(Degree) Inchoative States in Korean: Evidence from Child Language

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du bonheur ; elles sont les charmants jardiniers
par qui nos âmes sont fleuries.
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Abstract

This dissertation investigates the meaning of "inchoative states" in Korean (e.g.*nulk* 'old') that do not fit into Vendler (1967)'s aspectual classification, in that they show properties of both atelic (states) and telic (change-of-state) predicates. Building on Bar-el (2005), this dissertation proposes that inchoative states in Korean are semantically complex predicates describing a sequence of two events, one that is a change of state of the kind an achievement would describe, immediately followed by a second that is an eventuality of the kind a typical state would describe. Crucially, the change-of-state event constitutes the prior change bringing the state about. Moreover, inchoative states in Korean break down into two classes: (regular) inchoative states which are verbal vs. degree inchoative states which are deadjectival. Drawing a parallel with degree achievements (DAs), the following claim is put forth: the property described by a degree inchoative state becomes instantiated to at least the minimal value that counts as having the property in question. On its telic construal, a degree inchoative state is thus interpreted as 'become S' (*standard telos*; Kearns2007), unlike a DA which is interpreted as a 'become maximally S' (*maximal telos*; Hay et al.1999). Three experiments are designed and carried out to investigate Korean children's knowledge of the meaning of (degree) inchoative states: (i) a preference task; (ii) a truth value judgment task and (iii) a grammaticality judgment task. The results show that, by about 4 years of age, children can generally distinguish (degree) inchoative states from stative predicates as well as from achievements. The experimental studies thus provides novel experimental evidence from Korean child language for the claim that (degree) inchoative states constitute a distinct class of predicates with respect to Vendler's four-way classification.

Résumé

Cette thèse examine une classe particulière de prédicats, à savoir les «états inchoatifs» en coréen. Cette classe ne s'adapte pas à la classification aspectuelle de Vendler (1967) étant donné qu'elle possède des propriétés à la fois atéliques (état) et téliques (changement d'état). En adoptant Bar-el (2005), nous argumentons que les états inchoatifs en coréen sont des prédicats complexes constitués de deux composantes, décrivant une série de deux événements : l'un qui est un changement d'état comme un achèvement, et l'autre qui est un état typique comme un prédicat statif. L'événement de changement d'état constitue l'inception de l'état décrit. Les états inchoatifs en coréen se divisent en deux classes : états inchoatifs vs. états inchoatifs de degré. En établissant un parallèle avec les achèvements de degré, nous proposons que la propriété décrite par un état inchoatif de degré commence à se dérouler à partir de la valeur minimale qui compte comme la propriété en question. Un état inchoatif de degré modifié par les adverbes '*en x temps'* est interprété comme 'devenir état' (Kearns2007) contrairement à un achèvement de degré qui est interprété comme 'devenir maximalement état' (Hay et al.1999). Cette thèse présente également trois expériences examinant les connaissances de la signification des états inchoatifs (de degré) chez les enfants coréens : (i) une tâche de préférence; (ii) une tâche de jugement de condition de vérité et (iii) une tâche de jugement de grammaticalité. Les résultats montrent qu'à l'âge de 4 ans, les enfants coréens peuvent généralement distinguer les états inchoatifs (de degré) des prédicats statifs ainsi que des achèvements. Les études expérimentales nous permettent de conclure que les états inchoatifs (de degré) constituent une classe distincte de prédicats par rapport aux quatre classes de Vendler.

