours-long apple-pie eaten
    ‘Maribel ate apple pie for hours.’
Strong case assignment refers to the property of quantization; meaning that a strong case provides a strong quantified reading to the utterance, whereas, a weak case is underspecified with regard to the quantity property of the argument. Having established the theoretical frame, van Hout (1998) conducted a longitudinal and an experimental study. In the former she examined the production of light verb construction by 4 Dutch-speaking children aged 1;9 to 3;10, available on CHILDES. The findings suggested that light verb constructions appeared early on in the data set and the learners’ overall performance showed knowledge of complex predicate formation and event type composition. The main result of the study was that the lexical specification of the verbs entails eventuality, confirming the CHESS model predictions. Her experimental study on nonsense verbs tested 96 four, five, seven and eight year old children; 20 adult Dutch-speaking participants were also included for control purposes. The methodology involved short videotaped movies with one participant events and manipulated two semantic factors, telicity and agentivity, for the determination of unaccusative constructions. Both younger and older children were able to differentiate between intransitive constructions on the basis of telicity rather than agentivity.

Moreover, van Hout (2000b & 2007) reinvestigated transitivity in relation to telicity. 45 three, four and five year old children, along with 16 adult controls, were tested on the aspectual interpretation of four types of sentences about characters involved in telic and atelic events. The experimental conditions are exemplified in (104):

104. a. Intransitive
   Heeft de rode/witte muis gegeten?
   ‘Did the red/white mouse eat?’

b. Bare Transitive
   Heeft de rode/witte muis kaas gegeten?
   ‘Did the red/white mouse eat cheese?’

c. Full Transitive
   Heeft de rode/witte muis kaasje gegeten?
   ‘Did the red/white mouse eat his cheese?’

d. Particle Verb
   Heeft de rode/witte muis kaasje opgegeten?
‘Did the red/white mouse eat up his cheese?’

(van Hout 2000b: 269)

The data suggest that learners are unaware of the verb frame-event type association. They did not associate the transitive-intransitive alternation with the telic-atelic distinction. The only element identified as a telicity marker for children was the particle. Van Hout hints that transparent telicity markers will come first acquisitionally and indirect ones will be delayed. Additionally, she claims that the transitivity-telicity mapping may not be as straightforward as suggested in the literature.

The role of aspectual marking in transitive constructions has been explored in languages that show rich aspectual morphology, like Polish and Russian. Weist et al. (1991) tested 60 Polish-speaking children, aged 2;6 to 6;6, on the comprehension of aspect using a sentence-picture matching task. The pictures showed an ongoing and a completed situation and the sentences, describing the pictures, were marked either for perfective or imperfective aspect, with the test question starting with ‘which one shows…?’.

(105) exemplifies the conditions:

105. a. Dziewczynka rysowała kwiaty.
     girl draw-IMPERF-PAST flower
     ‘A/The girl was drawing a/the flower.’

b. Dziewczynka narysowała kwiaty.
     girl draw-PERF-PAST flower
     ‘A/The girl drew a/the flower.’

Weist et al. (1991) reported that Polish learners acquire the perfective-imperfective aspectual distinctions by the age of 2;6.

The same methodology with the addition of a distractor picture was used by Vinnitskaya and Wexler (2001). They examined the comprehension of Russian-speaking children, whom they divided into three groups of 12 participants; the age mean of the groups was 3, 5 and 6;6 respectively. Their experiment consisted of 8 picture sets for 4 transitive imperfective and 4 transitive perfective constructions of the following type:

106. Devočka čitala knigu.
     girl read-IMPERF-PAST book-ACC
‘A/the girl was reading a/the book.’ or ‘A/the girl read at a/the book.’

As with the Polish data by Weist et al. (1991), the aspectual distinctions appear to be set by the age of 3. Vinnitskaya and Wexler (2001) additionally examined the production of aspect in Russian. They provided the participants with pictures depicting an ongoing event, for example a bear eating an apple. The experimenter described the picture using imperfective aspect and then prompted the participant to complete a sentence starting with ‘Before...’ while presenting them with the completed version of the same event. Even though children used both aspectual types, they showed a vast overuse of the imperfective, which for the youngest children went as high up as 95%. They explained this pattern in the data as an indication that children are still unaware of the pragmatic implications of aspect.

A different experimental method that instead of pictures provides the whole event to the participants was Stoll’s (1998) study that used short video stimuli to test the comprehension of Russian. Similarly to the above experiments, the items provided ongoing and completed events. They were presented one at a time on a split screen and in the end simultaneously. Despite the difference in the experimental design, the results again showed that 3 year old Russian learners understand the aspectual semantics of perfective transitive verbs. On the divergence of aspectual forms, Gagarina (2004), based on the corpus data of 4 three year old Russian-speaking children, found that the distributional differences between perfective and imperfective aspect are to be attributed to the children’s strategy to learn aspectual forms in an item-based fashion.

Kazanina and Philips (2003) used an act-out task with 59 learners of Russian, aged 3-5;11. A puppet would act out three scenarios corresponding to a completed version of the act, an incomplete one and one where no action was performed. The experimenter would then use two where-questions with perfective or imperfective aspect, as shown in (107), and the task for the participant was to match the test question to one of the situations.

107. a. Gde obez’yanka sobirala gnomika?
   where the monkey assemble-IMPERF-PAST
   ‘Where was the monkey assembling a smurf?’

b. Gde obez’yanka sobrala gnomika?
   where the monkey assemble-PERF-PAST
‘Where did the monkey assemble a smurf?’

The data showed that perfective aspect was related to completed events by all children but the imperfective was not readily available for the incomplete interpretation, especially for the youngest children in the study. The performance of the youngest children suggests that they do not always understand aspect, leading Kazanina & Philips to propose that children fail to map imperfective aspect on counterfactual events.

Kazanina and Philips (2007) further retested the development of the imperfective. They examined three to six year old Russian-speaking children using four experiments. In the first experiment the participants were 25 children aged 2;10 to 6;9 and carried out an act-out truth-value judgment task that provided stories with completed and incomplete events for creation predicates. The test items were either perfective or imperfective. Once again, children demonstrated an adult-like performance with the pairing of perfective-completed events and a failure to associate the imperfective with incomplete events. The second experiment was of the same type, with the only difference being that creation predicates were substituted by change-of-state predicates. There were 41 participants aged 2;6 to 6;7. The results replicated those of the first experiment. Participants in the third experiment were 34, aged 3;2 to 6;9. This experiment was also a truth-value judgment task but the test items contained a while-clause, as shown in (108):

108. a. Poka malchik polival cvety, devochka vytirala stol
    while boy water-IMPERF-PAST flowers, girl clean-IMPERF-PAST table
    ‘While the boy was watering the flowers, the girl was cleaning the table.’

   b. Poka malchik polival cvety, devochka vyterla stol
    while boy water-IMPERF-PAST flowers, girl clean-PERF-PAST table
    ‘While the boy was watering the flowers, the girl cleaned (all of) the table.’

The change in item structure was surprisingly helpful for the children. The data showed that children of all ages could accurately accept the imperfective where required. In order to decide whether children were successful in the previous task due to the inclusion of a temporal modifier or the non-counterfactuality of the event, the fourth experiment tested precisely these two factors. There were 21 participants aged 3;3 to 6;9. The experimental design was the same as with the third experiment with the difference being that the event
was presented as counterfactual, meaning that the cleaning event of the main clause was completed but the moment of testing preceded the completion point. Once again the children correctly accepted the imperfective for the subpart of the counterfactual event.

Van Hout (2005 & 2008) also found that the semantics of perfective aspect are acquired earlier than imperfective aspect. She tested Dutch, Polish and Italian-speaking children. The Dutch children had a mean age of 3;2 (n=30), the Italian a mean age of 3;7 (n=17) and the Polish a mean age of 3;0 (n=35). The comprehension task consisted of short stories, each accompanied by a series of three pictures, the last one of which showed an empty slot where the final picture could be inserted. The experimenter told a story, for example, a castle-building one, to the participant and a puppet would provide the content of the last slot. The test sentences were the following:

109. a. Mickey heeft een kasteel gebouwd (Dutch – Present Perfect)
    mickey has a castle build-Participle
b. Mickey bouwde een kasteel (Dutch – Imperfect Past)
mickey build-IMPERF-PAST a castle
c. Mickey ha costruito un castello (Italian – Present Perfect)
mickey has build-Participle a castle
d. Mickey costruiva un castello (Italian – Imperfect Past)
mickey build-IMPERF-PAST a castle
e. Mickey zbudował zamek. (Polish – Perfective Past)
mickey build-PERF-PAST castle
f. Mickey budował zamek. (Polish – Perfective Past)
    Mickey build-IMPERF-PAST castle
(van Hout 2008: 1755-1756)

According to van Hout, all predicates were telic and transitive, consisting of a verb and a singular, quantized count noun phrase, for example, *build a castle, wash the dog, write a letter*. The interaction of aspect and telic predicates creates different entailments; the perfective entails completion, while the imperfective does not. Note that van Hout does not specify what makes the predicate telic and the verbal forms used are not exactly corresponding to each other (different tenses used for each language). The data showed that Dutch and Polish children acquire the completion entailment of Present Perfect and perfective
aspect respectively by the age of 3. The Italian learners, however, do not, which leads van Hout (2008) to suggest that the acquisition of aspect is not uniform across languages.

On completion entailments, Wagner (2002) tested 59 English-speaking children, aged 1;11 to 5;7, subdividing them into three age groups; two year old children (n=27), four year old children (n=20), and five year old children (n=12). She additionally included a control group of 16 adults. She employed four scenarios for the sentence-scene matching task with events having salient endpoints, as in roll a car to school, fill in a puzzle, empty out a cup and draw a face. Each event was presented in a completed and a half-completed version. The data showed that five year old children consistently matched the perfective sentence to the completed event exhibiting the perfective’s entailment of completion. The imperfective sentence, which lacks this entailment, however, was not consistently matched to any of the two versions. The results of Wagner’s study show that, contra previous studies, children remain largely ignorant towards aspectual distinctions up to the age of five. Wagner points to the fact that the process of mapping meanings onto morphemes is lengthier than it was originally expected.

Wagner (2001, 2006, 2009 & 2010a) further examined the role of aspect, telicity, transitivity and individuation of events in acquisition. Wagner (2006) investigated whether children use transitivity as a structural cue to infer telicity. She tested 32 English-speaking children, dividing them into two groups; one of three (aged 3;00-3;11) and another one of five year olds (aged 4;11 to 5;6). The experiment consisted of 10 animated movies depicting telic and atelic versions of transitive and intransitive constructions. The set of conditions is summarized in (110):

110. a. Transitive Telic
    The girl painted a flower.

b. Transitive Atelic
    The dog pushed the ball.

c. Intransitive Telic

For opposing findings on the acquisition of Italian see Lorusso (2007). Lorusso tested 50 Italian-speaking children aged 3 to 7 years old on the comprehension and production of aspect and found that children of all ages systematically attributed non-completed events to atelic verbs and completed events to telic ones.

With regard to transitive constructions, Barner et al. (2008) tested the role of mass-count NP distinctions with adult native speakers in English and found that NPs for punctual events are individuated whether they appear in mass or count syntax. On the parsing of mass-count nouns, also see Gillon et al. (1999), Proctor et al. (2004) and Barner and Snedeker (2005). On the mass-count differences in Hebrew adult and children data, see Hacohen (2006).

For a general discussion on the acquisition of semantic properties related to syntax see Kako and Wagner 2001, and Wagner 2010b.
The vase broke.

d. Intransitive Atelic

The vase moved.

The task assigned to the participants was to count the events. Both child groups successfully interpreted the telic and atelic situations regardless of the constructions they appeared in. They used a goal-based individuation criterion and children as young as three years old could reliably make the distinctions. A simplified version of the experiment was used with two year olds (n=16, aged 2;9 to 3;0), with participants pointing to events rather than counting. The data indicated a syntactic bias towards mapping transitive constructions to telic meanings.

In a more recent study, Wagner (2010a) examined again the role of transitivity with two more tasks. In the first task, she tested 34 English-speaking children aged 2;10 to 4;11 with a matching task for animated movies similar to Wagner (2006). Crucially, though, she added an explicit reference to result states. The target descriptions were either transitive or intransitive and the children were asked to make a judgment about each event. The results showed that children were more willing to accept a process event for an intransitive description and a result event for a transitive one, suggesting that syntactic differences lead children to isolate certain aspects of an event. The second experiment was a preferential looking task based on the materials of the first experiment. She conducted the experiment with 26 about two year old children (mean age 29.2 months). The data once more verified Wagner’s hypothesis that transitivity is used as a cue to telicity.

With regard to aspectual marking, acquisition studies suggested certain prototypical groupings of temporal-aspectual features: perfective-past and imperfective-present. Wagner (2009) examined the strength of these pairings and argues for continuity between the children’s and adults’ representations in the aspectual domain. In other words, for Wagner, children are not totally unaware of how aspect works and the differences in performance are of a quantitative nature. In order to validate her hypothesis, she tested 24 English-speaking children aged 3;3 to 5;5 and 20 adults. Her comprehension experiment employed picture stimuli and the items were 12, 4 per condition, as shown in (111):

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111.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Picture Content</th>
<th>Imperfective Utterance</th>
<th>Perfective Utterance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atelic</td>
<td>An agent engaged in an action or finished with it.</td>
<td>The boy was scribbling.</td>
<td>The boy scribbled.</td>
</tr>
<tr>
<td>Telic – Object Only</td>
<td>A result state of a completed or incomplete event with no people present.</td>
<td>Somebody was painting a flower.</td>
<td>Somebody painted a flower.</td>
</tr>
<tr>
<td>Telic – Object &amp; Agent</td>
<td>Result state and agent available for both types of events.</td>
<td>The woman was painting a flower.</td>
<td>The woman painted a flower.</td>
</tr>
</tbody>
</table>

The experimenter would alternate questions using perfective and imperfective aspect and the participant would pick the picture of the pair that is best described by the utterance. The data showed that children and adults find the prototypical combinations easier to comprehend. Moreover, the child data suggest that the presence of an agent facilitates their judgments. It should be noted, however, that the experimental design poses certain limitations. There is some confusion over the conditions set up, due to the fact that the term telicity is used quite loosely; for example, incomplete events fall under the telic condition category.

There is also evidence suggesting that the development of the interaction between telicity and particle use in transitive construction is set as early as the age of two. Schulz and Penner (2002) tested 24 German-speaking children aged 4;1 to 6;4 and 24 adult native speakers on their understanding of the particle verbs, such as *aufessen* (‘eat up’) and *austrinken* (‘drink up’). They used three picture-sequences illustrating an eating or drinking event along with a story. The experimenter would ask the children two types of yes/no questions; one with an intransitive construction and one with a particle verb/transitive construction. The data showed that children accepted the telic particle verbs referring to completed events, but rejected them in case of incomplete events.
They also accepted telic structures involving a VP with a quantized NP complement, like *den Apfel essen* (‘eat the apple’), but they performed at chance level when provided with an incomplete event. Overall, children performed adult-like in both types of verb constructions. Both children and adults treated the verbs with quantized NP complements ambiguously, while they unambiguously allowed particle verbs only to refer to completed situations suggesting that particle verbs are strong markers of telicity and easy to acquire.

Schulz et al. (2001 & 2002), Schulz and Wittek (2003) and Penner et al. (2003) also tested normally-developing children between 2;0 and 4;10 acquiring German as well as language-impaired children between 3;10 and 8;7 on their understanding of the telicity entailment of the particle verb *aufmachen* (‘to open’). They found that all groups accepted the particle verb to refer to events entailing the completion point. The data additionally indicated that normally developing children acquire the entailment properties of the particle verbs as early as at the age of two.

The telic and atelic interpretations of particle verbs in English and their L1 acquisition were investigated by Jeschull (2003 & 2007). Jeschull (2003) examined a corpus of 4 English-speaking children aged 1;6 and 3;8, from CHILDES. She measured the use of aspectual morphology and the mapping of (a)telicity. She found that children used perfective aspect with transitive verbs earlier than particle verbs. Meanwhile, imperfective aspect appeared earlier than perfective aspect with particle verbs. These data suggest that particle verbs, even though used to imply telic readings, do not attract perfective morphology. Jeschull (2007) tested, experimentally this time, 50 children divided into three- (n=12), four- (n=17), five- (n=12) and six- (n=9) year olds. The experiment involved eight stories presented via videos that involved two characters engaged to the same kind of events, such as a coke-drinking event; one of them would be finishing his bottle and the other would not. The experimental conditions were two; transitive verb construction or a particle verb construction, as shown in the test questions provided in (112):

112. a. Transitive Verb
    Who drank his coke?

b. Particle Verb
    Who drank his coke up?
Jeschull (2007) found that adults obligatorily interpreted as telic particle verbs but not transitive verbs. The children, however, differed. Even though, completion entailment interpretations appear more often with particle verbs over transitive ones for children, this difference is not statistically significant. The age of four appears in the data set as a turning point in acquisition but even up to the age of six, they do not develop the adult-like particle telicity.

Turning to the acquisition of Greek aspect, there is only a small number of studies; Delidaki and Varlokosta (2003), Tsimpili and Papadopoulou (2006), Tsimpili et al. (2007) and Tsimpili and Papadopoulou (2009). Delidaki and Varlokosta (2003) examined the comprehension of tense morphology in relation to lexical aspect. They tested 18 Greek-speaking children aged 2;7 to 4;0 using an act out task. They introduced an illustration of a road and a puppet would perform an event at three different locations along the road; initial, middle and final. The telic events were *htizo ena spiti* (‘build a house’), *adbiazo mia kupa* (‘empty out a cup’) and *zografizo ena prosopo* (‘draw a face’). The atelic events were *pezo me ena filo* (‘play with a friend’), *ksekurazomai* (‘rest’) and *agaliazo ena alojo* (‘hug a horse’). The test questions were asking about the location of an event describing the event with perfective or imperfective aspect. The data showed that the past and future tense use was problematic for the younger learners (2;7 to 3;1), while lexical aspect, which for Delidaki and Varlokosta is a term interchangeable with telicity, did not affect the tense morphology. They concluded that the acquisition of the aspectual characteristics of the verb is not related to the acquisition of tense.

Tsimpili and Papadopoulou (2006) investigated the interaction of viewpoint aspect and argument realization assigning the interpretative differences to the different derivational options available to each construction, as it was presented in detail in Section 2.4. Unlike other studies, Tsimpili & Papadopoulou provide a complete syntactic account that lies behind the experimental design. Thus, in order to test for object drop in transitive constructions, they manipulated viewpoint aspect (perfective vs. imperfective). They employed a sentence-completion task with 66 items, which included a temporal subordinating connective and a verb. 22 of these items were the critical items with optionally transitive verbs denoting activities. The examples of the items are provided in (113):

113. a. Imperfective Aspect

12 For the development of the aspectual morphology in Greek and in particular the differences found between sigmatic and non-sigmatic perfective past forms see Stavrakaki and Clahsen (2009).
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Kathos etrehe/etroje…
while run-IMPERF-PAST / eat-IMPERF-PAST
‘While he/she was running / eating …

b. Perfective Aspect
Afu etrekse/efaje…
aft er run-PERF-PAST / eat-PERF-PAST
‘After he/she ran / ate …

The experiment was conducted with 37 Greek-speaking children aged 10;6 to 11;6 and with 37 adult native speakers. The data verified their hypothesis and showed that in Greek overt DP objects are preferred with perfective aspect more than with the imperfective. Children differed from adults, however, with respect to the overall preference for transitive over intransitive constructions; the percentage of transitive uses for children was 27.68, whereas for adults it was 55.29%. Tsimpli and Papadopoulou attributed this difference to the availability of null cognate objects with perfective and imperfective verb forms. Thus, the difference in the object drop rate could be related to semantic/pragmatic considerations. The studies of Tsimpli et al. (2007) and Tsimpli and Papadopoulou (2009) concern motion verb constructions and we will refer to them in the subsequent section.

The acquisition studies reported in the present section demonstrate a disparity in their findings. They report dissimilar patterns in development, sometimes even for the same language, and different ages as the turning points in acquisition. The inconsistency in the data can be attributed to the methodological differences, the limited numbers of participants and the diversity in the encoding of aspect and telicity in each language. What appears to be commonly accepted is that tense and aspec tual properties do not necessarily go hand-in-hand in acquisition since the concept of time is shown to be developing independently.

3.3 Psycholinguistic Studies on Motion Verbs

The interaction of aspect and motion verb constructions is a largely understudied area in language acquisition research. As mentioned in Section 2.5, languages are generally classified into verb-framed ones (V-languages), that express manner of motion, and
satisfactory ones, that express change of location–path (S-languages). Following Bowerman (1985) and Levelt (1989), Slobin (2003) suggests that depending on whether a child is acquiring an S-language or a V-language, the child needs to pay attention to different semantic encodings that subsequently lead to the formation of preferences on the type of motion information they encode. Thus, for motion construction mental and linguistic representations merge to form a new cognitive ground for the build up of motion. The perception of motion events and the development of manner vs. path/goal bias in spatial language have been addressed in the work of Lakusta and Landau (2005), Rieger and Zheng (2007) and Papafragou et al. (2008).

The literature indicates that the expression of path emerges early even in the one- and two- word stage of children (see Bloom 1973 and Choi & Bowerman 1991, and Lakusta & Landau 2005 for an overview). Besides paths, children also know and differentiate between starting points and endpoints of paths. According to Clark (2002) by the age of 2;0 children use expressions about resultant states and know how to treat causal events and change of location events. Clark et al. (1995) showed that English-speaking children at the age of 1;0 mark reversals with general verbs such as ‘open’, followed by particles, such as ‘out’, and then the prefix ‘un’. Additionally, at the age of 2;6 to 3;0, children expand their use of expressions for notions such as source, that go beyond the physical and spatial motions of objects (see Clark & Carpenter 1989 & 1994).

Lakusta and Landau (2005) further investigated the goal-path bias with events for manner of motion, change of possession, change of state and attachment/detachment. They tested 10 English-speaking children aged 4;11 to 7;5 and 12 adult native speakers. Their first experiment employed 34 videotaped events; 18 manner of motion and 18 non-manner of motion events. The participant was asked to describe what happened in each occasion and was prompted to use a complete description of the event with reference to space (location, path, source etc.). The data showed that participants systematically included a goal-path but not a source reference. For the non-manner of motion events, this asymmetry held for both groups, while for the manner of motion events the asymmetry held only for the children. The authors conclude that children have a bias to linguistically encode goal-paths and not sources in a PP-complement for the verb. In the second experiment the verb to be used was provided by the experimenter to the participant. Once again, the results suggest that the bias to encode goals is robust. In order to see how younger children perform, they tested 12 children aged 3;5 to 4;4 using the same experiments. The data showed that even though younger children produced
fewer paths overall, they regularly included goal-paths and not source-paths in their utterances, similarly to older children and adults. Lakusta and Landau (2005) also summarize similar findings in other languages (28-31). Specifically, they report evidence from language acquisition that indicates that goal-paths are produced earlier than source-path terms (for Japanese see Clancy 1985 and for Hungarian see Pléh 1998). Moreover, Bowerman et al. (1995) and Bowerman (1996) reported that children tend to broadly overgeneralize spatial terms that describe separation but not those that describe joining, suggesting that spatial terms marking goal-paths are more finely differentiated than spatial terms marking source-paths (see Regier 1997 and Regier & Zheng 2003, reported in Lakusta & Landau 2005: 28).

Regier and Zheng (2007) investigated whether event endpoints are more privileged over event beginnings in language and perception. Despite the fact that their data come from adult grammars, it is useful to refer briefly to their findings since a possible perceptual asymmetry in motion event perception could enlighten our understanding of developmental data. The first experiment was conducted with 16 American/English native speakers. The experiment consisted of a set of eight video clips, each portraying a hand manipulating objects on a tabletop. Four of these clips involved a small Tupperware container and its lid. The other four video clips involved a toy bowl and a small shelf. Within each set of four, the two joining events differed in the resulting endpoint. Similarly, the two separating events in each set differed in the beginning of the event. At the beginning of all joining events, and at the end of all separating events, the figure object was on the tabletop, away from the ground object. Thus, discriminating two joining events required attention to endpoints, while discriminating two separating events required attention to event beginnings. Participants were shown pairs of videos and were asked whether they differed or not. In each pair, the two videos were either identical, or different but drawn from the same stimulus set (tupperware vs. shelf) and direction (joining vs. separating). The data showed that participants could discriminate the joining events more accurately than the separating events. They subsequently conducted the same experiment with the videos played backwards. Again the results suggested that people attend more intently to event endpoints. In order to examine whether this is a cognitive or a language bias, Regier and Zheng (2007) also tested 9 native speakers of Lebanese colloquial Arabic, 10 native speakers of Mandarin Chinese and 10 native speakers of American/English. Additionally, they extended their test items to 50 (25 joining events and 25 separating events). One
video was presented at a time and the participant provided a description for the event depicted. They performed comparisons both for the direction of the path (separating vs. joining) and for the type of language encoding of motion (V-language vs. S-language). The results suggested that “across all 3 languages, terms of joining are semantically narrower than terms of separating, consistent with [the] prediction that languages will tend to make finer grained semantic distinctions at event endpoints than at event beginnings” (Regier & Zheng 2007: 712).

The strength of a goal bias for V-languages and S-languages was addressed by Papafragou et al. (2008) through an eye-tracking study with adults. Papafragou et al. (2008) presuppose that language-specific semantic and syntactic requirements direct the online allocation of attention as speakers of different languages produce utterances. They tested 17 adult native speakers of English and 17 adult native speakers of Greek. The experiment included 12 short clip-art animations depicting motion events and 12 filler clips that were not pure motion events, like a woman knitting. The test items involved instrumental motions, such as skating or sailing, and the agents were animate. The event conditions were two; bounded and unbounded. In the bounded events, the agent always followed a predictable path, such that the initial heading was towards the spatial region occupied by the goal. In the unbounded events, the goal option was not available. The task for the participant was to describe the event. The researcher analyzed both the language and the eye-movement data. The verbal description results showed that speakers’ eyes rapidly focused on the event components that are typically encoded in their native language, generating significant cross-language differences even during the first second of motion onset. In particular, for bounded motion events, English speakers were much more likely to produce manner verbs than Greek speakers. For unbounded motion events, all speakers allocated their attention similarly regardless of the language they speak. The eye-movement data reflected this strong typological asymmetry with Greek speakers paying more attention to the path endpoint than English speakers did. This pattern was not attested, however, when the verbal description was not required. The findings suggest that event perception is affected by the perceiver’s native language only when linguistic forms are recruited to achieve a language-related task.

These typological differences of motion constructions (manner vs. path) appear to set early in acquisition. It is reported that they are in place as early as at 3 years of age (see Slobin 1996 & 2003, Naigles et al. 1998, Papafragou et al. 2002 & 2006, Allen et al. 2007, and Özyürek et al. 2008). The same finding is reported when novel verb
The First Language Acquisition of Aspect

constructions have been employed in the experimental design of studies on language development (Naigles & Terrazas 1998 and Papafragou & Selimis 2007).

The child data on manner vs. path motion constructions indicate that language-specific properties affect the development of these encodings. Papafragou et al. (2001) and Papafragou et al. (2006) examined the offline comprehension and production of motions with English-speaking and Greek-speaking children. Papafragou et al. (2001) tested 38 English-speaking children aged 4 to 6, 38 Greek-speaking children aged 4 to 7, 39 English-speaking children aged 10 to 12, 39 Greek-speaking children aged 9 to 12, 20 adult native speakers of English and 21 adult native speakers of Greek. They used a set of 6 drawings adapted from Mayer’s (1969) frog stories. During the first session, the participant was asked to describe the events depicted and during the second session to judge each picture by saying if it was the same or different from the one presented in the first session. The results showed that (a) for the description task, participants relied on their language-specific encodings, and (b) for the recognition task, no differences were found suggesting that manner and path are not treated differently by V-language and S-language speakers.

For the same hypothesis, Papafragou et al. (2006) tested 14 English-speaking children aged 7;5 to 10;0, 22 Greek-speaking children aged 7;2 to 9;2, 20 adult native speakers of English and 21 adult native speakers of Greek. They used a picture-book with 24 manner-path motion scenes and the participant was asked to describe the event. The results showed that Greek speakers adjusted their descriptions more than English speakers did to include manner information when it was not otherwise inferable. English speakers need not make such adjustments since manner was almost always available in the lexical specification of their motion verbs. On this language pair, Papafragou and Selimis (2007) examined if these patterns appear when speakers are provided with novel words. They tested 10 Greek-speaking children aged 4;1 to 5;10 years, 10 English-speaking children aged 4;7 to 5;8, 10 English-speaking and 12 Greek-speaking adults. The test items were 48 animated motion clips organized in 16 triads. Each triad consisted of a sample event and two variants. Sample events depicted an agent moving along a path in a certain manner and each of the variants presented a specific change to the original event. The task was presented on two laptop computers with each sample played twice, once on the screen on the left and once on the screen on the right. Then participants watched the two variants, one on each screen, and matched the sample to one of the variants. The data showed that language-specific lexicalization biases shape lexical learning. When
exposed to a new motion verb in an intransitive construction, the participants’ decision about its meaning was consistent with the way motion is lexicalized in their native language; English speakers interpreted it as a manner verb and Greek speakers as a path verb. In a similar experiment, Papafragou and Selimis (2007) examined the treatment of novel motion verbs in transitive constructions; that is both agent and theme were presented in the motion clips that involved direct physical causation. The results suggested that when selecting a verb to describe an event in which an Agent acts upon a Theme and causes it to undergo a change of location, English speakers were more likely than Greek speakers to use a verb implying manner and Greek speakers were more likely to use a verb construction that included a result component.

Lastly, Papafragou (2010) examined the cognitive-attentional bias in spatial representation and memory for 4-year old children though a preferential looking task and a language production one. The experimental design was similar to the design presented in Papafragou et al. (2008). The results showed that both adults and children remember object and relations better when they occur at the endpoint of motion event rather than at the beginning of it. The findings reported in the above studies show that there are lexical specific properties for motion verbs that children acquire early on. It is interesting to see, however, how they respond in cases where aspect and motion interact affecting their telic or atelic interpretation of the event, as in the study reported next.

Tsimpili et al. (2007) investigated the production of aspect for motion telic and atelic events. They tested 8 Greek-speaking children aged 6;8 to 7;2 and 10 adult native speakers. The experimental material consisted of 26 short videos, 16 of which were the critical items. These motion events were presented in two conditions; the telic and atelic one. In the telic condition, an entity was shown to perform a motion activity that led to a certain endpoint. In the atelic condition, the entity was performing a motion activity at a certain location. The data showed that 7 year old children do not perform adult-like in the mapping of telicity. Moreover, children overused the imperfective aspect indicating that children favor atelicity. According to Tsimpili et al. (2007), this finding verifies children’s preference for intransitive constructions over transitive ones reported in Tsimpili and Papadopoulou (2006).

The difficulties motion structures pose, however, are not limited to young children. Tsimpili and Papadopoulou (2009) re-investigated the possible interpretations available in Greek motion constructions through data from the adult grammar. Their
The experimental design lies on the possible readings for motions as they were formulated by Papadopoulou (1996). Consider (114):

114. Readings for Motion Verbs in Greek

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Telic</th>
<th>Atelic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Goal PP-complement</td>
<td>Locative PP-adjunct</td>
</tr>
<tr>
<td>Perfective</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Imperfective</td>
<td>X</td>
<td>✓</td>
</tr>
</tbody>
</table>

(modified from Tsimli & Papadopoulou 2009: 197)

Tsimli and Papadopoulou (2009) ran the comprehension experiment with 10 native speakers of Greek (mean age 22;1) and the production experiment with 10 native speakers of Greek (mean age 24;9). The sentence-picture matching task consisted of 46 items, 28 of which were critical. The conditions of the critical sentences are exemplified below:

115. a. Perfective + simple preposition
    To alogho etrekse sto tsirko.
    the horse run-PERF-PAST s-the circus
    ‘The horse ran in(to) the circus.’

b. Imperfective + simple preposition
    To alogho etrehe sto tsirko.
    the horse run-IMPERF-PAST s-the circus
    ‘The horse was running in(to) the circus.’

c. Perfective – complex preposition
    To alogho etrekse mesa sto tsirko.
    the horse run-PERF-PAST inside s-the circus
    ‘The horse ran in(to) the circus.’

d. Imperfective + complex preposition
    To alogo etrehe mesa sto tsirko.
    the horse run-IMPERF-PAST inside s-the circus
    ‘The horse was running in(to) the circus.’
The participants were given a picture-booklet which presented pictures in quartets and their task was to match the sentence they heard to one of them. The design of the production experiment was the same with the one reported in Tsimpli et al. (2007), earlier in this section. The results of the comprehension task illustrate that speakers rely on the aspectual marking of the verb to interpret motion events. Specifically, they associated perfective aspect with non-locative events and imperfective aspect with locative events. The type of preposition showed an effect only with imperfective VPs with complex prepositions increasing the preference for a locative reading. The production data suggested that perfective aspect is reserved for the description of telic motion events. Additionally, the production of complex propositions appeared to be slightly enhanced in the atelic condition. The Greek data, both from children and adults, suggest that the telic or atelic interpretation of a motion construction presents difficulties due to its interface nature. This is expected to be translated in a delay in its acquisition.

3.4 Summary

Section 3 introduced some of the acquisitional accounts available in the literature referring to the development of aspect. The psycholinguistic studies reported examined the order of acquisition of aspect and tense, the availability of prelinguistic semantic notions correlated to aspectuality and the relation between aspect and transitivity. Even though the findings do not appear uniform across languages, a considerable number of studies suggest that the age of 3 is a turning point in the acquisition of aspect, especially when a language provides clear telicity markers such as particles. Motion verb constructions, in contrast, appear to be a thorny region in acquisition with findings being quite inconclusive. Lastly, the area of Greek aspect in child language is quite understudied and telicity has not been addressed allowing an ample space for research.
4 Background Assumptions & Hypothesis

Telicity lies at the syntax-discourse interface and is determined by the interaction of different factors, that is (a) the aspectual class of the verb, (b) grammatical aspect and (c) the argument structure of the sentence (object properties, presence/absence of particles and other sentential elements such as adverbials and connectives), where factors (b) and (c) are language specific. The interaction of these factors offers information about the internal temporal organisation of an event and lead to a compositional understanding of aspectual meaning. Telicity is a by-product of the aspectual marking of VPs and, in line with Guéron’s proposal, it needs to satisfy certain interface conditions, as it is captured in (40) which is repeated here in (116):

116. At the interface between Syntax and Conceptual-Intentional component of mind, the situation the vP describes must be placed in the spatial expanse and in the time interval of the speaker’s world (or in the space-time world accessible to the speaker).

(Guéron 2008: 1817)

Telicity will not be treated as a lexical property of the verbs only; instead, we will assume an endpoint account for its analysis. Following Depraetere (2007), we adopt that a sentence receives a telic interpretation if the event is represented as having an endpoint beyond which the event cannot continue. The manifestations of the endpoint will be either syntactically or contextually provided, meaning that when a VP is potentially telic, the interface will determine its final status. The structures we will investigate are transitive activity and motion constructions of the following type:

117. a. Activity Verb \(\rightarrow\) Perfective/Imperfective Aspect + Object
To koritsi e\textit{fage} / et\textit{roge} ena milo.
the girl eat-PERF-PAST / eat-IMPERF-PAST an apple
‘The girl ate / was eating an apple.’
b. Motion Verb \(\rightarrow\) Perfective/Imperfective Aspect + PP
To agori e\textit{trekse} / et\textit{rehe} st\textit{in} kuzina.
the boy run-PERF-PAST/ run-IMPERF-PAST to/in | inside the kitchen
‘The boy ran to / was running inside the kitchen.’

Each structure includes an object DP or a PP as possible manifestations of the endpoint. As mentioned in earlier sections, the visibility of the endpoint may be established within the sentence and prior to pragmatic interpretation through lexical and grammatical means. Since perfectivity makes visible the endpoint of the event, the presence of the object serves to identify the endpoint with the completion of the event; that is the girl having eaten the whole apple in (117a). The imperfective aspect, on the other hand, does not make visible the endpoint of the event and leaves open the possibility of identifying the completion. With regard to imperfective aspect, we test only the progressive reading. It should be noted that in the case of motion constructions the preposition employed, *se*, is not biased towards a directional only interpretation allowing both a locative and goal interpretation for the sentence.

With regard to the syntactic representation of transitive activities and the interaction of aspect with overt/null objects, we follow Tsimpli and Papadopoulou (2006). The respective constructions are provided in (66) and (67) (see Section 2.4) and repeated in (118) and (119). The object of a perfective activity verb is merged in the specifier position of the TransP, while the object of an imperfective activity verb is merged in the lower VP. Movement of the direct object from the specifier position of the lower VP to SpecTransP is necessary for case reasons. The difference in the merging position of the direct objects leads to the telic or atelic interpretations of a construction depending on the type of grammatical aspect.

118. Activity [+PERF] with overt object
Activity [-PERF] with overt object

(Tsimli & Papadopoulou 2006: 1604)
With regard to the syntactic representation of motion constructions and the interaction of aspect with PPs, we follow Tsimpli and Papadopoulou (2009). The respective constructions are provided in (97) and (98) (see Section 2.6) and repeated in (120) and (121). In perfective motion VPs, the complement PP receives either a directional or a telic reading (goal), whereas, in imperfective motion VPs, the PP has a VP-adjunct status suggesting a locative interpretation. The syntax-discourse interface will finalize the status of the PP-Goal as the reached endpoint of the motion event.

120. Motion [+PERF] with PP-Goal

121. Motion [-PERF] with PP-Locative
Consequently, telicity can be unambiguously defined within the sentence with the combination of perfective aspect and a DP or a PP at the complement position. However, even when telicity is unambiguously defined within the sentence, this is the result of a compositional interpretation of the aspectual form and the quantized object or a PP-Goal. In a sense, we assume a syntactic account similar to the proposals put forward by Borer (2005) and Ramchand (2008) that allows the insertion of some information from the lexicon (argument structure information) along with the necessary checking from the syntax-discourse interface. How will these syntactic and interface properties be transferred in acquisition?

Due to its interface status, the complexity of telicity is expected to create a delay in acquisition, with grammatical aspect appearing early in development whereas telic/atelic interpretations turning adult-like quite late. We anticipate that our youngest participants will be able to produce aspectually marked utterances but the expression of telicity will be problematic especially for motion verb constructions. For the experimental study, in order to minimize the cognitive load, and subsequent task effects, we will provide the whole event to the participant so that the action is predictable and visibly reaching a goal, the endpoint. Moreover, considering the continuum of aspectual meanings that can be covered with the inclusion of sentential elements, such as adverbials, the temporal properties of the materials will be kept constant; that is the tense
will be past and the temporal property of boundedness will always be [+BOUNDED] for telic events and [-BOUNDED] for atelic events. In this way, telicity and atelicity appear to occupy the two ends of the aspectual continuum, goal-attainment in the former case and openendedness in the latter. The experimental study involves a comprehension experiment and a production experiment. In the comprehension experiment, we will manipulate the condition of aspect (perfective vs. imperfective) and we will measure the preferences of mapping on a telic or an atelic event. In the production experiment, we will manipulate the condition of telicity (telic vs. atelic) and we will measure the production of aspect and complements.
5 The Comprehension Study

The comprehension experiment examines the understanding of telicity in the grammar of young learners and adult native speakers of Greek on the basis of endpoint resolution and aspectual marking.

5.1 Predictions

The aim of the comprehension study is to investigate the role of the aspectual verb form (Perfective vs. Imperfective) and the nature of the complements (DPs vs. PPs) in the comprehension of activity and motion verbs by monolingual Greek children and adults. We adopt the notion that the acquisition of syntax precedes the acquisition of features that lie at the syntax-discourse interface. Consequently, the acquisition of the morphosyntax of aspect precedes the acquisition of telicity which is determined at the interface level. The expectations are that (a) activity verbs will precede motion verbs in acquisition as a result of the different complements they receive and (b) imperfective motion verbs will be acquired earlier than perfective ones due to the underspecification of telicity in the latter.

5.2 Participants

Three groups of monolingual learners\textsuperscript{13} of Greek participated in the study. There were 150 participants\textsuperscript{14} in total aged from 5 to 8 years old. The participants were recruited from a single primary school\textsuperscript{15} in Thessaloniki, Northern Greece. For each age group there were 50 participants. At the time of testing the 5-6 yrs old group had a mean age of 5;5 (Female: 25 & Male: 25), the 6-7 yrs old group a mean age of 6;4 (Female: 27 & Male: 23).

\textsuperscript{13} The parental consent for child-participants was provided with the help of the school’s headmaster, to whom I am deeply indebted for all his support.

\textsuperscript{14} 4 more participants were tested but their data are not reported due to the fact that they failed to complete the comprehension task.

\textsuperscript{15} I would like to thank Anatolia Elementary School for participating in this study and offering their help for the conduction of the experiments and the selection of information on the learners’ background.
23) and the 7-8 yrs old one a mean age of 7;4 (Female: 26 & Male: 24). All participants were typically developing learners of Greek and did not suffer from any language or mental disorder. Additionally, a group of 40 adult native speakers of Greek with a mean age of 36;5 (Female: 27 & Male: 13) was included for control purposes.

5.3 Materials

In order to determine the test items employed in the comprehension experiment, we conducted two pre-tasks; an acceptability judgment task for motion verbs (Section 5.3.1) and a verb frequency task for all test items (Section 5.3.2).

5.3.1 Pre-Task A: Acceptability Judgment Task

The acceptability judgment task aimed at defining the final set of motion verbs to be used in the main study. 128 adult monolingual speakers of Greek participated. The task consisted of 28 items; 14 test items (motion verbs) and 14 fillers. The following verbs were used in the test items set: *vuto* (‘dive’), *busulo* (‘crawl’), *kolibo* (‘swim’), *skarfalono* (‘climb up’), *strifogirizo* (‘turn around’), *sernome* (‘crawl’), *trebo* (‘run’), *peto* (‘fly’), *parapato* (‘stagger’), *perpato* (‘walk’), *pidho* (‘jump’), *pigeno* (‘go’), *horevo* (‘dance’), and *horopidho* (‘gambol’). The aim of the task was to examine whether there were preferred readings, either for a locative or a directional interpretation for each motion verb. The verbs were marked with perfective aspect and were followed by a PP complement with the preposition *se*. The proposition *se* is ambiguous and may be interpreted either as locative or directional. The resolution lies at the context provided in each case. The items were randomized and to avoid repetition effects two versions of the task were created so that the participants never encountered the same motion verb with both contexts implying either the locative or directional reading (see Appendix A). The number of syntactic constituents was preserved constant both in test and filler items. Examples of the two types of test items may be seen in (122) and (123) and an example of an ungrammatical filler in (124):

122. Locative Interpretation

To koritsi varethike tin kunai ke etrekse ston kipo
The girl got bored swinging and she ran in the garden.

‘The girl got bored swinging and she ran in the garden.’

123. Directional Interpretation

Ksehasa na paro efimeridha ke etreksa sto periptero
forget to get newspaper and run-PERF-PAST to-the kiosk

‘I forgot to get a newspaper and I ran to the kiosk.’

124. Filler

*Afu ipia ton kafe, o aderfos mu efages keik
after drink the coffee, the brother my eat-2nd-Sing cake

‘After I drank the coffee, my brother ate the cake.’

The participants were given a printed A4 sheet with the list of items and they were asked to indicate whether they considered the utterances to be acceptable or not in Greek. The preference for either interpretation was established when the item received an acceptability rate of 70% and up. The results are shown in Table 1:

<table>
<thead>
<tr>
<th>Locative</th>
<th>Directional</th>
<th>Both Interpretations Equally Preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>busulo (‘crawl’),</td>
<td>treho (‘run’),</td>
<td>perpato (‘walk’),</td>
</tr>
<tr>
<td>borevo (‘dance’),</td>
<td>pidho (‘jump’),</td>
<td>peto (‘fly’),</td>
</tr>
<tr>
<td>horopidho (‘gambol’),</td>
<td>pigeno (‘go’),</td>
<td>skarfolono (‘climb up’),</td>
</tr>
<tr>
<td>kolibo (‘swim’),</td>
<td>*ruto (‘dive’),</td>
<td></td>
</tr>
<tr>
<td>parapato (‘stagger’),</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sernome (‘crawl’),</td>
<td></td>
<td></td>
</tr>
<tr>
<td>strifogirizo (‘turn around’),</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Preferred Interpretations of Motion Verbs

On the basis of these findings 6 motion verbs were selected, 3 of them with a preference for a locative interpretation (horopidho (‘gambol’), sernome (‘crawl’), strifogirizo (‘turn around’)) and 3 of them with a preference for a directional interpretation (treho (‘run’), pidho (‘jump’), pigeno (‘go’)) so that the motion test items of the main study would be balanced out and there would be no overall effect towards one of the two interpretations. The reasons why these particular items were selected with each category are: (a) we
expected the children to be familiar with these verbs in their every day life and (b) we could demonstrate them easily in videos.

5.3.2 Pre-Task B: Verbs’ Frequency Task

The aim of the verbs’ frequency task was to establish that the final set of experimental items have approximately the same frequency. 70 adult monolingual speakers of Greek participated. The task consisted of 18 items, the experimental items of the main study (see details in Section 5.3.3). The participants were asked to mark on a scale of 1-5 the frequency of these verbs in Greek, with 1 indicating no use at all and 5 the most frequent items (see Appendix B). We measured the mean frequency per verb category, as shown in Table 2.

<table>
<thead>
<tr>
<th>Intransitive Verbs</th>
<th>Activity Verbs</th>
<th>Motion Verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.56 (SD: 1.16)</td>
<td>3.80 (SD: 1.11)</td>
<td>3.01 (SD: 1.25)</td>
</tr>
</tbody>
</table>

Table 2: Verbs’ Frequency Means

All verbs appear to be of relatively similar frequency as they were assumed by the native speakers to be falling in the ‘frequent’ category, with higher frequency for activity verbs and lower frequency for the motion ones. Additionally, we performed paired samples $t$-tests, which revealed differences between the means of intransitive, activity and motion verbs suggesting some diversity within the data per participant (intransitive vs. activity: $t(419)=3.109$, $p=.002$, intransitive vs. motion: $t(419)=6.389$, $p=.000$, activity vs. motion: $t(419)=10.647$, $p=.000$).

5.3.3 Experimental Items

The comprehension task consisted of 64 short video stimuli. For each verb, we constructed two videos, one presenting a telic/complete event and the other depicting an atelic/ongoing event. Each aspectual verb form [+/ - Perfective] was presented with the
same pair of videos. To avoid repetition effects two versions of the task were created so that the participants never saw the same pair of videos more than once in each session (see Appendix B). There were 18 target verbs (6 intransitive, 6 activity and 6 motion verbs) and 14 filler verbs. The following verbs were employed in intransitive constructions in the task: \textit{hamogelo} (‘smile’), \textit{kimame} (‘sleep’), \textit{kleo} (‘cry’), \textit{spao} (‘break’), \textit{kline} (‘close’) and \textit{pefto} (‘fall’). The activity verbs were \textit{zografizo} (‘paint’), \textit{dhiavazo} (‘read’), \textit{troo} (‘eat’), \textit{pino} (‘drink’), \textit{katharizo} (‘clean’) and \textit{ftiahno} (‘make’). The motion verbs were \textit{strifogirizo} (‘turn around’), \textit{sernome} (‘crawl’), \textit{treho} (‘run’), \textit{pidho} (‘jump’), \textit{pigeno} (‘go’) and \textit{horopidho} (‘gambol’). Note that the activity and motion categories fall under the activity category in Smith’s approach (1991/1997), with motions being a subclass of activities. Examples of each VP construction may be seen in (125), (126) and (127):

125. Intransitive VP

Unaccusative VP

a. Hthes i porta eklese.
yesterday the door close-PERF-PAST
‘Yesterday the door was closed.’
b. Hthes i porta eklise.
yesterday the door close-IMPERF-PAST
‘Yesterday the door was being closed.’

Unergative VP

c. Hthes to agori hamogelase.
yesterday the boy smile-PERF-PAST
‘Yesterday the boy smiled.’
d. Hthes to agori hamogecloue.
yesterday the boy smile-IMPERF-PAST
‘Yesterday the boy was smiling.’

126. Activity VP

a. Hthes to koritsi efage ena milo.
yesterday the girl eat-PERF-PAST an apple
‘Yesterday the girl ate an apple.’
b. Hthes to koritsi etroge ena milo.
yesterday the girl eat-IMPERF-PAST an apple
‘Yesterday the girl was eating an apple.’

127. Motion VP
   a. Hthes to agori etrekse stin kuzina.
      yesterday the boy run-PERF-PAST to/in the kitchen
      ‘Yesterday the boy ran to the kitchen.’
   b. Hthes to agori etrehe stin kuzina.
      yesterday the boy run-IMPERF-PAST inside the kitchen
      ‘Yesterday the boy was running in the kitchen.’

In (125), the intransitive constructions were of two types; either unaccusative or unergative. In (125a) and (125c), the perfective intransitive VPs are employed to refer to completed events (the door was closed and the boy smiled once), while, in (125b) and (125d), to refer to on-going events (the door was closed half way and the boy was smiling continuously). The intransitive constructions serve as a baseline condition so as to to establish that aspect is acquired independently to telicity. Note that complements are potential endpoints for our frame of analysis for telicity. Therefore, since overt complements are not provided in the surface syntax of intransitives, we will be able to see how aspect operates on its own. Moreover, potentially transitive verbs were avoided and only unaccusatives and unergatives were employed. However, due to the fact that they differ syntactically, unergatives have cognitive objects, we will further refer to their data individually. In (126a), the perfective activity VP is expected to be matched to a telic interpretation, that is a completed event where the goal has been accomplished (the whole apple has been consumed). In the case of the imperfective activity VP (126b), the utterance may only refer to an atelic event during which the goal has not been achieved (the apple remains uneaten). In (127a), the perfective motion VP can be interpreted either as telic or atelic. In order to receive a telic interpretation the PP needs to be interpreted as a goal (path+goal reading). The locative interpretation of the PP, on the other hand, will lead to an atelic reading of the sentence. In the case of the imperfective motion VP (127b), the interpretation of the PP may only be locative and it consequently leads to an overall atelic interpretation. Also note that the event/video suggesting a telic motion eventuality included both directional movement and goal attainment, in other words the endpoint was clearly provided to the participant. All items, both experimental
and fillers were introduced with the adverbial *hthes* (‘yesterday’) to establish past tense reference.

### 5.4 Procedure

The participants were shown both videos presenting the telic and atelic condition simultaneously and a recorded stimulus sentence followed. The stimulus sentence was morphologically marked either with perfective or imperfective aspect and the participants’ task was to match this utterance to one of the two events. The experiment was conducted with the use of a laptop computer with a 15.4" screen. The participants were given the following protocol before starting the experiment: A robot was introduced to each of the participants on the computer screen. He/she was told that this robot had been learning Greek and the previous day it was watching two kids doing several things. At the time of testing, the robot would describe what those kids were doing but it was not really sure how to use Greek accurately so it needed the participant’s help. The participant had to watch both videos carefully, listen to what the robot says and point to the video that is best described by the robot’s utterance.

### 5.5 Results

The data analysis consisted in counting the preferred matching of (im)perfective aspectual verb forms with a telic or atelic interpretation of the events. The data was subcategorized per verb type. The intransitive data are presented in Figure 1 to Figure 6 and the raw numbers in the following tables. With regard to target items, the mean percentages of aspect-telicity matching per age group are presented in Figure 7, Figure 8, Figure 9 and Figure 10 and the raw numbers in the subsequent tables. Two-way group-independence and one-way goodness-of-fit chi-square tests were performed to statistically support the preferred matchings.
5.5.1 Intransitive Constructions

First, the baseline condition of the experiment, that is the interpretation of aspectual meaning in the intransitive constructions, will be presented. The importance of the intransitive condition lies on the assumption that the aspectual meaning interpretation of intransitive constructions will not be problematic even for young learners since it does not relate to telicity. Telicity is compositionally determined by aspect and complement use that is DPs and PPs. In the intransitive constructions such elements are not syntactically overt and thus they may not be associated to endpoints which would facilitate the interpretation of an utterance as telic or atelic. Consequently, the interpretation of the aspectual marking of intransitives may be that of single completed events or of on-going ones.