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ABBREVIATION

1	first person
3	third person
ACC	accusative
AST-T	assertion time
CONJ	conjunctive
COP	copular
DEC	declarative
DET	determiner
FUT	future
GEN	genitive
IMPERF	imperfective
INCHO	inchoative
INTR	intransitive
LOC	locative
NEG	negative
NOM	nominative
NON.PAST	non-past
PAST	past
PAST.PFCT	past perfect
PFCT	perfect
POSS	possessive
PROG	progressive
REDUP	reduplicant
REF-T	reference time
RL	realis
SG	singular
TOP	topic
TR(LC)	limited control transitivizer

Chapter 1 Introduction

1.1 Goals of the dissertation

This dissertation investigates a particular class of predicates in Korean. These predicates can typically be translated into English using stative adjectives as well as verbs. According to the standard aspectual classification (Vendler 1967, Dowty 1979, Smith 1997 among many others), a stative predicate describes a certain property that holds continuously in time and in this sense, an unchanging situation, as we will see in more detail in Section 2. Consider the following examples.

(1) a. John was **anxious**.
b. Mina-ka **pikonha**-ess-ta.
Mina-NOM tired-PFCT-DEC
'Mina was tired.'

In (1a), the stative predicate *anxious* is used to express that John had a certain property, i.e. anxiety, at some time in the past, but the sentence tells us nothing about when this state of affairs starts to hold or comes to its end. So, a typical stative predicate does not inherently carry temporal information about the beginning or ending of the state of affairs it is used to describe. Just like English, Korean has a class of typical stative predicates (e.g. *celm* 'young', *pikonha* 'tired', *salangha* 'love', *nalssinha* 'thin'), as in (1b). I shall refer to typical stative predicates in Korean as pure states in this dissertation.

Interestingly, Korean also has a class of predicates (e.g. *nulk* 'old', *cichi* 'tired', *hwana* 'angry', *malu* 'thin') which, as I shall show in this dissertation, not only refer to a property holding continuously in time, but crucially also to the onset of the described property, that is the prior change bringing the state about. Since these predicates share some common properties with typical stative predicates, I refer to this class of predicates as "inchoative states", following in this respect Bar-el 2005, Chung 2005 and Kiyota 2008 among others. Korean indeed is not the only language that has so-called inchoative states. Rather, a survey of the recent literature shows that inchoative states have been argued to be tested cross-linguistically. They have been reported in languages such

as Sḵwx̱wú7mesh Salish (Bar-el 2005), Sənčáθən Salish, Japanese (Kiyota 2008), Korean (Chung 2005, Lee 2006, Choi 2010), Niuean, St'át'imcets (Davis 2012, Matthewson 2013, 2014), Spanish (Marín & McNally 2005, 2011 for reflexive psychological verbs) and Chinese (Huang et al. 2000, Chang 2003). Examples of inchoative states in these languages, including Korean, are given in (2).

(2) a. *INS in Korean* (Chung 2005)

Mina-nun nulk-ess-ta.
Mina-TOP old-PFCT-DEC
'Mina got old.'

b. *INS in Sḵwx̱wú7mesh Salish* (Bar-el 2005)

chen t'ayak̲'
1SG angry
'I got angry.'

c. *INS in Sənčáθən Salish* (Kiyota 2008)

łčík^{w}əs sən
get.tired 1SG
'I got tired.'

d. *INS in Japanese* (Kiyota 2008)

taoru-ga nure-tei-ru.
towel-NOM wet-PFCT-PRES
'The towel got wet.'

e. *INS in Niuean* (Matthewson 2014)

Kua lolelole tei a Tom.
PFCT tired recent ABS Tom
'Tom has become tired.'

f. *Spanish reflexive psychological verb* (Marín & McNally 2011)

Marta se ha aburrido.

Marta SE has bored.

'Marta has gotten bored.'

At first glance, just like a typical stative predicate, an inchoative state predicate as exemplified in (2a-f) above seems to describe a property. Crucially, however, an inchoative state predicate refers not only to a property, but crucially also to its onset (i.e. the beginning), that is the prior change bringing the state about, unlike a typical stative predicate. Hence, these states can yield, in the absence of an inchoative morpheme corresponding to 'become', an "inchoative interpretation", according to which the property associated with the predicate starts to hold at the reference time. This is the interpretation that we find in (2a-f) above.