Figure 1 presents the mean percentages of perfective aspect interpretation as completed and on-going per age group and Table 3 the corresponding raw numbers.

![Figure 1: Perfective Intransitive VPs](image)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Perfective-Completed Matching</th>
<th>Perfective-On-going Matching</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N (Total Responses) %</td>
<td>Raw N (Total Responses) %</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>89 (/150) 59.33</td>
<td>61 (/150) 40.66</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>100 (/150) 66.66</td>
<td>50 (/150) 33.33</td>
</tr>
</tbody>
</table>
The data reported in Figure 1 and Table 3 show that all age groups prefer to match perfective intransitive verb forms to completed events. This observation was statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: \( \chi^2 = 5.227, df= 1, p= .022 \); 6-7 yrs old: \( \chi^2 = 16.667, df= 1, p= .000 \); 7-8 yrs old: \( \chi^2 = 66.667, df= 1, p= .000 \)).

Figure 2 presents the mean percentages of imperfective aspect interpretation as completed and on-going per age group and Table 4 the corresponding raw numbers.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Imperfective-On-going Matching</th>
<th>Imperfective-Completed Matching</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N (/Total Responses)</td>
<td>%</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>97 (/150)</td>
<td>64.66</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>109 (/150)</td>
<td>72.66</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>131 (/150)</td>
<td>87.33</td>
</tr>
<tr>
<td>Adults</td>
<td>119 (/120)</td>
<td>99.16</td>
</tr>
</tbody>
</table>

Table 4: Imperfective Intransitive VPs
The data reported in Figure 2 and Table 4 show that all age groups match imperfective intransitive verb forms to on-going events. This observation was statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2= 12.907$, df= 1, p= .000; 6-7 yrs old: $\chi^2= 30.827$, df= 1, p= .000; 7-8 yrs old: $\chi^2= 83.627$, df= 1, p= .000; Adults: $\chi^2= 116.033$, df= 1, p= .000).

Two-way group-independence chi-square tests were performed to determine whether intransitive VPs are treated likewise by all age groups. Even though the groups' preferences appear to be uniform, the between-group comparisons (Table 5) indicate that the 5-6 yrs old and the 6-7 yrs old groups perceive intransitive VPs similarly for both aspectual conditions. The oldest child group, on the other hand, is differentiated by getting closer to the adult-like preferences. Lastly, all three child groups do not fully attain the adults' performance. The adults have associated the perfective aspect with telicity and the imperfective with atelic events, whereas children have the same association but not to the same extent.

<table>
<thead>
<tr>
<th>Group Comparisons</th>
<th>Perfective Aspect</th>
<th>Imperfective Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old vs. 6-7 yrs old</td>
<td>$\chi^2=1.730$, df= 1, p= .188</td>
<td>$\chi^2=2.231$, df= 1, p= .135</td>
</tr>
<tr>
<td>5-6 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2= 21.126$, df= 1, p= .000</td>
<td>$\chi^2=21.126$, df= 1, p= .000</td>
</tr>
<tr>
<td>6-7 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2=11.111$, df= 1, p= .001</td>
<td>$\chi^2=10.083$, df= 1, p= .001</td>
</tr>
<tr>
<td>5-6 yrs old vs. Adults</td>
<td>$\chi^2=63.043$, df= 1, p= .000</td>
<td>$\chi^2=49.594$, df= 1, p= .000</td>
</tr>
<tr>
<td>6-7 yrs old vs. Adults</td>
<td>$\chi^2=49.091$, df= 1, p= .000</td>
<td>$\chi^2=35.641$, df= 1, p= .000</td>
</tr>
<tr>
<td>7-8 yrs old vs. Adults</td>
<td>$\chi^2=22.041$, df= 1, p= .000</td>
<td>$\chi^2=13.611$, df= 1, p= .000</td>
</tr>
</tbody>
</table>

Table 5: Between Group Comparisons for Intransitive VPs

To better investigate the interpretation of (im)perfective verbs in intransitive structures the interpretational preferences of unaccusative and unergative constructions were compared. Figure 3 and Figure 4 present the mean percentages of aspect interpretation of unaccusative verbs, while Figure 5 and Figure 6 present those of unergative verbs per age group with their corresponding raw numbers provided in Table 6, Table 7, Table 9 and Table 10.

Figure 3 presents the mean percentages of perfective unaccusative VPs’ interpretation as completed and on-going per age group and Table 6 the corresponding raw numbers.
The data reported in Figure 3 and Table 6 show that all age groups prefer to match perfective unaccusative verb forms to completed events. This finding was statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2 = 34.680$, df= 1, p= .000; 6-7 yrs old: $\chi^2 = 56.333$, df= 1, p= .000). Moreover, a ceiling effect is observed both to the oldest child group and adults.

Figure 4 presents the mean percentages of imperfective unaccusative verbs’ interpretation as completed and on-going per age group and Table 7 the corresponding raw numbers.
The data reported in Figure 4 and Table 7 show that only the 7-8 yrs old group and adults prefer to match imperfective unaccusatives to on-going events, while the other two groups appear to be undecided. This observation was statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: \( \chi^2 = .120, df= 1, p = .729 \); 6-7 yrs old: \( \chi^2 = 1.080, df= 1, p = .299 \); 7-8 yrs old: \( \chi^2 = 18.253, df= 1, p = .000 \); Adults: \( \chi^2 = 56.067, df= 1, p = .000 \)).

Two-way group-independence chi-square tests were performed to determine whether unaccusative verbs were treated likewise by all age groups. The groups' overall preferences to interpret perfective unaccusative verbs as telic are indeed very strongly represented in the data, but still these preferences are differentiated enough in the individual age groups to show development, as seen in Table 8. In the between-child-
group comparisons, both in the perfective and imperfective aspect conditions, the 5-6 yrs old and the 6-7 yrs old groups are shown to perceive unaccusatives in the same way. On the other hand, the 7-8 yrs old children illustrate a clearly adult-like performance (ceiling effect) with perfective but not with imperfective aspect, where their performance is similar to that of the other two child groups.

<table>
<thead>
<tr>
<th>Group Comparisons</th>
<th>Unaccusative VPs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Perfective Aspect</td>
<td>Imperfective Aspect</td>
</tr>
<tr>
<td>5-6 yrs old vs. 6-7 yrs old</td>
<td>$\chi^2=3.251$, df= 1, p= .071</td>
<td>$\chi^2=.962$, df= 1, p= .327</td>
</tr>
<tr>
<td>5-6 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2=13.043$, df= 1, p= .000</td>
<td>$\chi^2=11.244$, df= 1, p= .001</td>
</tr>
<tr>
<td>6-7 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2=5.172$, df= 1, p= .023</td>
<td>$\chi^2=5.769$, df= 1, p= .016</td>
</tr>
<tr>
<td>5-6 yrs old vs. Adults</td>
<td>$\chi^2=10.537$, df= 1, p= .001</td>
<td>$\chi^2=40.502$, df= 1, p= .000</td>
</tr>
<tr>
<td>6-7 yrs old vs. Adults</td>
<td>$\chi^2=4.154$, df= 1, p= .042</td>
<td>$\chi^2=31.704$, df= 1, p= .000</td>
</tr>
<tr>
<td>7-8 yrs old vs. Adults</td>
<td>$\chi^2=14.794$, df= 1, p= .000</td>
<td></td>
</tr>
</tbody>
</table>

Table 8: Between Group Comparisons for Unaccusative VPs

Figure 5 illustrates the mean percentages of completed vs. on-going interpretations for perfective unergative verbs per age group. Table 9 presents the corresponding raw numbers.

Figure 5: Perfective Unergative VPs
Table 9: Perfective Unergative VPs

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Raw N (/Total Responses)</th>
<th>Raw N (/Total Responses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td>26 (/75)</td>
<td>34.66</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>30 (/75)</td>
<td>40</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>50 (/75)</td>
<td>66.66</td>
</tr>
<tr>
<td>Adults</td>
<td>60 (/60)</td>
<td>100</td>
</tr>
</tbody>
</table>

The findings reported in Figure 5 and Table 9 show that in the case of perfective unergative constructions the picture is diverse compared to the unaccusative ones. The 5-6 yrs old group appears to prefer matching the perfective verbs to ongoing events ($\chi^2=7.053$, df= 1, p= .008), while the 6-7 yrs old group shows no preference for either interpretation, even though their preferences remain in the same direction as those of the 5-6 yrs old group ($\chi^2=3.000$, df= 1, p= .083). The oldest child group, however, as well as the adults, prefer to match perfective unergative verb forms to completed events (7-8 yrs old: $\chi^2=8.333$, df= 1, p= .004).

Figure 6 presents the mean percentages of imperfective unergative VPs’ interpretation as completed and ongoing per age group and Table 10 the corresponding raw numbers.

Figure 6: Imperfective Unergative VPs

<table>
<thead>
<tr>
<th>Groups</th>
<th>Imperfective-On-going</th>
<th>Imperfective-Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The data reported in Figure 6 and Table 10 show that all age groups, that is both children and adults strongly prefer to match imperfective unergative VPs to on-going events. This observation was statistically supported by one-way-goodness-of-fit chi-square tests for all within group comparisons (5-6 yrs old: $\chi^2 = 29.453$, df= 1, $p= .000$; 6-7 yrs old: $\chi^2 = 46.413$, df= 1, $p= .000$).

Two-way group-independence chi-square tests were performed to determine whether intransitive VPs are treated likewise by all age groups. In Table 11, the comparisons for unergative VPs show a similar developmental pattern as the one shown for unaccusative VPs (see Table 8) since the two youngest child groups’ preferences are parallel. The 7-8 yrs old group is differentiated from both younger child groups without attaining, however, adult-like performance in the perfective condition.

<table>
<thead>
<tr>
<th>Group Comparisons</th>
<th>Unergative VPs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Perfective Aspect</td>
</tr>
<tr>
<td>5-6 yrs old vs. 6-7 yrs old</td>
<td>$\chi^2=.456$, df= 1, $p= .500$</td>
</tr>
<tr>
<td>5-6 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2=15.363$, df= 1, $p= .000$</td>
</tr>
<tr>
<td>6-7 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2=10.714$, df= 1, $p= .001$</td>
</tr>
<tr>
<td>5-6 yrs old vs. Adults</td>
<td>$\chi^2=61.535$, df= 1, $p= .000$</td>
</tr>
<tr>
<td>6-7 yrs old vs. Adults</td>
<td>$\chi^2=54.000$, df= 1, $p= .000$</td>
</tr>
<tr>
<td>7-8 yrs old vs. Adults</td>
<td>$\chi^2=24.545$, df= 1, $p= .000$</td>
</tr>
</tbody>
</table>

Table 11: Between Group Comparisons for Unergative VPs

Notice, however, that the within-group unaccusative vs. unergative comparisons per aspectual form demonstrate that the two types of verbs are distinguished by all child
groups but not by the adult native speakers, showing the young learners’ sensitivity to the lexical load and syntactic behaviour by each verb type (see Table 12). The data from the adult native speakers, on the other hand, indicate that the aspectual marking appears to override the lexical properties of the verbs, leading to the matching of perfective verb forms to completed events and imperfective verbs to on-going events.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Perfective Aspect</th>
<th>Imperfective Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unaccusative vs. Unergative</td>
<td>Unaccusative vs. Unergative</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>$\chi^2=37.825$, df= 1, p= .000</td>
<td>$\chi^2=18.236$, df= 1, p= .000</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>$\chi^2=48.000$, df= 1, p= .000</td>
<td>$\chi^2=20.978$, df= 1, p= .000</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>$\chi^2=30.000$, df= 1, p= .000</td>
<td>$\chi^2=21.756$, df= 1, p= .000</td>
</tr>
<tr>
<td>Adults</td>
<td></td>
<td>$\chi^2=1.008$, df= 1, p= .315</td>
</tr>
</tbody>
</table>

Table 12: Between Intransitive Constructions Comparisons (Unaccusatives vs. Unergatives)

Overall, we see that aspectual marking appears to interact with the boundedness of the event. Children, in particular, appear to be more sensitive to the lexical specification of the verbs and lexicon information for them interacts with aspect. The adults, on the other hand, seem to interpret aspect uniformly across intransitives with grammatical aspect overriding the lexical specification of verbs. It could be hypothesized that the acquisition of verbs demands attention to individual lexical characteristics that interact with aspect. To examine the role of endpoints in the telic or atelic interpretation of aspectually marked VPs, we turn to the data provided by the activity and motion test items.

5.5.2 Activity Constructions

Figure 7 presents the mean percentages of perfective activity verbs’ interpretation as telic or atelic per age group. The corresponding raw numbers are reported in Table 13.
The data reported in Figure 7 and Table 13 show that all age groups, that is both children and adults, prefer to match telic events to perfective activity verb forms. This observation was statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2 = 5.227$, df= 1, p= .022; 6-7 yrs old: $\chi^2 = 77.76$, df= 1, p= .000; 7-8 yrs old: $\chi^2 = 138.24$, df= 1, p= .000).

Figure 8 presents the mean percentages of imperfective activity verbs’ interpretation as telic and atelic per age group and Table 14 the corresponding raw numbers.
The data reported in Figure 8 and Table 14 suggest that all age groups choose to match atelic events to imperfective activity verb forms. This observation was statistically supported by one-way goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2 = 6.827$, df = 1, $p = .009$; 6-7 yrs old: $\chi^2 = 32.667$, df = 1, $p = .000$; 7-8 yrs old: $\chi^2 = 134.427$, df = 1, $p = .000$).

In addition, two-way group-independence chi-square tests were performed to determine whether activity verbs were treated likewise by all age groups. The comparisons presented in Table 15 show that the 5-6 and 6-7 yrs old groups are differentiated both from each other and from the rest of the groups. The oldest child group, however, is found to have attained the required adult-like preferences in both aspect conditions. The data suggest that the acquisition of the interpretation of perfective and imperfective activity verbs is completed by the age of 7-8.
### Group Comparisons

#### Activity Verbs

<table>
<thead>
<tr>
<th>Group Comparisons</th>
<th>Perfective Aspect</th>
<th>Imperfective Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old vs. 6-7 yrs old</td>
<td>$\chi^2 = 26.852, df= 1, p=.000$</td>
<td>$\chi^2 = 5.442, df= 1, p=.020$</td>
</tr>
<tr>
<td>5-6 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2 = 66.817, df= 1, p=.000$</td>
<td>$\chi^2 = 60.780, df= 1, p=.000$</td>
</tr>
<tr>
<td>6-7 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2 = 14.674, df= 1, p=.000$</td>
<td>$\chi^2 = 34.517, df= 1, p=.000$</td>
</tr>
<tr>
<td>5-6 yrs old vs. Adults</td>
<td>$\chi^2 = 63.043, df= 1, p=.000$</td>
<td>$\chi^2 = 109.810, df= 1, p=.000$</td>
</tr>
<tr>
<td>6-7 yrs old vs. Adults</td>
<td>$\chi^2 = 18.217, df= 1, p=.000$</td>
<td>$\chi^2 = 37.565, df= 1, p=.000$</td>
</tr>
<tr>
<td>7-8 yrs old vs. Adults</td>
<td>$\chi^2 = 2.427, df= 1, p=.119$</td>
<td>$\chi^2 = 3.248, df= 1, p=.072$</td>
</tr>
</tbody>
</table>

**Table 15: Between Group Comparisons for Activity Verbs**

#### 5.5.3 Motion Constructions

Moving on to motion verbs, Figure 9 presents the mean percentages and Table 16 the corresponding raw numbers of the groups’ (a)telic interpretations of perfective verbs.

**Figure 9: Perfective Motion Verbs**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Raw N (/Total Responses)</th>
<th>%</th>
<th>Raw N (/Total Responses)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td>55 (/150)</td>
<td>36.6</td>
<td>95 (/150)</td>
<td>63.4</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>89 (/150)</td>
<td>59.3</td>
<td>61 (/150)</td>
<td>40.7</td>
</tr>
</tbody>
</table>
The data reported in Figure 9 and Table 16 are different from those for activity verbs in the same conditions. In particular, perfective motion verbs appear to be problematic for young children, whereas they are clearly related to telic motion events for the older groups. The two oldest child groups perform similarly to the adult group in linking perfective aspect and PPs with the directional interpretation (6-7 yrs old: $\chi^2= 5.227$, df= 1, $p= .022$; 7-8 yrs old: $\chi^2= 96.00$, df= 1, $p= .000$; adults: $\chi^2= 104.533$, df= 1, $p= .000$). The 5-6 yrs old group, however, prefers to match perfective verbs with atelic motion events (5-6 yrs old: $\chi^2= 10.667$, df= 1, $p= .001$).

Figure 10 presents the mean percentages of imperfective motion verbs’ interpretation as telic and atelic per age group and Table 17 the corresponding raw numbers.

**Table 16: Perfective Motion Verbs**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Perfective Motion Verbs</th>
<th>5-6 yrs old</th>
<th>6-7 yrs old</th>
<th>7-8 yrs old</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N (Total Responses)</td>
<td>135 (150)</td>
<td>90 (150)</td>
<td>15 (150)</td>
<td>10 (120)</td>
</tr>
</tbody>
</table>

**Figure 10: Imperfective Motion Verbs**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Imperfective-Atelic Matching</th>
<th>Imperfective-Telic Matching</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N (/ Total Responses)</td>
<td>Raw N (/ Total Responses)</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>103 (150) 68.6 %</td>
<td>47 (150) 31.4 %</td>
</tr>
</tbody>
</table>
Lastly, the data reported in Figure 10 and Table 17 show that all age groups match atelic events to imperfective motion verb forms. This observation was statistically supported by one-way goodness-of-fit chi-square tests (5-6 yrs old: \( \chi^2 = 20.907, \) df= 1, p= .000; 6-7 yrs old: \( \chi^2 = 56.427, \) df= 1, p= .000; 7-8 yrs old: \( \chi^2 = 116.160, \) df= 1, p=.000). These findings indicate that the imperfective was strongly associated with the atelic interpretation of motion verbs, thus, the locative interpretation of the PP.

With regard to the developmental steps of aspect with motion verbs, two-way group-independence chi-square tests were performed to determine whether motion verbs are treated likewise by all age groups. Table 18 shows that all between-group comparisons for both aspectual conditions are statistically significant indicating that the interpretation of aspect for constructions with motion verbs for young learners remains non-adult like.

<table>
<thead>
<tr>
<th>Group Comparisons</th>
<th>Perfective Aspect</th>
<th>Imperfective Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old vs. 6-7 yrs old</td>
<td>( \chi^2 = 15.438, ) df= 1, p= .000</td>
<td>( \chi^2 = 5.710, ) df= 1, p= .017</td>
</tr>
<tr>
<td>5-6 yrs old vs. 7-8 yrs old</td>
<td>( \chi^2 = 91.866, ) df= 1, p= .000</td>
<td>( \chi^2 = 31.704, ) df= 1, p= .000</td>
</tr>
<tr>
<td>6-7 yrs old vs. 7-8 yrs old</td>
<td>( \chi^2 = 37.289, ) df= 1, p= .000</td>
<td>( \chi^2 = 12.053, ) df= 1, p= .001</td>
</tr>
<tr>
<td>5-6 yrs old vs. Adults</td>
<td>( \chi^2 = 103.349, ) df= 1, p= .000</td>
<td>( \chi^2 = 133.222, ) df= 1, p= .000</td>
</tr>
<tr>
<td>6-7 yrs old vs. Adults</td>
<td>( \chi^2 = 50.835, ) df= 1, p= .000</td>
<td>( \chi^2 = 25.992, ) df= 1, p= .000</td>
</tr>
<tr>
<td>7-8 yrs old vs. Adults</td>
<td>( \chi^2 = 4.529, ) df= 1, p=.033</td>
<td>( \chi^2 = 7.448, ) df= 1, p=.006</td>
</tr>
</tbody>
</table>

Table 18: Between Group Comparisons for Motion Verbs

These findings on the developmental steps of telicity for activity and motion verbs are in accordance with the predictions stated in 5.1, since the acquisition of activity verbs is shown to precede that of motion verbs and imperfective verbs are interpreted in an adult-like fashion earlier than perfective verbs.
To further examine whether activity and motion verbs are treated as different types of constructions with respect to the comprehension of aspect, two-way group-independence chi-square tests were performed, as shown in Table 19.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Perfective Aspect</th>
<th>Imperfective Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Activity vs. Motion Verbs</td>
<td>Activity vs. Motion Verbs</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>$\chi^2 = 15.438$, df = 1, $p = .000$</td>
<td>$\chi^2 = 2.101$, df = 1, $p = .147$</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>$\chi^2 = 26.852$, df = 1, $p = .000$</td>
<td>$\chi^2 = 2.277$, df = 1, $p = .131$</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>$\chi^2 = 5.511$, df = 1, $p = .004$</td>
<td>$\chi^2 = 2.010$, df = 1, $p = .159$</td>
</tr>
<tr>
<td>Adults</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 19: Between Verb Type Comparisons

In the between verb type comparisons, the child data show that (a) the interpretation of perfective activity verbs as telic is more strongly preferred than that of perfective motion ones for all child groups leading to significantly different responses per verb type; and (b) in the imperfective condition no statistically significant difference is found for any group suggesting that the comprehension of imperfective aspect as atelic overrides the syntactic properties of activity and motion verbs. The adult data in the between-verb-type comparisons present a ceiling effect clearly indicating that aspect controls their preferred readings of (a)telicity.

5.6 Summary

The comprehension results show that (a) even the youngest children show sensitivity to both activity and motion verbs, (b) activity verbs with a DP complement precede motion verbs in development and (c) even though both the adult controls and the oldest children seem to rely on the same criteria for the (a)telic interpretation of an event, that is the presence of an endpoint, adults do not present statistically significant results when comparing activity verbs with a DP complement to motion verbs with a PP complement; in other words, adults easily associate PP-Goals to endpoints of telic situations, a preference that remains problematic for children up to the age of 8.
6 The Production Study

The production experiment examines the expression of telicity by young learners and adult native speakers of Greek in relation to aspectual marking and complement use as endpoint marking.

6.1 Predictions

The aim of the production study is to investigate the role of the aspectual verb forms (Perfective vs. Imperfective) and the function of the complements (DPs vs. PPs) in the production of activity and motion verbs by monolingual Greek children and adults. The expectations are that (a) aspectual marking will precede in acquisition overt complement use, (b) activity verbs will be acquired earlier than motion verbs as a result of the different complements they receive and (c) the joint use of perfective aspect and overt DPs and PPs in the encoding of telicity in Greek will pose difficulties even to older learners due to the fact that it is not controlled by syntactic means alone but by the syntax-discourse interface as well.

6.2 Participants

Five groups of Greek language acquirers participated in the study. There were 250 participants in total aged from 5 to 10 years old. The participants were recruited from a single primary school as in the comprehension experiment. For each age group there were 50 participants. At the time of testing the 5-6 yrs old group had a mean age of 5;5 (Female: 21 & Male: 29), the 6-7 yrs old group a mean age of 6;5 (Female: 23 & Male: 27), the 7-8 yrs old one a mean age of 7;5 (Female: 26 & Male: 24), the 8-9 yrs old group a mean age of 8;6 (Female: 26 & Male: 24) and the 9-10 yrs old group a mean age of 9;3 (Female: 26 & Male: 24). All participants were typically developing learners of Greek and

---

16 Even though we tested children up to the age of 8 in the comprehension experiment, for the production task we had to test children up to the age of 10 to find data close to the adult performance.

17 2 more participants were tested but their data are not reported due to the fact that they failed to complete the production task.
did not suffer from any language or mental disorder. Additionally, a group of 40 adult native speakers of Greek with a mean age of 36.7 (Female: 27 & Male: 13) was included for control purposes.

6.3 Materials

The materials designed for the comprehension task were used for the production task as well. The production task consisted of 64 short video stimuli. For each verb, we used two videos, one presenting a telic/complete event and the other depicting an atelic/ongoing event, as in the comprehension task. To avoid repetition effects two versions of the task were created with 32 video stimuli each, so that the participants never saw the same verb-event/video more than one time in each session (see Appendix B for the list of items).

6.4 Procedure

The experiment was conducted with the use of a laptop computer with a 15.4" screen. The participants were shown one video at a time presenting either the telic or atelic condition and a test question followed. The test question was not morphologically marked with aspect, due to the fact that the verb *kano* (‘do’) is isomorphic in perfective and imperfective aspect in Greek. The test question also included a time adverbial to indicate past reference (128):

128. ti ekane hthes to pedhi?
    what do-PAST yesterday the-NOM child
    ‘What did the child do yesterday?’

The task for the participant was to describe the event. All participants had conducted the comprehension task two months earlier. They were, consequently, familiarized with the materials and, thus, no additional protocol was provided for the production task. For older children that participated in the study for the first time, the protocol was provided and they were familiarized with the verbs employed in the experiment.
6.5 Filtering Data

For the data analysis of the production experiment we filtered out utterances on the basis of two criteria: (a) lexical choice and (b) tense marking. Utterances that were not lexically related to the verb-target and/or were not morphological marked as past were excluded from the final data-set for analysis. Section 6.5.1 presents the filtering of the data on the criterion of lexical choice. Section 6.5.2 presents the filtering of the data on the criterion of tense marking and Section 6.5.3 the finalized data-set per condition.

6.5.1 Lexical Choice

Starting with the criterion of lexical choice, the utterances were categorized into five lexical groupings: (i) match, when the participant used the target verb, (ii) equivalent, when the participant used a verb with similar lexical content and syntactic function, (iii) light verb construction, when a light verb form of a similar lexical content was used, (iv) periphrasis, when the targeted lexical item was substituted by a periphrasis and (v) irrelevant, when the participant failed to produce an utterance that was in any way related to the intended verb/event presented in the video. The utterances that were characterized as match or equivalent were the ones to be included in the final data-set for analysis. In particular, the verbs that were accepted as equivalent were *gelo* (‘laugh’) in place of *hamogelo* (‘smile’), *bromatizo* (‘colour’) in place of *zografizo* (‘paint’), *skupizo* (‘wipe’) in place of *ka
t	hariz	o* (‘clean’), *pidho* (‘jump’) in place of *horopidho* (‘gambol’), *perpato* (‘walk’) in place of *pigeno* (‘go’), *kiljeme* (‘welter’) in place of *sernome* (‘crawl’) and *girizo* (‘turn’) in place of *strifogirizo* (‘turn around’). Figure 11 to Figure 16 and Table 20 to Table 31 present the percentages and raw numbers of the lexical choice sub-groupings per verb type (intransitive, activity and motion) and per event type (completed/telic and on-going/atelic) for each age group.

Figure 11 along with Table 20 and Table 21 illustrate the distribution of utterances in the completed condition for intransitive verbs.
Figure 11: Lexical Choice: Intransitive Completed Events

Table 20: Lexical Choice: Intransitive Completed Events (Raw Numbers)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Total Responses</th>
<th>Match</th>
<th>Equivalent</th>
<th>Light Verb</th>
<th>Periphrasis</th>
<th>Irrelevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td>150</td>
<td>109</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>38</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>150</td>
<td>104</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>150</td>
<td>115</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>34</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>150</td>
<td>126</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>150</td>
<td>134</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Adults</td>
<td>120</td>
<td>98</td>
<td>8</td>
<td>3</td>
<td>0</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 20: Lexical Choice: Intransitive Completed Events (Raw Numbers)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Match</th>
<th>Equivalent</th>
<th>Light Verb</th>
<th>Periphrasis</th>
<th>Irrelevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td>72.66</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>25.33</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>69.33</td>
<td>2</td>
<td>0.66</td>
<td>1.33</td>
<td>26.66</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>76.66</td>
<td>0</td>
<td>0</td>
<td>0.66</td>
<td>22.66</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>84</td>
<td>3.33</td>
<td>0.66</td>
<td>1.33</td>
<td>10.66</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>89.33</td>
<td>4.66</td>
<td>0.66</td>
<td>1.33</td>
<td>4</td>
</tr>
<tr>
<td>Adults</td>
<td>81.66</td>
<td>6.66</td>
<td>2.5</td>
<td>0</td>
<td>9.16</td>
</tr>
</tbody>
</table>
Table 21: Lexical Choice: Intransitive Completed Events (%)

Figure 12 along with Table 22 and Table 23 illustrate the distribution of utterances in the on-going condition for intransitive verbs.

Figure 12: Lexical Choice: Intransitive On-Going Events

<table>
<thead>
<tr>
<th>Groups</th>
<th>Lexical Choice</th>
<th>Total Responses</th>
<th>Match</th>
<th>Equivalent</th>
<th>Light Verb</th>
<th>Periphrasis</th>
<th>Irrelevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td></td>
<td>150</td>
<td>79</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>61</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td></td>
<td>150</td>
<td>114</td>
<td>8</td>
<td>3</td>
<td>2</td>
<td>23</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td></td>
<td>150</td>
<td>117</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>26</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td></td>
<td>150</td>
<td>124</td>
<td>12</td>
<td>1</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td></td>
<td>150</td>
<td>136</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Adults</td>
<td></td>
<td>120</td>
<td>95</td>
<td>11</td>
<td>9</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 22: Lexical Choice: Intransitive On-Going Events (Raw Numbers)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Lexical Choice %</th>
<th>Match</th>
<th>Equivalent</th>
<th>Light Verb</th>
<th>Periphrasis</th>
<th>Irrelevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td></td>
<td>52.66</td>
<td>1.33</td>
<td>4.66</td>
<td>0.66</td>
<td>40.66</td>
</tr>
</tbody>
</table>
### Table 23: Lexical Choice: Intransitive On-Going Events (%)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Match</th>
<th>Equivalent</th>
<th>Light Verb</th>
<th>Periphrasis</th>
<th>Irrelevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-7 yrs old</td>
<td>5.33</td>
<td>2</td>
<td>1.33</td>
<td>15.33</td>
<td></td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>1.33</td>
<td>2.66</td>
<td>0.66</td>
<td>17.33</td>
<td></td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>8</td>
<td>0.66</td>
<td>2.66</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>6.66</td>
<td>0</td>
<td>0</td>
<td>2.66</td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>9.16</td>
<td>7.5</td>
<td>0</td>
<td>4.16</td>
<td></td>
</tr>
</tbody>
</table>

Figure 13 along with Table 24 and Table 25 demonstrate the distribution of utterances in the telic condition for activity verbs.

### Table 24: Lexical Choice: Activity Telic Events (Raw Numbers)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Total Responses</th>
<th>Match</th>
<th>Equivalent</th>
<th>Light Verb</th>
<th>Periphrasis</th>
<th>Irrelevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td>150</td>
<td>118</td>
<td>13</td>
<td>7</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>150</td>
<td>122</td>
<td>18</td>
<td>5</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>150</td>
<td>128</td>
<td>12</td>
<td>7</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>150</td>
<td>128</td>
<td>13</td>
<td>7</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>150</td>
<td>137</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Adults</td>
<td>120</td>
<td>108</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

### Figure 13: Lexical Choice: Activity Telic Events

![Figure 13: Lexical Choice: Activity Telic Events](image-url)
The Production Study

<table>
<thead>
<tr>
<th>Groups</th>
<th>Lexical Choice %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Match</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>78.66</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>81.33</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>85.33</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>85.33</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>91.33</td>
</tr>
<tr>
<td>Adults</td>
<td>90</td>
</tr>
</tbody>
</table>

Table 25: Lexical Choice: Activity Telic Events (%)

Figure 14 along with Table 26 and Table 27 demonstrate the distribution of utterances in the atelic condition for activity verbs.

Figure 14: Lexical Choice: Activity Atelic Events

<table>
<thead>
<tr>
<th>Groups</th>
<th>Total Responses</th>
<th>Match</th>
<th>Equivalent</th>
<th>Light Verb</th>
<th>Periphrasis</th>
<th>Irrelevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td>150</td>
<td>113</td>
<td>26</td>
<td>4</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>150</td>
<td>116</td>
<td>22</td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>150</td>
<td>122</td>
<td>15</td>
<td>7</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>
Table 26: Lexical Choice: Activity Atelic Events (Raw Numbers)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Match</th>
<th>Equivalent</th>
<th>Light Verb</th>
<th>Periphrasis</th>
<th>Irrelevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td>75.33</td>
<td>17.33</td>
<td>2.66</td>
<td>0</td>
<td>4.66</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>77.33</td>
<td>14.66</td>
<td>3.33</td>
<td>0.66</td>
<td>4</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>81.33</td>
<td>10</td>
<td>4.66</td>
<td>0.66</td>
<td>3.33</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>86.66</td>
<td>8.66</td>
<td>3.33</td>
<td>0.66</td>
<td>0.66</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>90.66</td>
<td>9.33</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Adults</td>
<td>86.66</td>
<td>8.33</td>
<td>1.66</td>
<td>2.5</td>
<td>0.83</td>
</tr>
</tbody>
</table>

Table 27: Lexical Choice: Activity Atelic Events (%)

Figure 15 along with Table 28 and Table 29 illustrate the distribution of utterances in the telic condition for motion verb constructions showing a rise in the number of equivalent lexical items compared to activity verb constructions.
Table 28: Lexical Choice: Motion Telic Events (Raw Numbers)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Total Responses</th>
<th>Match</th>
<th>Equivalent</th>
<th>Light Verb</th>
<th>Periphrasis</th>
<th>Irrelevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td>150</td>
<td>77</td>
<td>39</td>
<td>9</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>150</td>
<td>79</td>
<td>40</td>
<td>16</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>150</td>
<td>75</td>
<td>46</td>
<td>16</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>150</td>
<td>85</td>
<td>42</td>
<td>7</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>150</td>
<td>110</td>
<td>28</td>
<td>10</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Adults</td>
<td>120</td>
<td>61</td>
<td>39</td>
<td>5</td>
<td>0</td>
<td>15</td>
</tr>
</tbody>
</table>

Table 29: Lexical Choice: Motion Telic Events (%)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Match</th>
<th>Equivalent</th>
<th>Light Verb</th>
<th>Periphrasis</th>
<th>Irrelevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td>51.33</td>
<td>26</td>
<td>6</td>
<td>3.33</td>
<td>13.33</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>52.66</td>
<td>26.66</td>
<td>10.66</td>
<td>0.66</td>
<td>9.33</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>50</td>
<td>30.66</td>
<td>10.66</td>
<td>0.66</td>
<td>8</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>56.66</td>
<td>28</td>
<td>4.66</td>
<td>1.33</td>
<td>9.33</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>73.33</td>
<td>18.66</td>
<td>6.66</td>
<td>0</td>
<td>1.33</td>
</tr>
<tr>
<td>Adults</td>
<td>50.83</td>
<td>32.5</td>
<td>4.16</td>
<td>0</td>
<td>12.5</td>
</tr>
</tbody>
</table>

Figure 16 along with Table 30 and Table 31 illustrate the distribution of utterances in the atelic condition for motion verb constructions showing again a rise in the number of equivalent lexical items compared to activity verb constructions as in the atelic condition.
Figure 16: Lexical Choice: Motion Atelic Events

Table 30: Lexical Choice: Motion Atelic Events (Raw Numbers)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Total Responses</th>
<th>Match</th>
<th>Equivalent</th>
<th>Light Verb</th>
<th>Periphrasis</th>
<th>Irrelevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td>150</td>
<td>60</td>
<td>58</td>
<td>9</td>
<td>2</td>
<td>21</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>150</td>
<td>66</td>
<td>58</td>
<td>6</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>150</td>
<td>67</td>
<td>61</td>
<td>7</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>150</td>
<td>76</td>
<td>58</td>
<td>9</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>150</td>
<td>94</td>
<td>51</td>
<td>4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Adults</td>
<td>120</td>
<td>58</td>
<td>49</td>
<td>2</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 30: Lexical Choice: Motion Atelic Events (Raw Numbers)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Match</th>
<th>Equivalent</th>
<th>Light Verb</th>
<th>Periphrasis</th>
<th>Irrelevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td>40</td>
<td>38.66</td>
<td>6</td>
<td>1.33</td>
<td>14</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>44</td>
<td>38.66</td>
<td>4</td>
<td>6</td>
<td>7.33</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>44.66</td>
<td>40.66</td>
<td>4.66</td>
<td>2.66</td>
<td>7.33</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>50.66</td>
<td>38.66</td>
<td>6</td>
<td>2</td>
<td>2.66</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>62.66</td>
<td>34</td>
<td>2.66</td>
<td>0</td>
<td>0.66</td>
</tr>
<tr>
<td>Adults</td>
<td>48.33</td>
<td>40.83</td>
<td>1.66</td>
<td>0.83</td>
<td>8.33</td>
</tr>
</tbody>
</table>
Table 31: Lexical Choice: Motion Atelic Events (%)

In reference to the adult data, it should be noted that the availability of a larger lexicon led to an extensive use of other equivalent lexical entries. Children, on the other hand, appear to be more reserved with regard to their lexical choices.

6.5.2 Tense Marking

Turning to the criterion of tense marking, utterances that were lexically related to the verb-target (match/equivalent ones) but were not morphological marked as past were excluded from the final data-set for analysis. Figure 17 to Figure 22 and Table 32 to Table 37 present the percentages and raw numbers of the past and present tense marked utterances per verb type (intransitive, activity and motion) and per event type (completed/telic and on-going/atelic) for each age group.

Figure 17 and Table 32 show the distribution of utterances into past and present marked ones in the completed condition for intransitive verbs.

![Figure 17: Tense Marking: Intransitive Completed Events](image-url)
Figure 18 and Table 33 show the distribution of utterances into past and present marked ones in the on-going condition for intransitive verbs.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Past</th>
<th>Present</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>(/Total Responses)</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>73 (/81)</td>
<td>90.12</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>106 (122)</td>
<td>86.88</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>107 (/119)</td>
<td>89.92</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>135 (/136)</td>
<td>99.26</td>
</tr>
</tbody>
</table>

Table 32: Tense Marking: Intransitive Completed Events
The Production Study

<table>
<thead>
<tr>
<th>Groups</th>
<th>Past</th>
<th>Present</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>(/Total Responses)</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>126 (/131)</td>
<td>96.18</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>115 (/140)</td>
<td>82.14</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>126 (/140)</td>
<td>90</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>140 (/141)</td>
<td>99.29</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>149 (/150)</td>
<td>99.33</td>
</tr>
<tr>
<td>Adults</td>
<td>112 (/113)</td>
<td>99.12</td>
</tr>
</tbody>
</table>

Table 34: Tense Marking: Activity Telic Events
Figure 20 and Table 35 show the distribution of utterances into past and present marked ones in the atelic condition for activity verb constructions.

![Figure 20: Tense Marking: Activity Atelic Events](image)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Tense Choice</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Past</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Raw N (/Total Responses)</td>
<td>%</td>
<td>Raw N (/Total Responses)</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>134 (/139)</td>
<td>96.4</td>
<td>5 (/139)</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>111 (/138)</td>
<td>80.43</td>
<td>27 (/138)</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>95 (/137)</td>
<td>69.34</td>
<td>42 (/137)</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>142 (/143)</td>
<td>99.3</td>
<td>1 (/143)</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>150 (/150)</td>
<td>100</td>
<td>0 (/150)</td>
</tr>
<tr>
<td>Adults</td>
<td>112 (/114)</td>
<td>98.25</td>
<td>2 (/114)</td>
</tr>
</tbody>
</table>

Table 35: Tense Marking: Activity Atelic Events

Figure 21 and Table 36 show the distribution of utterances into past and present marked ones in the telic condition for motion verb constructions.
Figure 21: Tense Marking: Motion Telic Events

![Graph showing distribution of utterances into past and present marked ones in the atelic condition for motion verb constructions.]

<table>
<thead>
<tr>
<th>Groups</th>
<th>Tense Choice</th>
<th>Past</th>
<th>Present</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N (Total Responses)</td>
<td>%</td>
<td>Raw N (Total Responses)</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>107 (/116)</td>
<td>92.24</td>
<td>9 (/116)</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>104 (/119)</td>
<td>87.39</td>
<td>15 (/119)</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>104 (/121)</td>
<td>85.95</td>
<td>17 (/121)</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>127 (/127)</td>
<td>100</td>
<td>0 (/127)</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>138 (/138)</td>
<td>100</td>
<td>0 (/138)</td>
</tr>
<tr>
<td>Adults</td>
<td>100 (/100)</td>
<td>100</td>
<td>0 (/100)</td>
</tr>
</tbody>
</table>

Table 36: Tense Marking: Motion Telic Events

Figure 22 and Table 37 show the distribution of utterances into past and present marked ones in the atelic condition for motion verb constructions.
Figure 22: Tense Marking: Motion Atelic Events

<table>
<thead>
<tr>
<th>Groups</th>
<th>Past</th>
<th>Present</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N (/%Total Responses)</td>
<td>%</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>105 (/118)</td>
<td>88.98</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>89 (/124)</td>
<td>71.77</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>92 (/128)</td>
<td>71.88</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>129 (/134)</td>
<td>96.27</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>145 (/145)</td>
<td>100</td>
</tr>
<tr>
<td>Adults</td>
<td>107 (/107)</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 37: Tense Marking: Motion Atelic Events

6.5.3 Finalized Data-Set

For the data analysis of the production experiment we filtered out utterances on the basis of lexical choice and tense marking, as we saw in the two previous sections. The finalized data set comprises utterances that have the targeted lexical content and were provided in a past tense form. Figure 23 to Figure 28 and Table 38 to Table 43 provide an overview of the targeted utterances per verb type (intransitive, activity and motion) and per event type (completed/telic and on-going/atelic) for each age group.
Figure 23 along with Table 38 illustrate the final distribution of utterances in target and non-target ones in the completed condition for intransitive verbs.

**Figure 23: Final Data-Set: Intransitive Completed Events**

![Bar chart showing the distribution of target and non-target utterances across different age groups.]

<table>
<thead>
<tr>
<th>Groups</th>
<th>Target Responses</th>
<th>Non-Target Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N (Total Responses)</td>
<td>%</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>109 (/150)</td>
<td>72.66</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>104 (/150)</td>
<td>69.33</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>109 (/150)</td>
<td>72.66</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>126 (/150)</td>
<td>84</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>140 (/150)</td>
<td>93.33</td>
</tr>
<tr>
<td>Adults</td>
<td>106 (/120)</td>
<td>88.33</td>
</tr>
</tbody>
</table>

**Table 38: Final Data-Set: Intransitive Completed Events**

Figure 24 along with Table 39 illustrate the final distribution of utterances in target and non-target ones in the on-going condition for intransitive verbs.
Figure 24: Final Data-Set: Intransitive On-Going Events

![Graph showing the distribution of utterances in target and non-target ones in the telic condition for activity verbs.]

<table>
<thead>
<tr>
<th>Groups</th>
<th>Target Responses</th>
<th>Non-Target Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N (%/Total Responses)</td>
<td>Raw N (%/Total Responses)</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>73 (/150) 48.66</td>
<td>77 (/150) 51.33</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>106 (/150) 70.66</td>
<td>44 (/150) 29.33</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>107 (/150) 71.33</td>
<td>43 (/150) 28.66</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>135 (/150) 90</td>
<td>15 (/150) 10</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>145 (/150) 96.66</td>
<td>5 (/150) 3.33</td>
</tr>
<tr>
<td>Adults</td>
<td>106 (/120) 88.33</td>
<td>14 (/120) 11.66</td>
</tr>
</tbody>
</table>

Table 39: Final Data-Set: Intransitive On-Going Events

Figure 25 along with Table 40 illustrate the final distribution of utterances in target and non-target ones in the telic condition for activity verbs.
Figure 25: Final Data-Set: Activity Telic Events

![Bar chart showing the final distribution of utterances in target and non-target ones in the atelic condition for activity verbs.]

<table>
<thead>
<tr>
<th>Groups</th>
<th>Target Responses</th>
<th>Non-Target Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>(/Total Responses)</td>
<td>%</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>126 (/150)</td>
<td>84</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>115 (/150)</td>
<td>76.66</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>126 (/150)</td>
<td>84</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>140 (/150)</td>
<td>93.33</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>149 (/150)</td>
<td>99.33</td>
</tr>
<tr>
<td>Adults</td>
<td>112 (/120)</td>
<td>93.33</td>
</tr>
</tbody>
</table>

Table 40: Final Data-Set: Activity Telic Events

Figure 26 along with Table 41 illustrate the final distribution of utterances in target and non-target ones in the atelic condition for activity verbs.
Figure 26: Final Data-Set: Activity Atelic Events

![Bar chart showing the distribution of utterances in target and non-target groups for different age groups.]

<table>
<thead>
<tr>
<th>Groups</th>
<th>Target Responses</th>
<th>Non-Target Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>(/Total Responses)</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>134 (/150)</td>
<td>89.33</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>111 (/150)</td>
<td>74</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>95 (/150)</td>
<td>63.33</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>142 (/150)</td>
<td>94.66</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>150 (/150)</td>
<td>100</td>
</tr>
<tr>
<td>Adults</td>
<td>112 (/120)</td>
<td>93.33</td>
</tr>
</tbody>
</table>

Table 41: Final Data-Set: Activity Atelic Events

Figure 27 along with Table 42 illustrate the final distribution of utterances in target and non-target ones in the telic condition for motion verbs.
Figure 27: Final Data-Set: Motion Telic Events

![Bar chart showing final data distribution for motion verbs across different age groups.]

Table 42: Final Data-Set: Motion Telic Events

<table>
<thead>
<tr>
<th>Groups</th>
<th>Target Responses</th>
<th>Non-Target Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N (% Total)</td>
<td>Raw N (% Total)</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>107 (71.33)</td>
<td>43 (28.66)</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>104 (69.33)</td>
<td>46 (30.66)</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>104 (69.33)</td>
<td>46 (30.66)</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>127 (84.66)</td>
<td>23 (15.33)</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>138 (92)</td>
<td>12 (8)</td>
</tr>
<tr>
<td>Adults</td>
<td>100 (83.33)</td>
<td>20 (16.66)</td>
</tr>
</tbody>
</table>

Figure 28 along with Table 43 illustrate the final distribution of utterances in target and non-target ones in the atelic condition for motion verbs.
Figure 28: Final Data-Set: Motion Atelic Events

Table 43: Final Data-Set: Motion Atelic events

<table>
<thead>
<tr>
<th>Groups</th>
<th>Target Responses</th>
<th>Non-Target Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N (Total)</td>
<td>%</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>105 (/150)</td>
<td>70</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>89 (/150)</td>
<td>59.33</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>92 (/150)</td>
<td>61.33</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>129 (/150)</td>
<td>86</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>145 (/150)</td>
<td>96.66</td>
</tr>
<tr>
<td>Adults</td>
<td>107 (/120)</td>
<td>89.16</td>
</tr>
</tbody>
</table>

6.6 Results

In Section 6.6, on the basis of the target responses provided by the finalized data set, we examine the use of aspect and complements. Section 6.6.1 presents the baseline condition examining the use of aspect for intransitive verbs to determine the status of aspectual marking for each age group regardless of telicity and endpoint marking. Section 6.6.2 details the aspectual marking of activity verbs in describing telic and atelic events. Section 6.6.3 demonstrates the aspectual marking of motion verbs in describing telic and
Section 6.6.4 summarizes the major findings on the use of aspect by learners and adults. Sections 6.6.5 and 6.6.6 lay out the overall use of complements for activity and motion VPs respectively and, lastly, Sections 6.6.7 and 6.6.8 show the joint use of perfective and imperfective aspect with overt and null complements in describing (a)telicity.

6.6.1 Aspectual Marking: Intransitive Verbs

In order to examine the role of the event type (completed vs. on-going) in the aspectual marking of intransitive verb constructions we performed two-way group-independence chi-square tests. The comparisons show that the event type the participants were provided with does not affect their aspectual choices (5-6 yrs old: $\chi^2=1.881$, df= 1, $p=.170$; 6-7 yrs old: $\chi^2=.670$, df= 1, $p=.413$; 7-8 yrs old: $\chi^2=.003$, df= 1, $p=.953$; 8-9 yrs old: $\chi^2=.640$, df= 1, $p=.424$; 9-10 yrs old: $\chi^2=1.193$, df= 1, $p=.275$; Adults: $\chi^2=.023$, df= 1, $p=.879$).

Figure 29 and Table 44 present the percentages and raw numbers of the aspectual choice for intransitives of each age group when the participants were shown a completed event.

![Figure 29: Aspectual Marking: Intransitive Completed Events](image)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Perfective</th>
<th>Imperfective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N</td>
<td>%</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 44: Aspectual Marking: Intransitive Completed Events

<table>
<thead>
<tr>
<th>Group</th>
<th>Responses</th>
<th>Responses</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td>75 (/109)</td>
<td>68.81</td>
<td>34 (/109)</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>76 (/104)</td>
<td>73.08</td>
<td>28 (/104)</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>76 (/109)</td>
<td>69.72</td>
<td>33 (/109)</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>78 (/126)</td>
<td>61.90</td>
<td>48 (/126)</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>89 (/140)</td>
<td>63.57</td>
<td>51 (/140)</td>
</tr>
<tr>
<td>Adults</td>
<td>76 (/106)</td>
<td>71.70</td>
<td>30 (/106)</td>
</tr>
</tbody>
</table>

The data reported in Figure 29 and Table 44 show that all age groups prefer to use perfective intransitive verb forms to describe completed events. This observation was statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: χ²=15.422, df= 1, p=.000; 6-7 yrs old: χ²=22.154, df= 1, p=.000; 7-8 yrs old: χ²=16.963, df= 1, p=.000; 8-9 yrs old: χ²=7.143, df= 1, p=.008; 9-10 yrs old: χ²=10.314, df= 1, p=.001; Adults: χ²=19.962, df= 1, p=.000).

Figure 30 and Table 45 present the percentages and raw numbers of the aspectual choice for intransitives of each age group when the participants were shown an on-going event.
The data reported in Figure 30 and Table 45 show that there is some variability on the preferences of each group. Perfective aspect is significantly preferred in describing on-going events for intransitive verbs by adults and 6 to 8 yrs old children. The youngest child group along with the 8-9 yrs old and 9-10 yrs old ones, however, appear undetermined on selecting either aspectual form as the one-way-goodness-of-fit chi-square tests show (5-6 yrs old: $\chi^2=2.315$, df= 1, p=.128; 6-7 yrs old: $\chi^2=13.623$, df= 1, p=.000; 7-8 yrs old: $\chi^2=17.280$, df= 1, p=.000; 8-9 yrs old: $\chi^2=2.674$, df= 1, p=.102; 9-10 yrs old: $\chi^2=3.041$, df= 1, p=.081; Adults: $\chi^2=18.264$, df= 1, p=.000).

Further two-way group-independence chi-square tests were performed to determine whether events referring to intransitive verbs were indeed treated likewise by all age groups. As seen in Table 46, the between group comparisons show a uniform attitude towards the description of completed and on-going events with a minor exception of the 8-9 and 9-10 yrs old groups when compared to adults.