This dissertation investigates the meaning of inchoative states in Korean, and in so doing seeks to provide further cross-linguistic support from Korean for the existence of inchoative states. This dissertation also presents a series of experimental studies investigating Korean children's knowledge of the meaning of inchoative states. This research has the following main goals:

a. to establish that inchoative states in Korean constitute a distinct class of predicates that do not fit into the standard aspectual classification. Inchoative states in Korean break down into two classes: (regular) inchoative states (verbal predicates) vs. degree inchoative states (deadjectival predicates). The property which distinguishes the two classes is gradability.

b. to argue that deadjectival inchoative states, which is the focus of this thesis, are in fact *degree* inchoative states, that is, inchoative states with a degree parameter. Crucially, a degree inchoative state describes a property instantiated to at least a *minimal* value on the associated relevant scale. The idea is that the change of state described by a degree inchoative state is the change that leads to the attainment of this minimal value of the relevant property which can be seen as the *onset* of the described state.

c. to provide an analysis of degree inchoative states in Korean accounting for their temporal properties. In particular, when modified by *in/for x time* adverbials, they yield three readings: (i) a change of state reading; (ii) a resultant state reading and (iii) a process of iterated changes reading.

d. to provide novel experimental evidence from Korean child language for the existence and underlying semantics of degree inchoative states.

Before setting out on my investigation, I briefly provide some background assumptions. In Section 1.2, I lay out ontological assumptions concerning eventualities and give an overview of the meanings of predicates that find a place in the standard aspectual classification. In Section 1.3, I preview my proposals about (degree) inchoative states in Korean. In Section 1.4, I summarize the organization of this dissertation.

1.2 Some theoretical background

1.2.1 Ontological assumptions concerning eventualities and the event argument

I start from the basic ontological assumption that the world contains eventualities[1]. For example, consider the following situation.

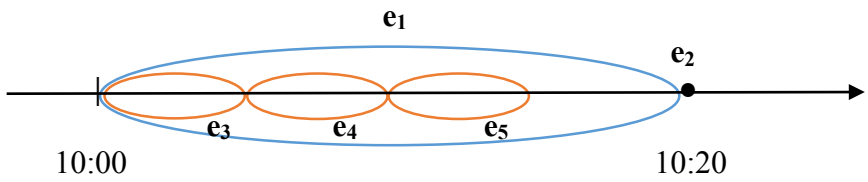
(3) Situation: Between 10:00 to 10:20 a.m., Mary runs to the store in a huge rush. She arrives at the store at 10:20.

I take the position that the situation (3) involves a variety of different eventualities, which we could use different predicates to describe. There is an eventuality (e_1) which lasts twenty minutes and which is an event of Mary running up until the store. There is an eventuality (e_2) which has no duration and occurs at 10:20 and which is an event of Mary arriving at the store. There are also many other eventualities (e_3, e_4, e_5, …) that take place throughout the twenty minutes and which are events of Mary running. Furthermore, e_1 is not only an event of Mary running up until the store, it is also an event of Mary running and a state of Mary being in a rush. Some of the eventualities

[1] In this thesis, I use Bach (1986)'s term *eventuality* as a cover term for both *states* and *events*.

involved in the situation (3) are schematized in the diagram in (4) below which indicates their temporal duration.

(4)



For my purposes here, it will be sufficient to view an eventuality as just a piece of the world over time. Notice that eventualities contained in the world have a variety of temporal properties. For example, some eventualities such as the eventuality (e_1) of Mary running up until the store and the eventualities (e_3, e_4, e_5, …) of Mary running take place with duration. On the other hand, some eventualities such as the eventuality (e_2) of Mary arriving at the store take place at instants. I will come back to this point shortly.

It is also worth mentioning here that I assume that eventualities may have other eventualities as parts, which fits with a conception of eventualities as pieces of the world over time. For instance, I assume that there is an eventuality of Mary running that is constituted completely of e_3 and e_4. Following the literature on mereology, I will speak of this eventuality as the "sum" of e_3 and e_4, or $e_3 \oplus e_4$. Similarly, e_1 can be obtained by putting together the many eventualities of Mary running that take place over the twenty minutes.