<table>
<thead>
<tr>
<th>Group Comparisons</th>
<th>Completed Event * Aspect</th>
<th>On-Going event * Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old * 6-7 yrs old</td>
<td>$\chi^2=.470$, df= 1, p=.493</td>
<td>$\chi^2=1.531$, df= 1, p=.216</td>
</tr>
<tr>
<td>5-6 yrs old * 7-8 yrs old</td>
<td>$\chi^2=.022$, df= 1, p=.883</td>
<td>$\chi^2=2.406$, df= 1, p=.121</td>
</tr>
<tr>
<td>5-6 yrs old * 8-9 yrs old</td>
<td>$\chi^2=1.226$, df= 1, p=.268</td>
<td>$\chi^2=.068$, df= 1, p=.795</td>
</tr>
<tr>
<td>5-6 yrs old * 9-10 yrs old</td>
<td>$\chi^2=.747$, df= 1, p=.387</td>
<td>$\chi^2=.055$, df= 1, p=.815</td>
</tr>
<tr>
<td>6-7 yrs old * 7-8 yrs old</td>
<td>$\chi^2=.293$, df= 1, p=.589</td>
<td>$\chi^2=.117$, df= 1, p=.732</td>
</tr>
<tr>
<td>6-7 yrs old * 8-9 yrs old</td>
<td>$\chi^2=3.214$, df= 1, p=.073</td>
<td>$\chi^2=2.982$, df= 1, p=.084</td>
</tr>
<tr>
<td>6-7 yrs old * 9-10 yrs old</td>
<td>$\chi^2=2.463$, df= 1, p=.117</td>
<td>$\chi^2=2.959$, df= 1, p=.085</td>
</tr>
<tr>
<td>7-8 yrs old * 8-9 yrs old</td>
<td>$\chi^2=1.582$, df= 1, p=.208</td>
<td>$\chi^2=4.356$, df= 1, p=.037</td>
</tr>
<tr>
<td>7-8 yrs old * 9-10 yrs old</td>
<td>$\chi^2=1.038$, df= 1, p=.308</td>
<td>$\chi^2=4.348$, df= 1, p=.037</td>
</tr>
</tbody>
</table>
The data, both in the completed and on-going conditions, show a general preference for perfective aspect across eventuality suggesting that it can possibly be a default choice for the intransitive verb constructions. This finding may be an indication that aspectual marking may be controlled by the verb category in question. If activity and motion verb construction are found to be treated differently, the possibility of a closer interrelation of aspect and telicity could be verified.

### 6.6.2 Aspectual Marking: Activity Verbs

For the event type comparisons (telic vs. atelic) in the aspectual marking of activity verb constructions we performed two-way group-independence chi-square tests. The comparisons show that the event type the participants were shown significantly affects the aspectual choice of the 7 yrs old and older children. Adults also show this effect. The two youngest age groups, though, do not appear to be equally sensitive to the role of telicity: **5-6 yrs old:** $\chi^2=7.386$, df= 1, p=.007; **6-7 yrs old:** $\chi^2=9.589$, df= 1, p=.002; **7-8 yrs old:** $\chi^2=127.396$, df= 1, p=.000; **Adults:** $\chi^2=25.794$, df= 1, p=.000.

Figure 31 and Table 47 present the percentages and corresponding raw numbers of the aspectual marking for activity VPs of each age group when they were provided with a telic event.
The data reported in Figure 31 and Table 47 show that the 5-6 yrs old group along with the 6-7 yrs old group significantly prefer to use imperfective aspect regardless of the fact that they are given a telic event. The 7-8 yrs old group appears to be undetermined and performs at chance level. The 8-9 and 9-10 yrs old groups, however, show adult-like performance in selecting perfective aspect to describe telic events. These observations were statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2=32.508$, df= 1, p=.000; 6-7 yrs old: $\chi^2=16.078$, df= 1, p=.000; 7-8 yrs old: $\chi^2=2.032$, df= 1, p=.154; 8-9 yrs old: $\chi^2=4.829$, df= 1, p=.028; 9-10 yrs old: $\chi^2=71.201$, df= 1, p=.000; Adults: $\chi^2=14.286$, df= 1, p=.000). These findings indicate that perfective aspect is used to mark telicity for activity VPs.
Turning to the atelic condition, Figure 32 and Table 48 present the percentages and corresponding raw numbers of the aspectual choice for activity VPs of each age group when they were provided with an atelic event.

**Figure 32: Aspectual Marking: Activity Atelic Events**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Perfective</th>
<th>Imperfective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>(/Total Responses)</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>39 (/134)</td>
<td>29.1</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>30 (/111)</td>
<td>27.03</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>36 (/95)</td>
<td>37.9</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>58 (/142)</td>
<td>40.85</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>29 (/150)</td>
<td>19.33</td>
</tr>
<tr>
<td>Adults</td>
<td>38 (/112)</td>
<td>33.93</td>
</tr>
</tbody>
</table>

**Table 48: Aspectual Marking: Activity Atelic Events**

The data reported in Figure 32 and Table 48 show that all groups uniformly select imperfective aspect to describe atelic activities. This observation was statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2=23.403$, df= 1, $p=.000$; 6-7 yrs old: $\chi^2=23.432$, df= 1, $p=.000$; 7-8 yrs old: $\chi^2=5.568$, df= 1, $p=.018$; 8-9 yrs old: $\chi^2=4.761$, df= 1, $p=.029$; 9-10 yrs old: $\chi^2=56.427$, df= 1, $p=.000$; Adults: $\chi^2=162$,
It appears that imperfective aspect is mapped on atelicity for activity verb constructions early on in acquisition.

Further two-way group-independence chi-square tests were performed to determine whether events referring to activity verb constructions were treated likewise by all age groups. As seen in Table 49, the between group comparisons for the telic condition show very clearly the developmental steps of telicity in the aspectual marking of activity VPs. The 5-6 and 6-7 yrs old children perform alike and the 7-8 and 8-9 yrs old ones similarly to each other. The rest of the between children comparisons are found significant. When compared to adults, children are found not to have attained the target performance with the exception of the 8-9 yrs old group. Quite importantly, the differences from the adult performance are not always in the same direction for all child groups. The youngest groups’ (5-8 yrs old) use of imperfective is high but it gradually lowers getting closer to the adult preference for perfective. The oldest group (9-10 yrs old), on the other hand, is significantly different from adults not because it selects the non-target aspect, that is imperfective, but due to the fact that it selects perfective aspectual marking more robustly. Thus, it is in the same direction with adults mapping telicity on perfective activities. In the atelic condition, the differences among the groups are more subtle and the preferences of each groups uniform. In detail, the differences found in the child group comparisons are the 8-9 yrs old group compared to the two youngest age groups and the 9-10 yrs old group to all child groups with the exception of the 6-7 yrs old children. Additionally in the atelic condition, children aged 5 to 9 yrs old are performing adult-like. Nevertheless, the 9-10 yrs old group, as in the telic condition, uses the target aspect, in this case imperfective, significantly more solidly than adults do.

<table>
<thead>
<tr>
<th>Group Comparisons</th>
<th>Activity Verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Telic Event * Aspect</td>
</tr>
<tr>
<td>5-6 yrs old vs. 6-7 yrs old</td>
<td>$\chi^2 = 1.345, \text{df} = 1, p = .246$</td>
</tr>
<tr>
<td>5-6 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2 = 26.353, \text{df} = 1, p = .000$</td>
</tr>
<tr>
<td>5-6 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2 = 32.573, \text{df} = 1, p = .000$</td>
</tr>
<tr>
<td>5-6 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2 = 100.194, \text{df} = 1, p = .000$</td>
</tr>
<tr>
<td>6-7 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2 = 15.277, \text{df} = 1, p = .000$</td>
</tr>
<tr>
<td>6-7 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2 = 19.862, \text{df} = 1, p = .000$</td>
</tr>
<tr>
<td>6-7 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2 = 77.654, \text{df} = 1, p = .000$</td>
</tr>
<tr>
<td>7-8 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2 = .235, \text{df} = 1, p = .628$</td>
</tr>
</tbody>
</table>
To summarize, the examination of aspectual marking for activity verbs makes evident that (a) telicity affects the aspectual choices of children and adults, (b) perfective aspect is selected for telic events adult-like by children from the age of 8 and (c) imperfective aspect is used for atelic activities by children as young as 5 yrs old. These findings are in accordance to our predictions as presented in Section 6.1.

### 6.6.3 Aspectual Marking: Motion Verbs

For the event type comparisons (telic vs. atelic) in the aspectual marking of motion verb constructions we performed two-way group-independence chi-square tests. The comparisons show that the event type, the participants were shown, significantly affects the aspectual choice of all child groups and adults:  
- **5-6 yrs old**: \( \chi^2 = 10.919, \text{df}=1, p=.001 \)  
- **6-7 yrs old**: \( \chi^2 = 10.989, \text{df}=1, p=.001 \)  
- **7-8 yrs old**: \( \chi^2 = 7.614, \text{df}=1, p=.006 \)  
- **8-9 yrs old**: \( \chi^2 = 21.658, \text{df}=1, p=.000 \)  
- **9-10 yrs old**: \( \chi^2 = 34.998, \text{df}=1, p=.000 \)  
- **Adults**: \( \chi^2 = 20.198, \text{df}=1, p=.000 \)  

Figure 33 and Table 50 present the percentages and corresponding raw numbers of the aspectual marking for motion VPs of each age group when they were provided with a telic event.
The data reported in Figure 33 and Table 50 show that children appear to be confused over the aspectual marking of motion telic events, while adults significantly prefer using perfective aspect. In particular, the use of imperfective is predominant for the youngest child groups. The 6-7 yrs old group significantly selects imperfective aspect, while the rest of the child groups are undetermined and perform at chance level indicating the acquisitional difficulty posed by telic motions. These observations were statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2=2.701$, df= 1, p=.100; 6-7 yrs old: $\chi^2=5.538$, df= 1, p=.019; 7-8 yrs old: $\chi^2=3.115$, df= 1, p=.078; 8-9 yrs old: $\chi^2=2.843$, df= 1, p=.092; 9-10 yrs old: $\chi^2=.261$, df= 1, p=.610; Adults: $\chi^2=4.840$, df= 1, p=.028).
Figure 34 and Table 51 present the percentages and corresponding raw numbers of the aspectual marking for motion VPs of each age group when they were provided with an atelic event.

The data reported in Figure 34 and Table 51 show that, unlike the findings in the telic condition, in the atelic condition children perform adult-like is selecting the imperfective to describe the atelic motion events. This observation was statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2=35.438$, df= 1, p=.000; 6-7 yrs old: $\chi^2=39.112$, df= 1, p=.000; 7-8 yrs old: $\chi^2=27.174$, df= 1, p=.000; 8-9 yrs old: $\chi^2=23.450$, df= 1, p=.000).
In terms of acquisition, two-way group-independence chi-square tests were performed to determine whether events referring to motion verb constructions were treated likewise by all age groups. As seen in Table 52, the between group comparisons for the telic condition show that the children’s performance is quite uniform. For the 6-7 yrs old group comparisons show a significant difference from the two oldest age groups (8-9 and 9-10 yrs old groups). Also, the 7-8 yrs old children appear to differ from the 8-9 yrs old ones. The age of 8 is of importance for the acquisition of telicity for motion verbs since it is from that age on that we get adult-like aspectual preferences by the children. In the atelic condition, there is a similar performance across the groups and the preference of imperfective mapping on atelic motion events appears to set early on in acquisition. The 6-7 yrs old group differs to the 8-9 yrs old group and adults. Quite interestingly, as for activity verbs, the 9-10 yrs old group overuses imperfective aspect, which is the target aspectual choice, and, thus, appears to be significantly different from the 8-9 yrs old group and adults.

<table>
<thead>
<tr>
<th>Group Comparisons</th>
<th>Motion Verbs</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Telic Event * Aspect</td>
<td>Atelic Event * Aspect</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old vs. 6-7 yrs old</td>
<td>$\chi^2 = .283, df = 1, p = .595$</td>
<td>$\chi^2 = .524, df = 1, p = .469$</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2 = .011, df = 1, p = .917$</td>
<td>$\chi^2 = .101, df = 1, p = .751$</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2 = 5.527, df = 1, p = .019$</td>
<td>$\chi^2 = 1.834, df = 1, p = .176$</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2 = 2.473, df = 1, p = .116$</td>
<td>$\chi^2 = .210, df = 1, p = .647$</td>
<td></td>
</tr>
<tr>
<td>6-7 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2 = .180, df = 1, p = .671$</td>
<td>$\chi^2 = 1.013, df = 1, p = .314$</td>
<td></td>
</tr>
<tr>
<td>6-7 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2 = 8.277, df = 1, p = .004$</td>
<td>$\chi^2 = 4.057, df = 1, p = .044$</td>
<td></td>
</tr>
<tr>
<td>6-7 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2 = 4.485, df = 1, p = .034$</td>
<td>$\chi^2 = .117, df = 1, p = .732$</td>
<td></td>
</tr>
<tr>
<td>7-8 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2 = 5.954, df = 1, p = .015$</td>
<td>$\chi^2 = .951, df = 1, p = .329$</td>
<td></td>
</tr>
<tr>
<td>7-8 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2 = 2.788, df = 1, p = .095$</td>
<td>$\chi^2 = .616, df = 1, p = .432$</td>
<td></td>
</tr>
<tr>
<td>8-9 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2 = .752, df = 1, p = .386$</td>
<td>$\chi^2 = 3.860, df = 1, p = .049$</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old vs. Adults</td>
<td>$\chi^2 = 7.424, df = 1, p = .006$</td>
<td>$\chi^2 = 2.238, df = 1, p = .135$</td>
<td></td>
</tr>
<tr>
<td>6-7 yrs old vs. Adults</td>
<td>$\chi^2 = 10.360, df = 1, p = .001$</td>
<td>$\chi^2 = 4.541, df = 1, p = .033$</td>
<td></td>
</tr>
<tr>
<td>7-8 yrs old vs. Adults</td>
<td>$\chi^2 = 7.880, df = 1, p = .005$</td>
<td>$\chi^2 = 1.269, df = 1, p = .260$</td>
<td></td>
</tr>
<tr>
<td>8-9 yrs old vs. Adults</td>
<td>$\chi^2 = .287, df = 1, p = .592$</td>
<td>$\chi^2 = .042, df = 1, p = .837$</td>
<td></td>
</tr>
<tr>
<td>9-10 yrs old vs. Adults</td>
<td>$\chi^2 = 1.832, df = 1, p = .176$</td>
<td>$\chi^2 = 4.373, df = 1, p = .037$</td>
<td></td>
</tr>
</tbody>
</table>
Table 52: Between Group Comparisons: Aspectual Marking in Motion VPs

Turning to the between verb-type comparisons per event type, Table 53 presents two-way group-independence chi-square tests to determine the role of telicity for each verb category. In the telic condition, the two verb categories are differentiated by children with the exception of 6-7 and 8-9 yrs old children, but crucially not by adults who appear not equally sensitive. In the atelic condition, both verb types are treated similarly by all groups with the exception of 7-9 yrs old children who significantly distinguish between the two. Overall, children are more responsive to VP differences and it is of interest to see if this applies to the complements each verb-type receives as we will see in detail in sections 6.6.5, 6.6.6, 6.6.7 and 6.6.8.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Telic Event * Aspect</th>
<th>Atelic Event * Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Activity vs. Motion Verbs</td>
<td>Activity vs. Motion Verbs</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>$\chi^2 = 8.019, df= 1, p=.005$</td>
<td>$\chi^2 = 2.058, df= 1, p=.151$</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>$\chi^2 = 1.235, df= 1, p=.267$</td>
<td>$\chi^2 = 2.932, df= 1, p=.087$</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>$\chi^2 = 5.130, df= 1, p=.024$</td>
<td>$\chi^2 = 5.008, df= 1, p=.025$</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>$\chi^2 = .089, df= 1, p=.765$</td>
<td>$\chi^2 = 4.392, df= 1, p=.036$</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>$\chi^2 = 35.133 , df= 1, p=.000$</td>
<td>$\chi^2 = .024 , df= 1, p=.876$</td>
</tr>
<tr>
<td>Adults</td>
<td>$\chi^2 = 1.087, df= 1, p=.297$</td>
<td>$\chi^2 = .407, df= 1, p=.523$</td>
</tr>
</tbody>
</table>

Table 53: Between Verb-Type Comparisons: Aspectual Marking

To summarize, the examination of the aspectual marking of motion verbs makes evident that (a) telicity affects the aspectual choices of children and adults, (b) perfective aspect is selected for telic events by adults but children do not attain the adult performance not even up to the age of 10, (c) imperfective aspect is used for atelic activities by all child groups and adults and (d) children are sensitive to the verb type when selecting aspect for telic events. These findings are pointing to the difficulties motion verb constructions pose in acquisition and are in accordance to our predictions as presented in Section 6.1.

6.6.4 Interim Summary

In terms of the role of aspect in describing telic and atelic events, aspect is found to be approached differently by each verb category. For intransitive verbs, the data show a
general preference for perfective aspect across eventuality (completed vs. on-going events) suggesting that it can possibly be a default choice for intransitive VPs. For activity and motion verbs, however, aspect operates in relation to telicity. Imperfective aspect is related to atelic events and is in place earlier than perfective aspect. Perfective aspect, on the other hand, is related to telic events for both activity and motion verbs but indicate a difficulty in acquisition especially in the case of the latter. To explore why motion VP constructions incommode the acquisition of aspect-telicity mapping we need to examine the role of complements, when interpreted as endpoints to telic eventualities. To this end, we will now turn to the examination of complement use for activity and motion verbs (a) irrespective of aspectual marking (Sections 6.6.5 and 6.6.6) and (b) in relation to aspectual marking and per event type (Sections 6.6.7 and 6.6.8).

### 6.6.5 Overall Complement Use: Activity Verbs

For the event type comparisons (telic vs. atelic) in the complement use in activity VPs we performed two-way group-independence chi-square tests. The comparisons show that the event type the participants were shown significantly affects the overt vs. null use of DPs for two child groups, the 6-7 and 9-10 yrs old group: (5-6 yrs old: $\chi^2=.126, df= 1, p= .723$; 6-7 yrs old: $\chi^2=4.491, df= 1, p= .034$; 7-8 yrs old: $\chi^2=.959, df= 1, p= .327$; 8-9 yrs old: $\chi^2=1.206, df= 1, p= .272$; 9-10 yrs old: $\chi^2=14.097, df= 1, p= .000$; **Adults**: $\chi^2=.098, df= 1, p= .755$).

Figure 35 and Table 54 present the percentages and corresponding raw numbers of the complement use for activity VPs of each age group when they were provided with a telic event.
The data reported in Figure 35 and Table 54 show that the youngest child group significantly prefers null DPs, while from the age of 6 and up children perform adult-like in selecting overt DPs when describing telic events. These observations were statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2=11.460$, df= 1, p=.001; 6-7 yrs old: $\chi^2=3.835$, df= 1, p=.050; 7-8 yrs old: $\chi^2=23.143$, df= 1, p=.000; 8-9 yrs old: $\chi^2=5.600$, df= 1, p=.018; 9-10 yrs old: $\chi^2=73.993$, df= 1, p=.000; Adults: $\chi^2=32.143$, df= 1, p=.000).

Figure 36 and Table 55 present the percentages and corresponding raw numbers of the complement use for activity VPs of each age group when they were provided with an atelic event.
The data reported in Figure 36 and Table 55 show that the youngest child group significantly prefers null DPs as in the telic condition, while the 7-8 and 9-10 yrs old children along with the adults select overt DPs when describing atelic events. The 6-7 and 8-9 yrs old group perform at chance level without demonstrating any preference. These observations were statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2=15.791$, df= 1, p=.000; 6-7 yrs old: $\chi^2=1.090$, df= 1, p=.296; 7-8 yrs old: $\chi^2=8.853$, df= 1, p=.003; 8-9 yrs old: $\chi^2=.704$, df= 1, p=.401; 9-10 yrs old: $\chi^2=16.667$, df= 1, p=.000; Adults: $\chi^2=28.000$, df= 1, p=.000).
In terms of acquisition, two-way group-independence chi-square tests were performed to determine whether activity events were treated likewise by all age groups in relation to complement use. As seen in Table 56, the between group comparisons for the telic condition show that almost all groups differ from each other. Similarities are found only when comparing the 6-7 yrs old group to the 8-9 yrs old one and the 7-8 and 9-10 yrs old groups to adults. In the atelic condition the findings are the same with the addition that the 7-8 and 9-10 yrs old children do not differ from each other. Overall for both telic and atelic conditions, the data indicate a gradual increase in the number of complements produced by children. The 7-8 and 9-10 yrs old groups reach the adult like performance but the 8-9 yrs old one seems to be lacking behind slightly. A possible explanation for this finding may be the fact that at the age of 8-9 children are perfecting the use of aspectual marking and due to that they may be more focused on this type of telicity encoding.

<table>
<thead>
<tr>
<th>Group Comparisons</th>
<th>Activity Verbs</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Telic Event * Overt/Null DPs</td>
<td>Atelic Event * Overt/Null DPs</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old vs. 6-7 yrs old</td>
<td>$\chi^2 = 14.166$, df = 1, p = 0.000</td>
<td>$\chi^2 = 3.827$, df = 1, p = 0.050</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2 = 33.723$, df = 1, p = 0.000</td>
<td>$\chi^2 = 23.511$, df = 1, p = 0.000</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2 = 16.708$, df = 1, p = 0.000</td>
<td>$\chi^2 = 12.004$, df = 1, p = 0.001</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2 = 73.492$, df = 1, p = 0.000</td>
<td>$\chi^2 = 32.408$, df = 1, p = 0.000</td>
<td></td>
</tr>
<tr>
<td>6-7 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2 = 4.027$, df = 1, p = 0.045</td>
<td>$\chi^2 = 8.434$, df = 1, p = 0.004</td>
<td></td>
</tr>
<tr>
<td>6-7 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2 = 0.20$, df = 1, p = 0.888</td>
<td>$\chi^2 = 1.790$, df = 1, p = 0.181</td>
<td></td>
</tr>
<tr>
<td>6-7 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2 = 22.910$, df = 1, p = 0.000</td>
<td>$\chi^2 = 12.202$, df = 1, p = 0.000</td>
<td></td>
</tr>
<tr>
<td>7-8 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2 = 3.828$, df = 1, p = 0.050</td>
<td>$\chi^2 = 3.227$, df = 1, p = 0.072</td>
<td></td>
</tr>
<tr>
<td>7-8 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2 = 7.819$, df = 1, p = 0.005</td>
<td>$\chi^2 = 0.51$, df = 1, p = 0.821</td>
<td></td>
</tr>
<tr>
<td>8-9 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2 = 23.326$, df = 1, p = 0.000</td>
<td>$\chi^2 = 5.264$, df = 1, p = 0.022</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old vs. Adults</td>
<td>$\chi^2 = 41.928$, df = 1, p = 0.000</td>
<td>$\chi^2 = 43.456$, df = 1, p = 0.000</td>
<td></td>
</tr>
<tr>
<td>6-7 yrs old vs. Adults</td>
<td>$\chi^2 = 8.107$, df = 1, p = 0.004</td>
<td>$\chi^2 = 20.859$, df = 1, p = 0.000</td>
<td></td>
</tr>
<tr>
<td>7-8 yrs old vs. Adults</td>
<td>$\chi^2 = 0.883$, df = 1, p = 0.347</td>
<td>$\chi^2 = 2.345$, df = 1, p = 0.126</td>
<td></td>
</tr>
<tr>
<td>8-9 yrs old vs. Adults</td>
<td>$\chi^2 = 7.987$, df = 1, p = 0.005</td>
<td>$\chi^2 = 12.391$, df = 1, p = 0.000</td>
<td></td>
</tr>
<tr>
<td>9-10 yrs old vs. Adults</td>
<td>$\chi^2 = 3.041$, df = 1, p = 0.081</td>
<td>$\chi^2 = 2.130$, df = 1, p = 0.144</td>
<td></td>
</tr>
</tbody>
</table>

Table 56: Between Group Comparisons: Overall Complement Use in Activity VPs
To summarize, the examination of complement use in activity VPs shows that (a) telicity affects the production of DPs of 6-7 and 9-10 yrs old children, (b) overt DPs are selected for telic events adult-like by children from the age of 6 and (c) overt DPs are used for atelic activities adult-like by 7-8 and 9-10 yrs old groups. These findings are in accordance to our predictions as presented in Section 6.1.

### 6.6.6 Overall Complement Use: Motion Verbs

For the event type comparisons (telic \textit{vs.} atelic) in the complement use in motion VPs we performed two-way group-independence chi-square tests. The comparisons show that the event type, the participants were shown, significantly affects the overt \textit{vs.} null use of PPs for two child groups, the 6-7 and 7-8 yrs old group (5-6 yrs old: $\chi^2=.007$, df = 1, p = .934; 6-7 yrs old: $\chi^2=8.199$, df = 1, p = .004; 7-8 yrs old: $\chi^2=5.328$, df = 1, p = .021; 8-9 yrs old: $\chi^2=.003$, df = 1, p = .955; 9-10 yrs old: $\chi^2=1.219$, df = 1, p = .270; Adults: $\chi^2=.796$, df = 1, p = .372).

Figure 37 and Table 57 present the percentages and corresponding raw numbers of the complement use for motion VPs of each age group when they were provided with a telic event.

![Figure 37: Overall Complement Use: Motion Telic Events](image)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Overt PPs</th>
<th>Null-PPs</th>
</tr>
</thead>
</table>
|              | Raw N (/
Total) | %        | Raw N (/
Total) | %        |
| 5-6 yrs old  |           |          |           |          |
| 6-7 yrs old  |           |          |           |          |
| 7-8 yrs old  |           |          |           |          |
| 8-9 yrs old  |           |          |           |          |
| 9-10 yrs old |           |          |           |          |
| Adults       |           |          |           |          |
The data reported in Figure 37 and Table 57 show that all child groups significantly prefer using null PPs, while adults select overt PPs to encode endpoints for telic motion events. These observations were statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2=28.271$, df= 1, p=.000; 6-7 yrs old: $\chi^2=7.538$, df= 1, p=.006; 7-8 yrs old: $\chi^2=8.654$, df= 1, p=.003; 8-9 yrs old: $\chi^2=22.118$, df= 1, p=.000; 9-10 yrs old: $\chi^2=8.377$, df= 1, p=.004; Adults: $\chi^2=7.840$, df= 1, p=.005).

Figure 38 and Table 58 present the percentages and corresponding raw numbers of the complement use for motion VPs of each age group when they were provided with an atelic event.

**Figure 38: Overall Complement Use: Motion Atelic Events**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Overt PPs</th>
<th>Null-PPs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N</td>
<td>%</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The data reported in Figure 38 and Table 58 show that in the atelic condition the 5-9 yrs old children significantly prefer null PPs, while the oldest child group and adults appear undecided upon their preferences for PP-complement use when describing atelic motion events as indicated by the one-way-goodness-of-fit chi-square test comparisons (5-6 yrs old: $\chi^2=28.810$, df=1, $p=.000$; 6-7 yrs old: $\chi^2=36.506$, df=1, $p=.000$; 7-8 yrs old: $\chi^2=31.696$, df=1, $p=.000$; 8-9 yrs old: $\chi^2=21.775$, df=1, $p=.000$; 9-10 yrs old: $\chi^2=1.993$, df=1, $p=.158$; Adults: $\chi^2=2.701$, df=1, $p=.100$).

In terms of acquisition, two-way group-independence chi-square tests were performed to determine whether motion events were treated likewise by all age groups in relation to complement use. As seen in Table 59, the between group comparisons for the telic condition show that the 5-6 yrs old group differs significantly both from 6-7 and 9-10 yrs old children. The rest of the child group comparisons indicate a uniform attitude towards complement production which never gets adult-like pointing to one more difficulty that motion VPs pose in relation to telicity marking. In the atelic condition, on the other hand, the comparisons show that the 9-10 yrs old group’s performance deviates from that of all other child groups but remains non-adult-like as is the case for the younger children.
Turning to the between verb-type comparisons per event type, Table 60 presents two-way group-independence chi-square tests to determine the role of telicity for each verb category in relation to the complement production. In describing both telic and atelic events, children from the age of 6 and up do differentiate between the two verb-categories. Adults, also treat activity and motion verbs differently for both conditions.

### Table 59: Between Group Comparisons: Overall Complement Use in Motion VPs

<table>
<thead>
<tr>
<th>Groups</th>
<th>Telic Event Activity vs. Motion Verbs</th>
<th>Atelic Event Activity vs. Motion Verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old</td>
<td>$\chi^2 = 3.106, df= 1, p=.078$</td>
<td>$\chi^2 = 2.336, df= 1, p =.126$</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>$\chi^2 = 11.161, df= 1, p=.001$</td>
<td>$\chi^2 = 16.368, df= 1, p =.000$</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>$\chi^2 = 29.615, df= 1, p=.000$</td>
<td>$\chi^2 = 37.883, df= 1, p =.000$</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>$\chi^2 = 25.602, df= 1, p=.000$</td>
<td>$\chi^2 = 16.061, df= 1, p =.000$</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>$\chi^2 = 69.030, df= 1, p=.000$</td>
<td>$\chi^2 = 15.158, df= 1, p =.000$</td>
</tr>
<tr>
<td>Adults</td>
<td>$\chi^2 = 4.174, df= 1, p=.041$</td>
<td>$\chi^2 = 7.164, df= 1, p =.007$</td>
</tr>
</tbody>
</table>

Table 60: Between Verb-Type Comparisons: Overall Complement Use

To summarize, the examination of complement use in motion VPs shows that (a) telicity affects the production of PPs of 6-7 and 7-8 yrs old children, (b) null PPs are selected for telic events by children of all ages, while adults select overt PPs, (c) null PPs are used for atelic motion events by 5-9 yrs old children, while the oldest child group and adults perform at chance level and (d) all child groups, with the exception of the
youngest one, along with the adults treat the activity and motion verbs as separate categories both in the telic and atelic condition. These findings are in accordance to our predictions as presented in Section 6.1.

6.6.7 Aspectual Marking & Complement Use: Activity Verbs

For the event type comparisons (telic vs. atelic) in the complement use in perfective activity VPs we performed two-way group-independence chi-square tests. The comparisons show that the event type, the participants were given, does not affect the complement production in perfective VP constructions (5-6 yrs old: $\chi^2=.391$, $df=1$, $p=.532$; 6-7 yrs old: $\chi^2=.754$, $df=1$, $p=.385$; 7-8 yrs old: $\chi^2=.106$, $df=1$, $p=.745$; 8-9 yrs old: $\chi^2=2.561$, $df=1$, $p=.110$; 9-10 yrs old: $\chi^2=2.574$, $df=1$, $p=.109$; Adults: $\chi^2=.238$, $df=1$, $p=.626$). For the event type comparisons (telic vs. atelic) in the complement use in imperfective activity VPs we performed two-way group-independence chi-square tests. The comparisons show that the event type, in this case, affects the children’s production of DPs. In particular, the 6-7, 8-9 and 9-10 yrs old groups show statistically significant differences in the overt use of DPs depending on telicity (5-6 yrs old: $\chi^2=.893$, $df=1$, $p=.345$; 6-7 yrs old: $\chi^2=3.594$, $df=1$, $p=.058$; 7-8 yrs old: $\chi^2=.002$, $df=1$, $p=.963$; 8-9 yrs old: $\chi^2=3.422$, $df=1$, $p=.064$; 9-10 yrs old: $\chi^2=4.436$, $df=1$, $p=.035$; Adults: $\chi^2=.291$, $df=1$, $p=.590$).

For the aspect type comparisons (perfective vs. imperfective) in the complement use for telic activity events we performed two-way group-independence chi-square tests. The comparisons show that the aspect type the participant uses does not affect the complement use for telic activities for any group with the exception to the 7-8 yrs old children who produce significantly more DPs when selecting perfective aspect (5-6 yrs old: $\chi^2=.260$, $df=1$, $p=.610$; 6-7 yrs old: $\chi^2=.491$, $df=1$, $p=.483$; 7-8 yrs old: $\chi^2=10.854$, $df=1$, $p=.001$; 8-9 yrs old: $\chi^2=2.175$, $df=1$, $p=.140$; 9-10 yrs old: $\chi^2=.149$, $df=1$, $p=.699$; Adults: $\chi^2=1.604$, $df=1$, $p=.205$).

Figure 39 and Table 61 present the percentages and corresponding raw numbers of the complement use for perfective activity VPs of each age group when they were provided with a telic event.
Figure 39: DPs in Perfective Activity VPs for Telic Events

Table 61: DPs in Perfective Activity VPs for Telic Events

The data reported in Figure 39 and Table 61 show that from the age of 7 and up children perform adult-like in selecting overt DPs for perfective VPs when describing telic activities. This observation was statistically supported by one-way goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2=1.581, df= 1, p=.209$; 6-7 yrs old: $\chi^2=2.778, df= 1, p=.096$; 7-8 yrs old: $\chi^2=31.113, df= 1, p=.000$; 8-9 yrs old: $\chi^2=7.530, df= 1, p=.006$; 9-10 yrs old: $\chi^2=64.286, df= 1, p=.000$; Adults: $\chi^2=27.842, df= 1, p=.000$).

Figure 40 and Table 62 present the percentages and corresponding raw numbers of the complement use for imperfective activity VPs of each age group when they were provided with a telic event.
The Production Study

Figure 40: DPs in Imperfective Activity VPs for Telic Events

<table>
<thead>
<tr>
<th>Groups</th>
<th>Overt DPs</th>
<th>Null-DPs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N (%/Total Responses)</td>
<td>%</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>32 (/95) 33.68</td>
<td>63 (/95) 66.32</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>45 (/79) 56.96</td>
<td>34 (/79) 43.04</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>31 (/55) 56.36</td>
<td>24 (/55) 43.64</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>30 (/57) 52.63</td>
<td>27 (/57) 47.37</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>19 (/23) 82.61</td>
<td>4 (/23) 17.39</td>
</tr>
<tr>
<td>Adults</td>
<td>25 (/36) 69.44</td>
<td>11 (/36) 30.56</td>
</tr>
</tbody>
</table>

Table 62: DPs in Imperfective Activity VPs for Telic Events

The data reported in Figure 40 and Table 62 show that when describing telic activities with imperfective aspectual marking the production of complements differs for each group. The 5-6 yrs old group prefers using null DPs, while the 6-7, 7-8 and 8-9 yrs old groups do not show any preference. The oldest child group, however, performs similarly to adults and selects overt DPs in describing telic events even though they have not selected the appropriate aspectual marking. These observations were statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2=10.116$, df= 1, $p=.001$; 6-7 yrs old: $\chi^2=1.523$, df= 1, $p=.216$; 7-8 yrs old: $\chi^2=.891$, df= 1, $p=.345$; 8-9 yrs old: $\chi^2=.158$, df= 1, $p=.691$; 9-10 yrs old: $\chi^2=9.783$, df= 1, $p=.002$; Adults: $\chi^2=5.444$, df= 1, $p=.020$).
In terms of acquisition, two-way group-independence chi-square tests were performed to determine whether telic activity events were treated likewise by all age groups in relation to complement use in (im)perfective VP constructions. As seen in Table 63, the between group comparisons in the case of perfective VPs show that all child groups differ from each other with the exception of 6-7 vs. 8-9 and 7-8 vs. 9-10 yrs old who perform similarly. There is a clear developmental pattern that leads to an adult-like performance for the 7-8 and 9-10 yrs old groups. In the case of imperfective VPs, the 5-6 yrs old group differs from all other child groups and to adults and the 9-10 yrs old group to the rest of child groups. Quite importantly, for the youngest child group the difference is a qualitative one since they differ in the direction of preference, while for the oldest child group in the degree of preference for overt DPs for telic events. Overall, from the age of 6 and up the comparisons indicate a clear adult-like performance.

<table>
<thead>
<tr>
<th>Group Comparisons</th>
<th>Activity Verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Perfective Aspect</td>
</tr>
<tr>
<td>5-6 yrs old vs. 6-7 yrs old</td>
<td>$\chi^2 = 4.233$, df= 1, p=.040</td>
</tr>
<tr>
<td>5-6 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2 = 20.098$, df= 1, p=.000</td>
</tr>
<tr>
<td>5-6 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2 = 6.429$, df= 1, p=.011</td>
</tr>
<tr>
<td>5-6 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2 = 30.516$, df= 1, p=.000</td>
</tr>
<tr>
<td>6-7 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2 = 4.923$, df= 1, p=.027</td>
</tr>
<tr>
<td>6-7 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2 = .015$, df= 1, p=.902</td>
</tr>
<tr>
<td>6-7 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2 = 8.619$, df= 1, p=.003</td>
</tr>
<tr>
<td>7-8 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2 = 6.374$, df= 1, p=.012</td>
</tr>
<tr>
<td>7-8 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2 = .241$, df= 1, p=.624</td>
</tr>
<tr>
<td>8-9 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2 = 12.246$, df= 1, p=.000</td>
</tr>
<tr>
<td>5-6 yrs old vs. Adults</td>
<td>$\chi^2 = 17.538$, df= 1, p=.000</td>
</tr>
<tr>
<td>6-7 yrs old vs. Adults</td>
<td>$\chi^2 = 3.493$, df= 1, p=.062</td>
</tr>
<tr>
<td>7-8 yrs old vs. Adults</td>
<td>$\chi^2 = .197$, df= 1, p=.657</td>
</tr>
<tr>
<td>8-9 yrs old vs. Adults</td>
<td>$\chi^2 = 4.581$, df= 1, p=.032</td>
</tr>
<tr>
<td>9-10 yrs old vs. Adults</td>
<td>$\chi^2 = 1.031$, df= 1, p=.310</td>
</tr>
</tbody>
</table>

Table 63: Between Group Comparisons: DPs in Activity VPs for Telic Events

For the aspect type comparisons (perfective vs. imperfective) in the complement use for atelic activity events we performed two-way group-independence chi-square tests.
The comparisons show that 5-6, 7-8, 8-9 and 9-10 yrs old children produce more DPs when selecting perfective aspect for the description of events while adults do not differentiate between the two types of aspect (5-6 yrs old: \(\chi^2=4.424\), df= 1, p=.035; 6-7 yrs old: \(\chi^2=1.141\), df= 1, p=.285; 7-8 yrs old: \(\chi^2=5.980\), df= 1, p=.014; 8-9 yrs old: \(\chi^2=22.826\), df= 1, p=.000; 9-10 yrs old: \(\chi^2=14.449\), df= 1, p=.000; Adults: \(\chi^2=.053\), df= 1, p=.818).

Figure 41 and Table 64 present the percentages and corresponding raw numbers of the complement use for perfective activity VPs of each age group when they were provided with an atelic event.

**Figure 41: DPs in Perfective Activity VPs for Atelic Events**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Overt DPs</th>
<th>Null-DPs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>(/Total Responses)</td>
<td>%</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>18 (/39)</td>
<td>46.15</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>16 (/30)</td>
<td>53.33</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>29 (/36)</td>
<td>80.55</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>45 (/58)</td>
<td>77.59</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>28 (/29)</td>
<td>96.55</td>
</tr>
<tr>
<td>Adults</td>
<td>29 (/38)</td>
<td>76.32</td>
</tr>
</tbody>
</table>

*Table 64: DPs in Perfective Activity VPs for Atelic Events*
The data reported in Figure 41 and Table 64 show that from the age of 7 and up children perform adult-like in selecting overt DPs for perfective VPs even when describing atelic activities suggesting a general rise in complement use. This observation was statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2=0.231$, df= 1, p=.631; 6-7 yrs old: $\chi^2=0.133$, df= 1, p=.715; 7-8 yrs old: $\chi^2=13.444$, df= 1, p=.000; 8-9 yrs old: $\chi^2=17.655$, df= 1, p=.000; 9-10 yrs old: $\chi^2=25.138$, df= 1, p=.000; Adults: $\chi^2=10.526$, df= 1, p=.001).

Figure 42 and Table 65 present the percentages and corresponding raw numbers of the complement use for imperfective activity VPs of each age group when they were provided with an atelic event.

![Figure 42: DPs in Imperfective Activity VPs for Atelic Events](image)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Overt DPs</th>
<th>Null-DPs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>(/Total Responses)</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>26 (/95)</td>
<td>27.37</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>34 (/81)</td>
<td>41.98</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>33 (/59)</td>
<td>55.93</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>31 (/84)</td>
<td>36.9</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>72 (/121)</td>
<td>59.5</td>
</tr>
<tr>
<td>Adults</td>
<td>55 (/74)</td>
<td>74.32</td>
</tr>
</tbody>
</table>

Table 65: DPs in Imperfective Activity VPs for Atelic Events
The data reported in Figure 42 and Table 65 show that the 5-6 and 8-9 yrs old groups prefer null complements over overt ones, while children aged 6-8 remain undecided. The 9-10 yrs old group and the adults, on the other hand, significantly prefer using overt DPs. These observations were statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2=19.463, df= 1, p=.000$; 6-7 yrs old: $\chi^2=2.086, df= 1, p=.149$; 7-8 yrs old: $\chi^2=.831, df= 1, p=.362$; 8-9 yrs old: $\chi^2=5.762, df= 1, p=.016$; 9-10 yrs old: $\chi^2=4.372, df= 1, p=.037$; Adults: $\chi^2=17.514, df= 1, p=.000$).

In terms of acquisition, two-way group-independence chi-square tests were performed to determine whether atelic activity events were treated likewise by all age groups in relation to complement use in (im)perfective VP constructions. As seen in Table 66, the between group comparisons in the case of perfective VPs show that the 5-6 and 6-7 yrs old group perform alike and the 7-8 and 8-9 yrs old group adult like. The comparisons outline two turning points in acquisition, the first at the age of 7 and a second one at the age of 9. In both cases they signal a rise in complement use. The between group comparisons in the case of imperfective VPs show great variability among child groups and between children and adults. Similarities are found for the 5-6 vs. 8-9, 6-7 vs. 7-8 and 8-9, and 7-8 vs. 9-10 yrs old groups.

<table>
<thead>
<tr>
<th>Group Comparisons</th>
<th>Activity Verbs</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Perfective Aspect</td>
<td>Imperfective Aspect</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old vs. 6-7 yrs old</td>
<td>$\chi^2=.350, df= 1, p=.554$</td>
<td>$\chi^2=4.152, df= 1, p=.042$</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2=9.470, df= 1, p=.002$</td>
<td>$\chi^2=12.565, df= 1, p=.000$</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2=10.120, df= 1, p=.001$</td>
<td>$\chi^2=1.868, df= 1, p=.172$</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2=19.503, df= 1, p=.000$</td>
<td>$\chi^2=22.173, df= 1, p=.000$</td>
<td></td>
</tr>
<tr>
<td>6-7 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2=5.590, df= 1, p=.018$</td>
<td>$\chi^2=2.665, df= 1, p=.103$</td>
<td></td>
</tr>
<tr>
<td>6-7 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2=5.468, df= 1, p=.019$</td>
<td>$\chi^2=.444, df= 1, p=.505$</td>
<td></td>
</tr>
<tr>
<td>6-7 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2=14.527, df= 1, p=.000$</td>
<td>$\chi^2=5.978, df= 1, p=.014$</td>
<td></td>
</tr>
<tr>
<td>7-8 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2=.117, df= 1, p=.732$</td>
<td>$\chi^2=5.075, df= 1, p=.024$</td>
<td></td>
</tr>
<tr>
<td>7-8 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2=3.808, df= 1, p=.051$</td>
<td>$\chi^2=.208, df= 1, p=.648$</td>
<td></td>
</tr>
<tr>
<td>8-9 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2=5.150, df= 1, p=.023$</td>
<td>$\chi^2=10.129, df= 1, p=.001$</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old vs. Adults</td>
<td>$\chi^2=7.363, df= 1, p=.007$</td>
<td>$\chi^2=36.750, df= 1, p=.000$</td>
<td></td>
</tr>
<tr>
<td>6-7 yrs old vs. Adults</td>
<td>$\chi^2=3.956, df= 1, p=.047$</td>
<td>$\chi^2=16.551, df= 1, p=.000$</td>
<td></td>
</tr>
<tr>
<td>7-8 yrs old vs. Adults</td>
<td>$\chi^2=.196, df= 1, p=.658$</td>
<td>$\chi^2=4.960, df= 1, p=.026$</td>
<td></td>
</tr>
</tbody>
</table>
To summarize, the examination of complement use in (im)perfective activity VPs shows that (a) event and aspect type comparisons indicate that DP production is affected in imperfective VP constructions but not in the perfective ones, (b) from the age of 7 and up children develop the adult like preference for the combination of perfective aspect and overt DP-use both for the telic and the atelic conditions and (c) the adult like preference for the combination of imperfective aspect and overt DP-use in the telic and the atelic conditions surfaces later in acquisition, that is at the age of 9-10.

6.6.8 Aspectual Marking & Complement Use: Motion Verbs

For the event type comparisons (telic vs. atelic) in the complement use in perfective motion VPs we performed two-way group-independence chi-square tests. The comparisons show that the event type, the participants were presented with, affects the complement production in perfective VP constructions only in the case of 7-8 yrs old group (5-6 yrs old: $\chi^2=2.540$, df= 1, p=.111; 6-7 yrs old: $\chi^2=1.946$, df= 1, p=.163; 7-8 yrs old: $\chi^2=4.541$, df= 1, p=.033; 8-9 yrs old: $\chi^2=.036$, df= 1, p=.849; 9-10 yrs old: $\chi^2=.433$, df= 1, p=.510; Adults: $\chi^2=.263$, df= 1, p=.608). For the event type comparisons (telic vs. atelic) in the complement use in imperfective motion VPs we performed two-way group-independence chi-square tests. The comparisons show that the event type affects the children’s production of PPs only in the case of the 6-7 yrs old children (5-6 yrs old: $\chi^2=.880$, df= 1, p=.348; 6-7 yrs old: $\chi^2=3.576$, df= 1, p=.059; 7-8 yrs old: $\chi^2=.169$, df= 1, p=.368; 8-9 yrs old: $\chi^2=1.399$, df= 1, p=.237; 9-10 yrs old: $\chi^2=2.616$, df= 1, p=.106; Adults: $\chi^2=.219$, df= 1, p=.640).

For the aspect type comparisons (perfective vs. imperfective) in the complement use for telic motion events we performed two-way group-independence chi-square tests. The comparisons show that the use of perfective aspect increases the production of PPs for the 6-7, 7-8, 8-9 yrs old child groups along with the adults (5-6 yrs old: $\chi^2=.182$, df= 1, p=.670; 6-7 yrs old: $\chi^2=3.368$, df= 1, p=.066; 7-8 yrs old: $\chi^2=3.825$, df= 1, p=.051; 8-9 yrs old: $\chi^2=5.127$, df= 1, p=.024; 9-10 yrs old: $\chi^2=2.933$, df= 1, p=.087; Adults: $\chi^2=6.481$, df= 1, p=.011).
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Figure 43 and Table 67 present the percentages and corresponding raw numbers of the complement use for perfective motion VPs of each age group when they were provided with a telic event.

**Figure 43: PPs in Perfective Motion VPs for Telic Events**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Overt PPs</th>
<th>Null-PPs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>(/Total Responses)</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>10 (/45)</td>
<td>22.22</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>19 (/40)</td>
<td>47.5</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>20 (/43)</td>
<td>46.51</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>27 (/73)</td>
<td>36.99</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>32 (/72)</td>
<td>44.44</td>
</tr>
<tr>
<td>Adults</td>
<td>45 (/61)</td>
<td>73.77</td>
</tr>
</tbody>
</table>

**Table 67: PPs in Perfective Motion VPs for Telic Events**

The data reported in Figure 43 and Table 67 show that children do not produce PPs when selecting perfective aspect for telic motion events. In particular, 5-6 and 8-9 yrs old children significantly prefer null complements, while the adults’ performance indicates a clear preference for overt PPs. These observations were statistically supported by one-way-goodness-of-fit chi-square (5-6 yrs old: \( \chi^2 = 13.889, \text{df}= 1, p=.000; 6-7 \text{ yrs old:}\)}
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$\chi^2 = .100, \text{ df} = 1, p = .752$; 7-8 yrs old: $\chi^2 = .209, \text{ df} = 1, p = .647$; 8-9 yrs old: $\chi^2 = 4.945, \text{ df} = 1, p = .026$; 9-10 yrs old: $\chi^2 = .889, \text{ df} = 1, p = .346$; Adults: $\chi^2 = 13.787, \text{ df} = 1, p = .000$.

Figure 44 and Table 68 present the percentages and corresponding raw numbers of the complement use for imperfective motion VPs of each age group when they were provided with a telic event.

Figure 44: PPs in Imperfective Motion VPs for Telic Events

<table>
<thead>
<tr>
<th>Groups</th>
<th>Overt PPs</th>
<th>Null-PPs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>(/Total Responses)</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>16 (/62)</td>
<td>25.81</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>19 (/64)</td>
<td>29.69</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>17 (/61)</td>
<td>27.67</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>10 (/54)</td>
<td>18.52</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>20 (/66)</td>
<td>30.3</td>
</tr>
<tr>
<td>Adults</td>
<td>19 (/39)</td>
<td>48.72</td>
</tr>
</tbody>
</table>

Table 68: PPs in Imperfective Motion VPs for Telic Events

The data reported in Figure 44 and Table 68 show that all child groups prefer null PPs in imperfective motion VP constructions, whereas adults perform at chance level suggesting indecisiveness. These observations were statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2 = 14.516, \text{ df} = 1, p = .000$; 6-7 yrs old: $\chi^2 = 10.563, \text{ df} = 1,$
p=.001; **7-8** yrs old: $\chi^2=11.951$, df= 1, p=.001; **8-9** yrs old: $\chi^2=21.407$, df= 1, p=.000; **9-10** yrs old: $\chi^2=10.242$, df= 1, p=.001; **Adults**: $\chi^2=.026$, df= 1, p=.873).

In terms of acquisition, two-way group-independence chi-square tests were performed to determine whether telic motion events were treated likewise by all age groups in relation to complement use in (im)perfective VP constructions. As seen in Table 69, the between group comparisons in the case of perfective VPs show the youngest child group differs significantly from the rest of the children with the exception of the 8-9 yrs old ones. The rest of child groups perform alike. None of the groups, however, develops the adult-like preference. In the case of imperfective motion VPs, all child groups perform similarly and they never reach the adult performance. Developmentally, telic motions appear to be difficult and even at the age of 10 the child performance differs from the adult one since the production of PPs at the complement position remains very limited.

<table>
<thead>
<tr>
<th>Group Comparisons</th>
<th>Perfective Aspect</th>
<th>Imperfective Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old vs. 6-7 yrs old</td>
<td>$\chi^2=.014$, p=.928</td>
<td>$\chi^2=.006$, p=.939</td>
</tr>
<tr>
<td>5-6 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2=.016$, p=.928</td>
<td>$\chi^2=.006$, p=.939</td>
</tr>
<tr>
<td>5-6 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2=.093$, p=.796</td>
<td>$\chi^2=.006$, p=.939</td>
</tr>
<tr>
<td>5-6 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2=.015$, p=.796</td>
<td>$\chi^2=.006$, p=.939</td>
</tr>
<tr>
<td>6-7 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2=.015$, p=.796</td>
<td>$\chi^2=.006$, p=.939</td>
</tr>
<tr>
<td>6-7 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2=.277$, p=.627</td>
<td>$\chi^2=.576$, p=.572</td>
</tr>
<tr>
<td>6-7 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2=.277$, p=.627</td>
<td>$\chi^2=.576$, p=.572</td>
</tr>
<tr>
<td>7-8 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2=.277$, p=.627</td>
<td>$\chi^2=.576$, p=.572</td>
</tr>
<tr>
<td>7-8 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2=.277$, p=.627</td>
<td>$\chi^2=.576$, p=.572</td>
</tr>
<tr>
<td>8-9 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2=.277$, p=.627</td>
<td>$\chi^2=.576$, p=.572</td>
</tr>
<tr>
<td>5-6 yrs old vs. Adults</td>
<td>$\chi^2=.014$, p=.928</td>
<td>$\chi^2=.006$, p=.939</td>
</tr>
<tr>
<td>6-7 yrs old vs. Adults</td>
<td>$\chi^2=.014$, p=.928</td>
<td>$\chi^2=.006$, p=.939</td>
</tr>
<tr>
<td>7-8 yrs old vs. Adults</td>
<td>$\chi^2=.014$, p=.928</td>
<td>$\chi^2=.006$, p=.939</td>
</tr>
<tr>
<td>8-9 yrs old vs. Adults</td>
<td>$\chi^2=.014$, p=.928</td>
<td>$\chi^2=.006$, p=.939</td>
</tr>
<tr>
<td>9-10 yrs old vs. Adults</td>
<td>$\chi^2=.014$, p=.928</td>
<td>$\chi^2=.006$, p=.939</td>
</tr>
</tbody>
</table>

Table 69: Between Group Comparisons: PPs in Motion VPs for Telic Events
Turning to atelic motion events, for the aspect type comparisons (perfective vs. imperfective) in the complement use we performed two-way group-independence chi-square tests. The comparisons show that the use of perfective aspect increases the production of PPs only for the 5-6 yrs old children, while the rest of the groups remain unaffected (5-6 yrs old: $\chi^2=4.486$, df= 1, p=.034; 6-7 yrs old: $\chi^2=.924$, df= 1, p=.337; 7-8 yrs old: $\chi^2=.043$, df= 1, p=.836; 8-9 yrs old: $\chi^2=.805$, df= 1, p=.370; 9-10 yrs old: $\chi^2=.801$, df= 1, p=.371; Adults: $\chi^2=2.188$, df= 1, p=.139).