As far as natural language is concerned, I assume that verbs together with their arguments characterize eventualities. Davidson (1967) proposes events as additional arguments of verbs (see also Parsons 1985, 1990, Bach 1986, Chierchia 1995, Kratzer 1995). To illustrate, consider the following sentence.

(5) a. Jones buttered the toast.

b. [[butter]] = $\lambda x.\lambda y.\lambda e$. e is an event of y buttering x.

On Davidson's proposal, the verb *butter* is analyzed as expressing a three-place relation between an individual who butters, an object which gets buttered, and a buttering event, as shown in (5b). Accordingly, the VP in the sentence (5) denotes a set of events of Jones's buttering the toast, as in (6).

(6) [[$_{VP}$ Jones butter the toast]] = λ*e*. *e* is an event of Jones buttering the toast.

Along these lines, I will assume in this dissertation that verbs (or more generally predicates) have eventuality arguments − sometimes, I will say "event arguments" − and that VPs (or more generally projections of predicates) denote predicates of eventualities (see also Parsons 1990). According to this basic assumption, the eventualities involved in the situation given in (3) belong to the denotations of VPs like those in (7-10).

(7) [[$_{VP}$ Mary run]] = λ*e*. *e* is an event of Mary running.

(8) [[$_{VP}$ Mary in a rush]] = λ*e*. *e* is an event of Mary being in a rush.

(9) [[$_{VP}$ Mary run to the store]] = λ*e*. *e* is an event of Mary running to the store.

(10) [[$_{VP}$ Mary arrive at the store]] = λ*e*. *e* is an event of Mary arriving at the store.

Note that, in addition to events, I also assume an ontology of individual entities, truth values, degrees (Parsons 1990, Kratzer 1996, von Stechow 2002) in this thesis. The notation which will be used in this thesis is given in Table 1.

Table 1. Semantic ontological assumptions and notation

Name	type	variable
truth values	*t*	
individuals	*e*	x, y, z, …
events	*v*	e_1, e_2, e_3, …
degrees	*d*	s, s', …

In what follows, with this basic assumption about eventualities in mind, I briefly discuss how different kinds of eventualities described by predicates can be characterized with respect to their temporal properties.

1.2.2 Vendlerian aspectual classes of predicates

As we have just observed in (3-4) in the previous section, eventualities described by predicates have a variety of properties. Specifically, predicates can be distinguished according to how the

states of affairs that they describe take place in time. To illustrate, take two of the kinds of events involved in the situation (3):

(11) a. [[$_{VP}$ Mary run]] = λ*e*. *e* is an event of Mary running.
b. [[$_{VP}$ Mary run to the store]] = λ*e*. *e* is an event of Mary running to the store.

The VP containing the predicate *run* in (11a) denotes the set of eventualities of Mary running. Following the way we described the situation (3) above, the fact that an event belongs to this set means simply that it is an eventuality of Mary running that takes place over some time interval. The information that an event belongs to this set does not on its own allow us to conclude whether or not Mary continued running after the temporal duration of the event. In principle, the event might be followed by another event in the same set, or it might not. In contrast, the VP containing the predicate *run to the store* in (11b) behaves differently. Any event that belongs to the denotation of this predicate ends once Mary arrives at the store (e.g. at 10:20 in the situation (3)). An event in this set thus cannot be followed right away by another event in the same set.

Different predicates are thus associated with different temporal profiles for the sets of eventualities they describe. This kind of difference is generally discussed under the heading of *lexical aspect* (also called *Aktionsart* or *situation type*; Smith 1997, Olsen 1997 among many others). In the literature, many studies seek to classify predicate meanings according to how they describe the evolution of states of affairs in time, and this can be related to the ways in which eventualities are temporally distributed in the sets that the predicates denote (Dowty 1979, Carlson 1981, Verkuyl 1993, Smith 1997, Olsen 1997, Rothstein 2004 among many others). The most well-known classification is proposed by Vendler (1967) where four classes of predicates are distinguished: states, activities, accomplishments and achievements. In the rest of this section, I will review this classification and bring up a way in which it has been treated in the literature.