Figure 45 and Table 70 present the percentages and corresponding raw numbers of the complement use for perfective motion VPs of each age group when they were provided with an atelic event.

**Figure 45: PPs in Perfective Motion VPs for Atelic Events**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Overt PPs</th>
<th>Null-PPs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N (%/Total Responses)</td>
<td>%</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>9 (/22) 40.9</td>
<td>13 (/22) 59.1</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>4 (/15) 26.66</td>
<td>11 (/15) 73.33</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>4 (/21) 19.05</td>
<td>17 (/21) 80.95</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>13 (/37) 35.14</td>
<td>24 (/37) 64.86</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>14 (/27) 51.85</td>
<td>13 (/27) 48.15</td>
</tr>
<tr>
<td>Adults</td>
<td>22 (/32) 68.75</td>
<td>10 (/32) 31.25</td>
</tr>
</tbody>
</table>

**Table 70: PPs in Perfective Motion VPs for Atelic Events**
The data reported in Figure 45 and Table 70 show that 6-7, 7-8 and 8-9 yrs old children prefer null PPs when selecting perfective aspect. For the oldest child group, the production of PPs rises but it is only the adult group that suggests a statistically significant preference for overt PPs. These observations were statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2=.727$, df= 1, $p=.394$; 6-7 yrs old: $\chi^2=3.267$, df= 1, $p=.071$; 7-8 yrs old: $\chi^2=8.048$, df= 1, $p=.005$; 8-9 yrs old: $\chi^2=3.270$, df= 1, $p=.071$; 9-10 yrs old: $\chi^2=.037$, df= 1, $p=.847$; Adults: $\chi^2=4.500$, df= 1, $p=.034$).

Figure 46 and Table 71 present the percentages and corresponding raw numbers of the complement use for imperfective motion VPs of each age group when they were provided with an atelic event.

**Figure 46: PPs in Imperfective Motion VPs for Atelic Events**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Overt PPs</th>
<th>Null-PPs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw N</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>(/Total Responses)</td>
<td></td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>16 (/83)</td>
<td>19.28</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>12 (/74)</td>
<td>16.22</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>15 (/71)</td>
<td>21.13</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>25 (/92)</td>
<td>27.17</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>50 (/118)</td>
<td>42.37</td>
</tr>
<tr>
<td>Adults</td>
<td>40 (/75)</td>
<td>53.33</td>
</tr>
</tbody>
</table>
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Table 71: PPs in Imperfective Motion VPs for Atelic Events

The data reported in Figure 46 and Table 71 show that children aged 5-9 prefer null PPs in imperfective motion VP constructions, whereas 9-10 yrs old children and adults perform at chance level with the former slightly favouring, qualitatively only, the null complement use. These observations were statistically supported by one-way-goodness-of-fit chi-square tests (5-6 yrs old: $\chi^2=31.337$, df= 1, $p=.000$; 6-7 yrs old: $\chi^2=33.784$, df= 1, $p=.000$; 7-8 yrs old: $\chi^2=23.676$, df= 1, $p=.000$; 8-9 yrs old: $\chi^2=19.174$, df= 1, $p=.000$; 9-10 yrs old: $\chi^2=2.746$, df= 1, $p=.098$; Adults: $\chi^2=.333$, df= 1, $p=.564$).

In terms of acquisition, two-way group-independence chi-square tests were performed to determine whether atelic motion events were treated likewise by all age groups in relation to complement use in (im)perfective VP constructions. As seen in Table 72, the between group comparisons in the case of perfective VP production shows that children perform similarly in selecting null complements, with the exception of the 7-8 vs. 9-10 yrs old group comparison. The adult-like preference is attained only by the oldest child group. In the case of imperfective VPs, however, the oldest child group not only performs adult-like but also differs significantly from the younger children indicating a turning point for acquisition. Thus, in the atelic motion condition children do get the adult preferences developed, which does not seem to be happening in the telic condition as we saw earlier.

<table>
<thead>
<tr>
<th>Group Comparisons</th>
<th>Perfective Aspect</th>
<th>Imperfective Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 yrs old vs. 6-7 yrs old</td>
<td>$\chi^2= .794$, df= 1, $p=.373$</td>
<td>$\chi^2= .250$, df= 1, $p=.617$</td>
</tr>
<tr>
<td>5-6 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2= 2.434$, df= 1, $p=.119$</td>
<td>$\chi^2= .081$, df= 1, $p=.775$</td>
</tr>
<tr>
<td>5-6 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2= .197$, df= 1, $p=.657$</td>
<td>$\chi^2= 1.517$, df= 1, $p=.218$</td>
</tr>
<tr>
<td>5-6 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2= .583$, df= 1, $p=.445$</td>
<td>$\chi^2= 11.785$, df= 1, $p=.001$</td>
</tr>
<tr>
<td>6-7 yrs old vs. 7-8 yrs old</td>
<td>$\chi^2= .294$, df= 1, $p=.588$</td>
<td>$\chi^2= .577$, df= 1, $p=.448$</td>
</tr>
<tr>
<td>6-7 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2= .348$, df= 1, $p=.555$</td>
<td>$\chi^2= 2.843$, df= 1, $p=.092$</td>
</tr>
<tr>
<td>6-7 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2= 2.498$, df= 1, $p=.114$</td>
<td>$\chi^2= 14.231$, df= 1, $p=.000$</td>
</tr>
<tr>
<td>7-8 yrs old vs. 8-9 yrs old</td>
<td>$\chi^2= 1.673$, df= 1, $p=.196$</td>
<td>$\chi^2= .791$, df= 1, $p=.374$</td>
</tr>
<tr>
<td>7-8 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2= 5.424$, df= 1, $p=.020$</td>
<td>$\chi^2= 8.868$, df= 1, $p=.003$</td>
</tr>
<tr>
<td>8-9 yrs old vs. 9-10 yrs old</td>
<td>$\chi^2= 1.788$, df= 1, $p=.181$</td>
<td>$\chi^2= 5.201$, df= 1, $p=.023$</td>
</tr>
<tr>
<td>5-6 yrs old vs. Adults</td>
<td>$\chi^2= 4.133$, df= 1, $p=.042$</td>
<td>$\chi^2= 19.971$, df= 1, $p=.000$</td>
</tr>
</tbody>
</table>
Turning to the between verb-type comparisons per event type, Table 73 presents two-way group-independence chi-square tests to determine the role of telicity for each verb category in relation to the complement production when perfective aspect was provided by the participants. In describing both telic and atelic events, children from the age of 7 and up do differentiate between the two verb-categories. Adults, on the other hand, who, as seen in Section 6.6.6 on the overall PP-use treat activity and motion verbs differently in telic and atelic conditions, when selecting perfective aspect do not make the same distinction.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Telic Event</th>
<th>Atelic Event</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Activity vs. Motion Verbs</td>
<td>Activity vs. Motion Verbs</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td>$\chi^2 = 2.426, df= 1, p=.119$</td>
<td>$\chi^2 = .157, df= 1, p=.692$</td>
</tr>
<tr>
<td>6-7 yrs old</td>
<td>$\chi^2 = 2.058, df= 1, p=.151$</td>
<td>$\chi^2 = 2.880, df= 1, p=.090$</td>
</tr>
<tr>
<td>7-8 yrs old</td>
<td>$\chi^2 = 16.850, df= 1, p=.000$</td>
<td>$\chi^2 = 20.584, df= 1, p=.000$</td>
</tr>
<tr>
<td>8-9 yrs old</td>
<td>$\chi^2 = 12.263, df= 1, p=.000$</td>
<td>$\chi^2 = 17.120, df= 1, p=.000$</td>
</tr>
<tr>
<td>9-10 yrs old</td>
<td>$\chi^2 = 37.677, df= 1, p=.000$</td>
<td>$\chi^2 = 14.900, df= 1, p=.000$</td>
</tr>
<tr>
<td>Adults</td>
<td>$\chi^2 = .815, df= 1, p=.367$</td>
<td>$\chi^2 = .503, df= 1, p=.478$</td>
</tr>
</tbody>
</table>

**Table 73: Between Verb-Type Comparisons: Perfective VPs & Complement Use**

Turning to the between verb-type comparisons per event type, Table 74 presents two-way group-independence chi-square tests to determine the role of telicity for each verb category in relation to the complement production when imperfective aspect was provided by the participants. In describing both telic and atelic events, children from the age of 6 upwards do differentiate between the two verb-categories. Adults, also distinguish the two categories.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Telic Event</th>
<th>Atelic Event</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Activity vs. Motion Verbs</td>
<td>Activity vs. Motion Verbs</td>
</tr>
<tr>
<td>5-6 yrs old</td>
<td></td>
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<tr>
<td>6-7 yrs old</td>
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<tr>
<td>7-8 yrs old</td>
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<td>8-9 yrs old</td>
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<td></td>
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<tr>
<td>9-10 yrs old</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>$\chi^2 = .815, df= 1, p=.367$</td>
<td>$\chi^2 = .503, df= 1, p=.478$</td>
</tr>
</tbody>
</table>

**Table 74: Between Group Comparisons: PPs in Motion VPs for Atelic Events**
5-6 yrs old  $\chi^2 = 1.097$, df= 1, p=.295  $\chi^2 = 1.609$, df= 1, p=.205
6-7 yrs old  $\chi^2 = 10.638$, df= 1, p=.001  $\chi^2 = 12.295$, df= 1, p=.000
7-8 yrs old  $\chi^2 = 9.681$, df= 1, p=.002  $\chi^2 = 16.761$, df= 1, p=.000
8-9 yrs old  $\chi^2 = 14.000$, df= 1, p=.000  $\chi^2 = 1.917$, df= 1, p=.166
9-10 yrs old $\chi^2 = 18.955$, df= 1, p=.000  $\chi^2 = 7.016$, df= 1, p=.008
Adults      $\chi^2 = 3.316$, df= 1, p=.069  $\chi^2 = 7.103$, df= 1, p=.008

Table 74: Between Verb-Type Comparisons: Imperfective VPs & Complement Use

To summarize, the examination of complement use in (im)perfective motion VPs shows that (a) event type comparisons show an effect for the 7-8 yrs old children for perfective aspect and for 6-7 yrs old children for imperfective aspect, (b) aspect type comparisons indicate an increase in PP production in the telic condition for 6-7, 7-8 and 8-9 yrs old children and in the atelic condition for 5-6 yrs old children, (c) across (a)telic conditions and aspectual marking young children demonstrate a preference for null PPs, (d) for telic motion events, the adult preference for the combination of perfective aspect and overt PP-use is not attained by children even at the age of 10 and (e) for atelic motion events, 9-10 yrs old children do perform adult-like.

6.7 Summary

The production results show that aspect is found to operate in relation to telicity. Perfective aspect is used to mark telicity on both activity and motion events but poses difficulties developmentally especially in the case of the latter. Imperfective aspect, on the other hand, is related to atelic events for both verb categories and is in place earlier in acquisition than perfective aspectual marking. The examination of the overall complement use shows that (a) activity and motion verbs are differentiated both by learners and adults, (b) the use of DPs for telic activities becomes adult-like by the age of 6 and (c) the use of PPs for telic motions remains non-adult-like till the age of 10. The overall complement use results, as the aspectual marking results, point to a developmentally advantageous position in relation to telicity for activity VP constructions as opposed to the motion ones. Lastly, the results on the joint use of perfective aspect and overt complements for telic events indicate two separate developmental stepping stones for each verb category. Learners aged 7 and up develop an adult-like preference
for perfective activity VPs with overt complements but this preference does not develop for the motion construction even at the age of 10.
7 Discussion

The primary aim of this dissertation was to investigate the acquisition of telicity in Greek. To this aim, we explored the syntactic representation of aspect and the role of endpoint resolution in the definition of telicity. Given that the results have been presented in earlier sections, this section sets to provide an overview of the findings and discuss (a) whether the theoretical assumptions were sufficient to explain the research findings, (b) whether the experimental data resemble or not the findings in other studies on the acquisition of aspect and telicity and (c) whether there was a methodological bias towards the particular conclusions.

7.1 Main Experimental Findings

The thesis assumed that telicity lies at the syntax-discourse interface and that it is determined compositionally through the interaction of different factors, such as lexical and grammatical aspect and argument structure. Telicity as the by-product of the aspectual marking of VPs was not treated as a lexical property of the verbs only. Instead, we adopted an endpoint account for its analysis. Following Depraetere (2007), a sentence was expected to receive a telic interpretation if the event was represented as having an endpoint beyond which the event could not continue. The manifestations of the endpoint were syntactically and contextually provided and the structures we investigated were activity and motion constructions with specific complements. Each structure included a quantized DP object or a PP-Goal as possible manifestations of the endpoint. The visibility of the endpoint was established within the sentence through aspectual marking. Perfective aspect made visible the endpoint of the event and imperfective aspect offered an openedness to the event.

With regard to the syntactic representation of transitive activities and the interaction of aspect with overt/null objects, we followed Tsimpli and Papadopoulou (2006). Specifically, we presupposed that the object of a perfective activity verb merged in the specifier position of the TransP, while the object of an imperfective activity verb in the lower VP. Movement of the direct object from the specifier position of the lower VP
to SpecTransP was necessary for case reasons. Thus, the availability of an object was encoded syntactically as a Merge-only or a Merge+Move derivation.

With regard to the syntactic representation of motion constructions and the interaction of aspect with PPs, we followed Tsimpli and Papadopoulou (2009). In perfective motion VPs, the complement PP received either a directional or a telic reading (goal), whereas, in imperfective motion VPs, the PP had a VP-adjunct status suggesting a locative interpretation. The syntax-discourse interface would then finalize the status of the PP-Goal as the reached endpoint of the motion event. Based on these assumptions, we predicted that acquisition data would demonstrate these syntactic differences. In particular, our youngest participants were expected to have acquired grammatical aspect but the expression of telicity would be problematic especially for motion verb constructions due to the variability in interpretations.

The comprehension experiment examined the interpretation of grammatical aspect in intransitives, transitive activities and motions by acquirers aged from 5 to 8 years old. The task manipulated the condition of aspect (perfective vs. imperfective) and measured the preferences of mapping on a telic or an atelic event. The data on intransitive constructions showed that perfective intransitive VPs were matched to completed events and imperfective ones to on-going events. A more thorough look within this subset of data suggested that perfective unaccusative constructions were mapped on completed events, while the data of imperfective unaccusatives implied no matching preference by children. In the unergative constructions, the use of perfective aspect was not reserved for completed events and the use of imperfective aspect lead to a robust preference for on-going eventualities. These findings suggest that the lexical specific properties of intransitives, that consequently require a different syntactic representation, are activated in the interaction with grammatical aspect in the child language. Adults, however, were shown to rely predominantly on the encoding of grammatical aspect and were reluctant to consider lexical properties.

The comprehension data on activity constructions suggested that both children and adults mapped perfective VPs to telic events and imperfective VPs to atelic events. These preferences became adult-like for children by the age of 7. The data on motion constructions confirmed our hypothesis that the ambiguity in the interpretation of aspect could potentially create a delay in acquisition. Specifically, perfective motion VPs were mapped on events representing goal attainment by children aged 6 to 8 years old. Nevertheless, their performance was not adult-like. The imperfective motion VPs, on the
other hand, were matched to events denoting a locative interpretation by all groups. Keep in mind that for motion constructions the children did not reach the adult preference levels in any condition. The between verb type comparisons (activity vs. motion) indicated that children discriminated between the two categories only in the perfective condition clearly exemplifying the interaction of perfective aspect with the argument structure of each verb type. The comprehension results demonstrated that grammatical aspect interacts with the verb’s argument structure and, consequently, affects the process of acquisition. The findings on the perception of telicity provided evidence for our prediction that activities would precede in development.

The production experiment examined the expression of telicity by acquirers aged from 5 to 10 years old. The task manipulated the condition of telicity (telic vs. atelic) and measured the production of grammatical aspect and complements. The aspectual marking on intransitive verbs showed that both for completed and on-going events children and adults used perfective aspect. This preference for perfective aspect across eventualities suggests a default choice for intransitive constructions which is not found in activity and motion VPs. The performance of participants on the use of aspect for the description of activity events was very informative for the interrelation of aspect and telicity. For telic activity events young children appeared to use imperfective aspect quite robustly. Their performance changed at the age of 8 when they developed the adult-preference for perfective marking. For atelic activity events, however, we found no variability in the child performance. In fact, the data showed that imperfective aspect was mapped on atelicity very early on in acquisition.

Turning to motion constructions, the findings pinpointed the difficulties acquirers face in the aspectual encoding of telicity verifying our predictions. For telic motion events, children aged 5 to 7 robustly selected imperfective aspect. The use of perfective aspect increased with age but the adult performance was not attained even by 10 year old children. For atelic motion events, though, children performed adult-like selecting imperfective aspect for the encoding of atelicity. Moreover, the between verb type comparisons showed that in the telic condition children differentiated the two categories reflecting on the differences in the interaction of activity and motion syntactic configurations with grammatical aspect.

In order to explore the role of endpoints in the encoding of telicity we explored the production of DPs and PPs across aspectual marking and in relation to it. The overall complement use for telic activities suggested that from the age of 6 and up children
manipulated overt DPs as manifestations to endpoints irrespectively to aspectual marking. The joint use of overt complements with perfective marking in the description of telic activities was developed by children from the age of 7 and up. These findings imply that children encoded telicity adult-like quite late in acquisition compared to other acquisition studies, as we will see in detail in the following section.

Further delay in the acquisition of telicity was found in the motion data. On overall PP production both for telic and atelic motion events, we found a robust preference for null PPs. With regard to the joint use of perfective aspect and complements, there was an increase in the production of PPs by 6 to 9 year old children. This increase, however, did not lead to the adult-like strong preference for overt PP complements in the description of telic motions. The motion data showed that even 10 year old children do not produce telicity encodings in an adult-like manner.

The between verb comparisons for the overall complement use showed that both in the telic and atelic conditions children discriminate between activity and motion verbs offering further support to our argumentation. The between verb comparisons for the joint use of perfective aspect and overt complements also suggested that in acquisition children are affected by the syntactic properties of verbs and they use these features to manipulate each verb class differently. Thus, the production study demonstrated the interaction of aspect and endpoint encoding and fine-graded the development steps required for the acquisition of telicity. Having presented an overview of our findings let’s turn now to the discussion of the theoretical background and the findings in other psycholinguistic studies.

7.2 Theoretical & Acquisitional Implications

Starting with the theoretical framework of the study we need to address whether the verbs selected were appropriate candidates for the examination of the interaction of aspect and argument structure. As discussed in Section 2.1 several verbal classifications have been put forward to accommodate the lexical aspect properties. Vendler (1957) suggested the distinction of verbs into four categories, activities, accomplishments, achievements and states. Several researchers subsequently altered and reorganized these categories with Smith (1991/1997) developing them further on the basis of features such as stativity, duration and telicity. For the purposes of our research, however, we
narrowed down the set of verbs to be examined in one category; that is activities. Both transitive activity and motion verbs fall under the situation type of activity and their lexical aspect may be altered to that of accomplishment with the addition of a complement. Thus, the verb items, both in the comprehension and production study, were of the same situation type, with the option of turning into accomplishments with the addition of an object argument. Note that even though we assumed an endpoint account for the treatment of telicity, the particular constructions may comply with Smith’s approach since she proposes that the feature of telicity for accomplishments has a positive value, which fits the conditions of telic and atelic readings in the experiments.

The grammatical encoding of aspect in Greek is either perfective or imperfective. The former presents a situation as a single whole and the latter implies incompleteness and openendedness. In the case of perfective aspect, Smith (1991/1997) suggests that situation types bearing the [+Telic] feature have natural endpoints that function as completion points due to the aspectual marking. Situation types bearing the [-Telic] feature, on the other hand, have only termination points. Since our experimental items were provided as accomplishments with perfective aspectual marking, we have ensured the possibility for a telic interpretation. This was also evident in the adult comprehension data, where adults showed a ceiling effect replicating our prediction. Thus, methodologically up to this point our experimental items appear to be controlled both for lexical and grammatical aspect.

One more issue that arises in the literature with regard to grammatical aspect is markedness. In the acquisition studies markedness is translated as order of acquisition with perfective aspect appearing early in child language, especially with accomplishments. To establish markedness, Comrie (1876) sets a set of conditions (see in detail Section 2.1.1) and concludes that the unmarked category can be used everywhere while the marked category shows more irregularities. On the basis of our data, the preference for imperfective aspectual forms both for activities and motions suggests that children identify the imperfective as the unmarked category. In our data set, imperfective aspect emerges first in development, contra other acquisition studies that identify perfective aspect as the first type of aspect to be acquired. The ‘overuse’ of the imperfective, especially by the youngest language acquirers, suggests that in Greek imperfective could be referred to as the default choice of aspect but only in reference to telicity. The extensive use of imperfective aspect in contexts were telicity is investigated was also found in Polish and Russian as we saw in Section 3.2. Developmentally, the use of
imperfective aspect is gradually substituted by perfective aspect for occasions where the speaker chooses to focus on the endpoint of an event. In other words, we do not claim that imperfective aspect sets first in acquisition rather that it appears as a readily available option to speakers earlier than perfective aspectual marking in relation to telicity encoding.

Semantic and syntactic approaches on the derivation of aspectual meaning further highlighted the role of quantization and event measurement (see Section 2.1.2 for the work by Verkuyl, Krifka, Tenny and De Swart). For Verkuyl (2005a), the [ADD TO] feature on the verb and the [SQA] feature on the noun phrase establish quantity in the syntactic computation through lexical specification. We agree that quantity is a property that interacts with the telic or atelic interpretation of an utterance and consequently we considered this factor in the experimental design. The [+ADD TO] feature on the verb was satisfied with the inclusion of verbs that express non-states and the [+SQA] feature on the complement was satisfied with the inclusion of objects that were specific and quantized; the event/videos for transitive activities presented objects whose quantity was always one.

The syntactic accounts of aspect emphasized the role of Spec-Head relationships and the role of scope over positions lower in the tree construction for the built up of aspectual meaning (see Section 2.2). Borer (2005b) suggests that both the quantity predicate (VP) and the subject of quantity (complement) fall under the head of aspect which can potentially offer a telic reading. On a similar note, Ramchand (2008) divides the aspectual projections into three categories, causing, process and result projection with the latter appearing at the bottom of the tree and reserved for the interpretation of telicity. Even though, Ramchand assumes an unconstructed lexicon, her proposal allows the lexical specification of verbs as result states that receive a telic interpretation. For our experimental study, we also assume a low landing site for complements but we refrain from categorizing our verbs as result-states. Moreover, in order to confine the effects of sentential elements, that imply, for example, cause and result, we avoided to use adverbials and adjectives or even verbs that carry this type of semantic content. Consequently, the findings of the experimental study refer only to operations within the aspectual head and not to event properties higher in the tree construction.

One more property to consider in the discussion of telicity is boundedness. Boundedness is a temporal property that could potentially affect the results of the study since it is repeatedly confused with telicity in the literature (for a detailed account see
Section 2.3). Following Depraetere (1995), we assumed that a sentence will be bounded if the situation is described as having reached a temporal boundary irrespectively of whether an inherent or intended endpoint is available. Thus, to avoid a boundedness interference, telic events were presented as bounded and atelic events as unbounded. Moreover, the inclusion of the baseline condition (intransitive constructions) in the experimental design targeted this key difference between boundedness and telicity.

The results for intransitives were quite revealing both with regard to their lexical specification and their interaction to the property of boundedness. The comprehension findings show that aspectual marking appears to interact with the boundedness of the event. Specifically, perfective intransitives were mapped on bounded events and imperfective intransitives on unbounded events. However, when we look at unaccusative and unergative constructions independently, the data show a robust preference in the mapping of perfective unaccusatives on completed events and imperfective unergatives to on-going eventualities.

These findings additionally support van Hour’s (2000b) proposal on the syntactic representation of unaccusatives and unergatives; however, due to the fact that she does not adopt an endpoint account for telicity, she uses the term telicity for these constructions and she maps the unaccusative syntax on telicity and unergative syntax on atelicity (see in detail Section 3.2). Regardless of terminological choices, our data show that children were more sensitive to the lexical specification of intransitive verbs and that lexicon information interacted with the aspectual marking of VPs. The adults, on the other hand, interpreted aspect uniformly across intransitives with grammatical aspect overriding the lexical specification of verbs. A possible explanation to these findings is that the acquisition of verbs concerns individual lexical characteristics that interact with aspect. Thus, the role of aspectuality within the lexicon should not be ignored. We need to point out, though, that further investigation is required for intransitive constructions with a larger set of verbs, so as to identify more fine details on their acquisition, especially if we consider that the production study showed a preference for perfective aspect regardless to eventuality and type of intransitivity. This finding also suggests that when acquirers and adults used imperfective to describe atelic events for activities and motions, they were aware of the differences between the intransitives and transitive constructions and the role of endpoints in the interpretation of the latter.