The Vendler classes can be intuitively characterized as follows. A state (e.g. *know, believe, love, have, be happy*) serves to describe a state of affairs that holds uniformly throughout a given period − one that holds in the same way at every moment. Moreover, the state of affairs (for example, someone's love for someone) is not one which by its nature is intrinsically destined to expire at a particular point. Similarly, an activity (e.g. *run, walk, swim, sing, drive a car*) serves to describe a pattern of events that takes place constantly throughout a given period (for example, the

sequence of actions involved in swimming), and that is not associated with a natural temporal endpoint. An accomplishment (e.g. *paint a picture, draw a circle, build a house*) describes a pattern of events that extends over a period of time like an activity, but, in contrast with activities, the pattern of events is associated with a natural temporal endpoint (for example, the point at which the full circle has been drawn) − at which point one might say that the pattern of events described by the accomplishment has been realized. An achievement (e.g. *arrive, die, recognize, spot, find*) describes the instantaneous transition into a new state of affairs, a transition that by its nature ends as soon as it has begun and cannot extend over a period of time.

Based on Vendler's original description, previous studies have attempted to categorize these four classes in terms of underlying aspectual features such as dynamicity, telicity, durativity (Carlson 1981, Olsen 1994, Smith 1997 many others). Our discussion in this dissertation will above all make reference to Rothstein (2004)'s classification where the four verb classes are characterized with respect to two properties: (i) whether or not the predicate describes events with a natural endpoint; (ii) whether or not the predicate describes events that progress or develop in time, in a certain sense. I will therefore discuss the two properties in turn. The first of these properties is the property of *telicity*.

Telic predicates associate the eventualities they describe with an endpoint, while atelic predicates do not. To get a sense for this distinction, consider the following sentences.

(12)	a. Mary ran.	[activity]
	b. Mary ran to the store.	[accomplishment]
	c. Mary loved John.	[state]
	d. John died.	[achievement]

Compare first the activity predicate *run* in (12a) with the accomplishment predicate *run to the store* in (12b). The meaning of *run* is such that, once Mary has run, she can in principle continue running. By contrast, the meaning of *run to the store* in (12b) is such that, once Mary has run to the store, she cannot continue running to the store. Assuming that to say that Mary has run to the store is to say that an eventuality of the kind described by *Mary run to the store* has taken place, this motivates a picture on which any such eventuality ends at a point when Mary reaches the store. In this sense, *Mary run to the store* associates the eventualities it describes with an endpoint, while *Mary run*

does not. Achievement predicates like *die* in (12d) have been argued to be like accomplishment predicates in this respect, while state predicates like *love* in (12c) have been argued to be like activity predicates. The idea is that an achievement predicate like *die* describes the instantaneous eventuality of its subject dying, which ends as soon as it starts, while state predicates like *love* do not determine a particular endpoint for the eventualities that they describe. One possible way to see the telic-atelic distinction is then as follows: a predicate is telic when the eventualities it describes are such that we could never find one whose temporal extent includes and goes past the last moment of another.

In x time adverbials have been taken to be a diagnostic for telicity. The idea here is that an adverbial like *in 20 minutes* or *in two years* is designed to modify a telic predicate, one that associates the eventualities it describes with an endpoint, and we use the adverbial to talk about the time it takes to reach the end of an eventuality of the kind the predicate describes (see Dowty 1979, Rothstein 2004, Kearns 2007 and many others). As shown in (13) below, the achievement predicate *die* and the accomplishment predicate *build the house* naturally occur with *in x time* adverbials; this position then leads us to conclude that they associate the eventualities they describe with an endpoint. By contrast, the state predicate *know* and the activity predicate *dance* do not naturally occur with *in x time* adverbials, which suggests that they are atelic. (13) shows as well that the facts go in the opposite direction when *for x time* are used. It has been argued that *for x time* adverbials are restricted to atelic predicates and are used to talk about the duration of eventualities that they describe. In that case, the compatibility of the state predicate *know* and the acitivty predicate *dance* with *for x time* adverbials shows that these predicates are atelic.