Turning to transitive constructions and the interaction of aspect with argument structure in Greek, Tsimpli and Papadopoulou (2006) have shown both theoretically and
experimentally that object omission is controlled by the aspectual marking of the verb (see Section 2.4 and Section 3.2). They propose that for perfective aspect the complement is merged at the lowest position in the tree, while for imperfective it is necessary to move higher. Thus, in the case of imperfectives the derivational steps involve the Merge + Move operations. Additionally, they propose that the pairing of perfective aspect with an overt object leads to the telic reading of an utterance, whereas all other combinations to atelicity. Our transitive activity verb data both in the comprehension and the production study demonstrate this interaction of aspect and argument structure providing further validation to their hypothesis, which we adopted as the theoretical frame of the present thesis. Specifically, perfective activity VPs are mapped on telic events and imperfective activity VPs are mapped on atelic events even by 5 year old children. Note, however, that they reach the adult preferences at the age of 7, which is considerably late compared to findings in the acquisition of other languages. In the description of telic activity events (production data), the picture is not as straightforward.

The production data for activities show that (a) the imperfective is used predominantly for the description of atelic events, (b) in the telic condition, adults and children aged 8 and up use perfective aspect, (c) the overall complement use increases with age, especially for telic events, and (d) between the ages of 6 and 7 children develop the adult performance of pairing perfective aspect with overt DPs. These findings suggest that the development of telicity is indeed related to grammatical aspect and complement use. Therefore, they verify the compositional nature of telicity, which we have adopted. Moreover, we establish that telicity is not a lexicon-syntax interface phenomenon because if it belonged to the lexical specification of a verb, (a) it would set earlier in acquisition, and (b) we would not find differences in the data of transitive and intransitive constructions.

If we consider the findings of acquisitional studies on the relation of transitivity and telicity, we will discover both similarities and differences with our data. Firstly, acquisition studies, like Wagner’s work, have examined the role of transitivity as a structural cue to infer telicity (see Section 3.2). Some of these studies report a connection of transitivity to telicity in the child language and others do not. Secondly, transitive constructions with particles have been shown to map telicity on particles very early on in the acquisition of aspectual meaning. 3 year old Dutch-speaking children and 2 year old German speaking children were found to associate telic events to constructions that
contain particles (for an overview of van Hout’s and Schulz’s work see in Section 3.2). The Greek data, however, do not show such an early adult-like performance. Instead, the acquisition of telicity in Greek appears to set from the age of 7 and upwards depending on the type of measurement (comprehension vs. production). The comprehension data indicate an adult-like understanding of telicity from the age of 7 and up, while the production data from the age of 8 and up showing a four year delay compared to findings in other languages. This difference should not come as a surprise since Greek does not lexicalize telicity through particles. Lastly, a similarity in the findings on the acquisition of Russian aspect with our findings is that of the overuse of imperfectives (see Section 3.2). Russian-speaking children, similarly to Greek-speaking children, use the imperfective quite robustly at the start of the acquisition but the Russian aspectual distinctions set around the age of 3 which is not attested in the development of Greek aspect. The delay in the acquisition of telicity for transitives can be explained by (a) the lack of lexicalization of telicity in Greek, (b) the lack of grammaticalization of telicity in Greek and (c) the late development of properties activated at interfaces. In reference to the activation of features at the syntax-discourse interface, we need to point out that discourse and pragmatic information do not affect the grammaticality of an utterance per se but have an interpretational value.

Our results for motion constructions have been quite informative as well. Literature has identified motion verbs as a special category with regard to its lexical specification and syntactic representation. Talmy (1985) put forward the typological distinctions of motion verbs and suggested the dichotomy of verb-framed and satellite-framed languages, with Greek falling under the former group. Zubizarreta and Oh (2007) also examined the properties of motion verbs and proposed the V-V syntactic account for the syntactic configuration of inherently directed motions (see in detail Section 2.5). Additionally, the critical role of PPs and their effect on the interpretation of motion utterances as directional and locative was addressed by Ramchand (2008) and Zwarts (2008). The Greek literature further examined the subclassification of motions in terminative motion verbs that denote inherent directed motion towards a goal and non-terminative ones that denote non-directed open-ended movements (for Horrocks & Stavrou’s (2007) account see Section 2.6). In addition, Tsimpli and Papadopoulou (2009) explored the interaction of aspect with the argument structure of motions suggesting a complement position for PP-Goals and an adjunct attachment for locative PPs that lead to the telic and atelic interpretations of motion sentences respectively. Considering the
above key facts on motion constructions, we took two steps in the experimental design. Firstly, we pre-tested our motion verbs on their preferred readings as locative and directional and we selected an equal number of verbs from both categories to counterbalance a possible reading effect in the data. Secondly, we used only one preposition that has no bias towards a directional or locative reading so as to avoid a semantic effect that different prepositions would create.

The comprehension results for motions showed that adults map perfective motions on telic events with goal attainment but children even up to the age of 8 do not develop the adult preferences. With regard to the mapping of imperfective motions, children of all ages select the atelic interpretation but again they differ from adults. The data comparison between activity and motion verbs on comprehension verifies the differences between the two verb types and backs our theoretical assumption on the interaction of aspect with DPs and PPs (for the tree constructions see Section 4). The production results for motions demonstrated in detail the interaction of aspect and complement use. Specifically, in the description of telic events the use of perfective aspect emerges between the ages 8 and 10, but the child performance is not adult-like, and the overall PP use is very limited since children selected null PPs. Quite interestingly, when we tested the joint use of perfective aspect and overt PPs, we found a rise in the number of PPs produced, which, however, remained at chance level and not close to the adult preference for overt PPs. The between verb comparisons once again confirmed our predictions that the acquisition of telicity is further delayed for motions.

The acquisition studies on motions are sparse. The few of them that tested the differences between goal and locative readings of motion constructions, explored the differences between verb-framed and satellite-framed languages and manipulated event beginnings and endpoints (see Section 3.3). Language specific properties, such as the manner vs. path encoding, appear to set as early as at 3 years of age. Papafragou et al. (2008) found that this typological asymmetry is found in the adult language as well. Moreover, a goal bias was found across motion language type. Regier and Zheng’s (2007) study confirms the privileged position of goals over event beginnings for adults and Papafragou’s (2010) child data further validated the cognitive-attentional bias for endpoints. The present thesis did not examine the role of event beginnings in the description of motions but did identify endpoints as the key component of motion verb meaning. Based on the fact that the above mentioned studies found a goal bias for motions cross-linguistically, we may infer that our child participants were aware of the
presence of endpoints depicted in the event/videos and that due to linguistic-related reasons they did not produce descriptions for them. This implication also cancels out any attempt to explain the problematic area of motion acquisition on accounts that suggest that cognitive limitations are responsible for the delay.

Lastly, the interaction of aspect and motion verbs in developmental data was tested by Tsimpili et al. (2007). They found that at the age of 7 children still do not perform adult-like and instead they overused imperfective aspect in motion constructions suggesting a preference to atelicity. Even though the Tsimpili et al.’s (2007) study was of a smaller scale (the number of participants was limited), their findings point to the same direction as the data of the present thesis; that is the difficulties posed by perfective aspect in the interpretation of motion VPs.

Considering the above, the overall findings of the thesis appear to contribute significantly to the linguistic research on the development of telicity in Greek. The thesis provides an overview of the acquisitional steps of aspectual marking, endpoint encoding and the interpretation of telicity in activity and motion structures basing our argumentation on a large pool of data that have been collected with the help of a quite controlled experimental study. We can summarize the key results of the thesis as follows:

i. Telicity in Greek is compositionally determined.

ii. Grammatical aspect in Greek controls argument structure and sets the potentially telic interpretation of an utterance.

iii. Objects, either in a nominal or prepositional form, may operate as manifestations of endpoints in eventualities.

iv. The delay in acquisition of telicity in Greek reflects the difficulties posed by the syntax-discourse interface.

7.3 Limitations of the Present Study & Future Research

As any research conducted in the field of human behaviour, experimental designs can bear strengths and limitations, which we need to consider when drawing general assumptions. The tight timeframe placed on a Ph.D. research project means that a very focused approach was required for the investigation of a vast domain such as aspect. The
Theories and suggestions of linguists working in this area informed the direction of the research and guided significantly the set of variables tested.

Nevertheless, a number of factors that may affect telicity were not explored. An important factor to the derivation of a telic or atelic interpretation is that of quantity. The manipulation of the quantity properties in object and event specifications could provide useful information on the interaction of quantization and telicity. Specifically, an acquisitional study could test the differences between mass and count DPs and explore whether aspect interacts with DP properties in the comprehension and production of telicity. Moreover, the examination of other sentential elements, such as adverbials, could also contribute to the understanding of the derivational steps required for the built up of aspectual meaning. For example, temporal adverbials denoting either duration or punctuality could be tested against telic and atelic interpretations of events.

Our comprehension experiment was off-line and the data we collected did not provide an insight of the online comprehension of telicity. Future studies on Greek telicity could examine the roles of endpoints on the basis of eye-tracking data. This kind of evidence could enlighten us on the exact perception of telicity and the spatial properties that contribute to its determination.

Furthermore, even though the number of children participating to our experiments was relatively large for an acquisition study and, thus, provided us with an ample size of data, it was not feasible to collect longitudinal data as well in order to examine the development of each child individually. Additionally, with regard to participants, it is important to take into account that they had the same sociolinguistic profile, which, on the one hand, creates a uniform sample for us to test, but, at the same time, it leads to the exclusion, for example, of information on possible dialectal differences.

Because of these reasons, we acknowledge that this thesis is by no means an all-inclusive analysis of telicity in Greek but only the first attempt to approach the domain of aspect in the light of psycholinguistic evidence on telicity.
8 Conclusion

The thesis set out to review theories on the representation of aspect in grammar and to address the linguistic encoding of telicity in Greek. Our acquisitional findings on the interaction of aspect with activity and motion constructions are a main contribution to the discussion on the compositional nature of aspectual meaning and inform considerably the area of first language acquisition research on the developmental behaviour of syntax-discourse interface properties, such as telicity. The particular psycholinguistic domain in Greek lacks evidence from prior research and, consequently, the thesis contributes to this direction as well. Nonetheless, our experimental study is the first step only; further research has to address the role of aspect in the learning of other verb classes, the interaction of the quantity properties of eventualities with telicity during online processing and the function of other syntactic configurations in the interpretation of aspect among many other issues. Furthermore, one would need to know how these interactions are represented in the adult grammar and if the same mapping strategies are employed by language acquirers and at what age. Acquisition insights of this sort do not only contribute to a better understanding of language development but they additionally offer validation to theoretical approaches describing interface properties abstractly.
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Appendix A

Pre-Task A: Acceptability Judgment Task Items

Version A

1. Το κορίτσι βαρέθηκε την κούνια και έτρεξε στον κήπο.
   ‘The girl got bored with the swing and ran in the garden.’

2. Αφού ήπια τον καφέ, ο αδερφός μου έφαγες κέικ.
   ‘After I had a coffee, my brother ate the cake.’

3. Είχε καθαρά παπούτσια αλλά πήδηξε στο νερό.
   ‘She/he had clean shoes, but jumped to/in the water.’

4. Το κορίτσι μίλησαν στο φίλη της και κοίταξε έξω.
   ‘The girl talked to her friend and looked outside.’

5. Το παιδί ήταν χαρούμενο και χοροπήδησε στις λάσπες.
   ‘The child was happy and gamboled in the mud.’

6. Αφού βρήκαμε το χαμένο δαχτυλίδι, εμείς ηρέμησε με ένα τσάι.
   ‘After we found the lost ring, we calmed down with a tea.’

7. Το χάμστερ έφαγε και σκαρφάλωσε στο κλουβί του.
   ‘The hamster ate and climbed up in its cage.’

8. Γκρεμίστηκε το σπίτι και μένει στους γονείς της.
   ‘The house demolished and she stays at her parents’.

9. Το συνέδριο συνεχίστηκε αδιάκοπα αν και άρχισε με το πρωί.
   ‘The conference carried on without a break even though it started with the morning.’
10. Το μωράκι έπαιξε με τα παιχνίδια του και μπουσούλησε στην κούνια του.
   ‘The baby played with its toys and crawled in its crib.’

11. Είχε τα υλικά έτοιμο και έφτιαξε στο ταψί.
   ‘She/he had the ingredients *ready-SG and made *to the baking tray.’

12. Ζαστάθηκε και βούτηξε στο ποτάμι.
   ‘She/he got hot and dived in the river.’

13. Θα έχανε το μάθημα αλλά πήγε στη σχολή.
   ‘She/he would miss the class but went to school.’

14. Χτύπησε το κουδούνι αφού άνοιξε στο γραμματόκιβωτο.
   ‘The bell rang after she/he opened the safe.’

15. Έφυγε χαρούμενη από το δωμάτιό της και χόρεψε στο βιβλίο της.
   ‘She left her room happy and danced to her book.’

16. Σχεδίασε το σκίτσο αλλά το έσκισε στα κομμάτια.
   ‘She/he drew an illustration but tore it *to pieces.’

17. Είχε να κάνει ψώνια και πέταξε στο Λονδίνο.
   ‘She/he had to do some shopping and flew to London.’

18. Όλοι ήθελαν να αργήσουν αλλά το τρένο άργησε στο δευτερόλεπτο.
   ‘Everybody wanted to be late but the train *were-late-2SG *to the second.’

19. Μέθυσε με τα ποτά στο μπαρ και παραπάτησε στο σπίτι του.
   ‘She/he got drunk with the drinks at the bar and stumbled to his home.’

20. Αφού οι κριτές αποφάσισαν ο νικητής είχε να φύγει.
   ‘Since the judges decided the winner had *in-order-to go.’

21. Το γάμος έγινε αλλά η νύφη σκέφτηκε στον αστράγαλο των.
“*The-Neut wedding happened the bride thought *to the ankle *them-Gen.’

22. Δεν είχε χώρο στο πεζοδρόμιο και περπάτησα στην άκρη του δρόμου.
   ‘There was no space on the sidewalk and I walked on the edge of the road.’

23. Στόλισε τα δέντρα και γυάλισε καθώς και τα λαμπάκια.
   ‘She/he decorated *the-PL tree and shined *likewise *and the lights.’

24. Δεν του κολούσε ύπνος και στριφογύρισε στο κρεβάτι.
   ‘She/he couldn’t fall asleep and was turning around in the bed.’

25. Αυτοί τοποθέτησε την τραπεζαρία και μετά εμείς έκατσες.
   ‘They *positioned-3SG the dining table and then we *sat-2SG.’

26. Ήμουν πολύ βαθιά και κολύμπησα στην ακτή.
   ‘I was far away and I swam (back) to the coast.’

27. Εμείς ακούσατε μουσική από το παράθυρο και κοίταξε μέσα.
   ‘We *listened-2PL to music from the window and *looked-3SG inside.’

28. Χτύπησε στο δρόμο και σύρθηκε στο κεφαλόσκαλο.
   ‘She/he got hit in the street and crawled to the landing.’
Version B

1. Ο προπονητής τον μάλωσε αλλά αυτός κολύμησε στην πισίνα.
   ‘The coach argued with him but he swam in the pool.’

2. Αφού ήταν τον καφέ, ο αδερφός μου έφαγες κέικ.
   ‘After I had a coffee, my brother ate 2SG the cake.’

3. Γκρίνιαξε ξαφνικά και πήγε στο πάτωμα του δωματίου.
   ‘She/he moaned suddenly and went to floor of the room.’

4. Το κορίτσι μίλησαν στο φίλη της και κοίταξε έξω.
   ‘The girl talked 3PL to her friend and looked outside.’

5. Ήμουν με παρέα έξω και χόρεψα στο κλαμπ.
   ‘I was out with company and I dance in the club.’

6. Άφησαμε το χαμένο δαχτυλίδι, εμείς έσβησαμε με ένα τσάι.
   ‘After we found the lost ring, we calmed down 3SG with a tea.’

7. Το πουλί φτερούγισε και πέταξε στο κλουβί.
   ‘The bird flapped (its wings) and flew to its cage.’

8. Γκρεμίστηκε το σπίτι και μένει στους γονείς της.
   ‘The house demolished 2SG and she stays at her parents’.

9. Το συνέδριο συνεχίστηκε αδιάκοπα αλλά άρχισε με το πρωί.
   ‘The conference carried on without a break even though it started with the morning.’

10. Ήταν λακκούβα και παραπάτησα στο δρόμο.
    ‘There was a puddle and I stumbled in the street.’

11. Ήταν το υλικό έτοιμο και έφτιαξε στο ταψί.
‘She/he had the ingredients *ready-SG and made *to the baking tray.’

12. Δεν ήξερα τίποτα και στριφογύρισα στη φίλη μου.
   ‘I knew nothing and I turned around to my friend.’

13. Φοβήθηκα και πηδήξα στη θάλασσα.
   ‘I got scared and I jumped into the sea.’

14. Χτύπησε το κουδούνι αφού άνοιξε στο γραμματόκιβωτο.
   ‘The bell rang after she/he opened the safe.’

15. Έφτασα το βιβλίο αφού χοροπήδησα στο ψηλότερο ράφι.
   ‘I reached the book after I hopped on the highest shelf.’

16. Σχεδίασε το σκίτσο αλλά το έσκισε στα κομμάτια.
   ‘She/he drew an illustration but tore it *to pieces.’

17. Κουράστηκα αλλά σκαρφάλωσα στην κορυφή του βουνού.
   ‘She/he got tired but climbed to the top of the mountain.’

18. Όλοι ήθελαν να αργήσουν αλλά το τρένο άργησε στο δευτερόλεπτο.
   ‘Everybody wanted to be late but the train *were-late-2SG *to the second.’

19. Ήμουν στην κουζίνα με το μωρό και μπουσούλησε στο σαλόνι.
   ‘I was in the kitchen with the baby and it crawled to the living room.’

20. Αφού οι κριτές αποφάσισαν ο νικητής είχε για να φύγει.
    ‘Since the judges decided the winner had *in-order-to go.’

21. Το γάμος έγινε αλλά η νύφη σκέφτηκε στον αστράγαλο των.
    ‘*The-Neut wedding happened the bride thought *to the ankle *them-Gen.’

22. Ο στρατιώτης έκανε ασκήσεις και σώθηκε στο χώμα.
    ‘The soldier was exercising and he crawled on the ground.’
23. Στόλισε τα δέντρα και γυάλισε καθώς και τα λαμπάκια.
   ‘She/he decorated *the-PL tree and shined *likewise *and the lights.’

24. Δεν είχε πολύ ενέργεια από το πρωί και βούτηξε στη καρέκλα.
   ‘She/he didn’t have a lot of energy in the morning and dived into the chair.’

25. Αυτοί τοποθέτησε την τραπεζαρία και μετά εμείς έκατσε.
   ‘They *positioned-3SG the dining table and then we *sat-2SG.’

26. Ξέχασα να πάρω εφημερίδα και έτρεξα στο περίπτερο.
   ‘I forgot to get a newspaper and I ran to the kiosk.’

27. Εμείς ακούσατε μουσική από το παράθυρο και κοίταξε μέσα.
   ‘We *listened-2PL to music from the window and *looked-3SG inside.’

28. Έφυγα από το μαγαζί και περπάτησα στη γωνία του δρόμου.
   ‘I left the shop and I walked to the corner of the street.’
### Appendix B

**Final Set of Experimental Items for Comprehension and Production Studies**

<table>
<thead>
<tr>
<th>Verb Type</th>
<th>Perfective Aspect</th>
<th>Imperfective Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unergatives</strong></td>
<td>Χθες το αγόρι χαμογέλασε.</td>
<td>Χθες το αγόρι χαμογελούσε.</td>
</tr>
<tr>
<td></td>
<td>‘Yesterday the boy smiled’</td>
<td>‘Yesterday the boy was smiling.’</td>
</tr>
<tr>
<td></td>
<td>Χθες το παιδί κοιμήθηκε.</td>
<td>Χθες το παιδί κοιμόταν.</td>
</tr>
<tr>
<td></td>
<td>‘Yesterday the child slept.’</td>
<td>‘Yesterday the child was sleeping.’</td>
</tr>
<tr>
<td></td>
<td>Χθες το κορίτσι έκλαψε.</td>
<td>Χθες το κορίτσι έκλαψε.</td>
</tr>
<tr>
<td></td>
<td>‘Yesterday the girl cried.’</td>
<td>‘Yesterday the girl was crying.’</td>
</tr>
<tr>
<td><strong>Unaccusatives</strong></td>
<td>Χθες το ποτήρι έσπασε.</td>
<td>Χθες το ποτήρι έσπασε.</td>
</tr>
<tr>
<td></td>
<td>‘Yesterday the glass broke.’</td>
<td>‘Yesterday the glass was breaking.’</td>
</tr>
<tr>
<td></td>
<td>Χθες η πόρτα έκλεισε.</td>
<td>Χθες η πόρτα έκλεισε.</td>
</tr>
<tr>
<td></td>
<td>‘Yesterday the door closed.’</td>
<td>‘Yesterday the door was closing.’</td>
</tr>
<tr>
<td></td>
<td>Χθες το παιδί έπεφτε.</td>
<td>Χθες το παιδί έπεφτε.</td>
</tr>
<tr>
<td></td>
<td>‘Yesterday the child fell.’</td>
<td>‘Yesterday the child was falling.’</td>
</tr>
<tr>
<td><strong>ACTIVITY</strong></td>
<td>Χθες το κορίτσι ζωγράφισε ένα λουλούδι.</td>
<td>Χθες το κορίτσι ζωγράφισε ένα λουλούδι.</td>
</tr>
<tr>
<td><strong>V+DP</strong></td>
<td>‘Yesterday the girl painted a flower.’</td>
<td>‘Yesterday the girl was painting a flower.’</td>
</tr>
<tr>
<td></td>
<td>Χθες το παιδί διάβαζε ένα βιβλίο.</td>
<td>Χθες το παιδί διάβαζε ένα βιβλίο.</td>
</tr>
<tr>
<td></td>
<td>‘Yesterday the child read a book.’</td>
<td>‘Yesterday the child was reading a book.’</td>
</tr>
<tr>
<td></td>
<td>Χθες το αγόρι ήτρυγε ένα μήλο.</td>
<td>Χθες το αγόρι ήτρυγε ένα μήλο.</td>
</tr>
<tr>
<td>English</td>
<td>Greek</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>‘Yesterday the boy ate an apple.’</td>
<td>Χθές το αγόρι έφτιαξε ένα παζλ.</td>
<td></td>
</tr>
<tr>
<td>‘Yesterday the girl drank (a glass of) water.’</td>
<td>Χθές το κορίτσι έπινε το νερό.</td>
<td></td>
</tr>
<tr>
<td>‘Yesterday the child cleaned the table.’</td>
<td>Χθές το παιδί καθάρισε το τραπέζι.</td>
<td></td>
</tr>
<tr>
<td>‘Yesterday the boy made a puzzle.’</td>
<td>Χθές το κορίτσι στριφογύρισε στο δωμάτιο.</td>
<td></td>
</tr>
<tr>
<td>‘Yesterday the girl turned around in the room.’</td>
<td>Χθές το παιδί έτρεχε στην κουζίνα.</td>
<td></td>
</tr>
<tr>
<td>‘Yesterday the boy crawled to the carpet.’</td>
<td>Χθές το αγόρι σώρθηκε στο χαλί.</td>
<td></td>
</tr>
<tr>
<td>‘Yesterday the child was cleaning the table.’</td>
<td>Χθές το παιδί καθάρισε το τραπέζι.</td>
<td></td>
</tr>
<tr>
<td>‘Yesterday the boy was making a puzzle.’</td>
<td>Χθές το αγόρι σερνόταν στο χαλί.</td>
<td></td>
</tr>
<tr>
<td>‘Yesterday the girl was turning around in the room.’</td>
<td>Χθές το κορίτσι στριφογύρισε στο δωμάτιο.</td>
<td></td>
</tr>
<tr>
<td>‘Yesterday the child was running inside the kitchen.’</td>
<td>Χθές το παιδί έτρεχε στην κουζίνα.</td>
<td></td>
</tr>
<tr>
<td>‘Yesterday the girl was jumping in the water.’</td>
<td>Χθές το κορίτσι πήδηκε στο νερό.</td>
<td></td>
</tr>
<tr>
<td>‘Yesterday the boy was going home.’</td>
<td>Χθές το αγόρι πήγε στο σπίτι.</td>
<td></td>
</tr>
</tbody>
</table>
Χθες το κορίτσι χοροπήδηξε στο κρεβάτι. ‘Yesterday the girl gamboled to the bed.’

Χθες το αγόρι έπαιξε στον κήπο. ‘Yesterday the boy played in the garden.’

Χθες το παιδί έπαιξε με την πλαστελίνη. ‘Yesterday the child played with the play-dough.’

Χθες το κορίτσι μίλησε με την φίλη της. ‘Yesterday the girl talked to her friend.’

Χθες το παιδί κοίταξε από το παράθυρο. ‘Yesterday the child looked outside the window.’

Χθες το αγόρι απάντησε στο τηλέφωνο. ‘Yesterday the boy answered the phone.’

Χθες το κορίτσι άκουγε μουσική. ‘Yesterday the girl listened to music.’

Χθες το κορίτσι έσπρωξε την καρέκλα. ‘Yesterday the girl pushed the chair (forward).’

Χθες το παιδί κάθισε στη καρέκλα. ‘Yesterday the child sat on a chair.’
<table>
<thead>
<tr>
<th>Greek</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Χθές το κορίτσι είδε τηλεόραση.</td>
<td>‘Yesterday the girl watched TV.’</td>
</tr>
<tr>
<td>Χθές το κορίτσι κράτησε τη μπάλα.</td>
<td>‘Yesterday the girl held the ball.’</td>
</tr>
<tr>
<td>Χθές τα παιδιά χόρεψαν στο σαλόνι.</td>
<td>‘Yesterday the children danced in the living room.’</td>
</tr>
</tbody>
</table>