(13) a. John knew Mary *for years/*in a year*. [state]
b. John danced *for hours/*in an hour*. [activity]
c. John died *in a few minutes/*for a few minutes*. [achievement]
d. John built the house *in a few weeks/*for a few weeks*. [accomplishment]

A full analysis of *in/for x time* adverbials is beyond the scope of this thesis, but a first attempt at their semantics might say that they have the denotations in (14), which select for VP denotations (the restriction to atelic or telic predicates occurs here as a restriction on possible arguments).

(14) a. [[for two years]] = λ*P: P* is atelic. λ*e*. *e* is a P-event and *e* has a temporal duration of two years.

b. [[in two years]] = λ*P: P* is telic. λ*e*. *e* contains a P-event as its final part and *e* has a temporal duration of two years.

The second crucial feature distinguishing the four classes of predicates concerns whether the eventualities described by the predicate are made up of *stages*[2]. To illustrate, let us consider the following examples.

(15) a. John ran. [activity]

b. John died. [achievement]

The activity predicate *run* in (15a) describes an eventuality of John running. We can imagine that the running eventuality involves movement of John, so that John's body is in different positions at different moments during which the running eventuality occurs. In that case, the whole eventuality described by the activity predicate *John run* can be broken up into different temporal phases corresponding to the different actions of John that together constitute running. Given that one action must follow another in order for the whole to constitute running, an eventuality of John running can be seen as progressing in time. In contrast, the achievement predicate *die* in (15b) describes an eventuality of John dying which cannot be distinguished into different temporal subparts if, as we said above, the eventuality itself occurs instantaneously. So, the achievement eventuality in (15b) does not have internal stages and as such, it cannot be analyzed as progressing in time. According to Vendler (1967), states do not have internal stages either:

[2] Rothstein (2004, 2008) specifically characterizes stages in the following way, basing herself on Landman (1992, 2004). (b) and (c) below deserve more explication than I have given in the text, but according to this description, a predicate that describes eventualities with stages describes eventualities that have sub-eventualities leading directly to other subparts. The symbols in (i) are to be understood as follows: '≤' indicates a temporal precedence relation and '⊆' indicates an inclusion relation. Also, 'τ(e)' stands for the running time of the described eventuality.

(i) If e_1 and e_2 are eventualities and e_1 is a ***stage*** of e_2 ($e_1 \leq e_2$) then:
a. '*Part of*': $e_1 \leq e_2$, e_1 is part of e_2 (and hence $\tau(e_1) \subseteq \tau(e_2)$)
b. *Cross-temporal identity*: e_1 and e_2 share the same essence: they count intuitively as the same eventuality or process at different times.
c. *Kineisis*: e_1 and e_2 are qualitatively distinguishable, e_1 is an earlier version of e_2, e_1 grows into e_2.
(Rothstein 2008: 6)

'…running, writing, and the like are processes going on in time, that is, roughly, that they consist of successive phases following one another in time… But although it can be true of a subject that he knows something at a given moment or for a certain period, knowing and its kin are not processes going on in time.' (Vendler 1967: 99-100)

The progressive has been taken to be a diagnostic for the property of having stages. The idea here is that a predicate in the progressive gets used to communicate that, at a certain point in time, an eventuality of the kind described by the verb is in the process of being realized. But for an eventuality to be in the process of being realized in the relevant sense, it has to be an eventuality with internal phases, one that develops in time. Let us examine the four classes of predicate with respect to this diagnostic.

(16) a. Mary is running. [activity]
b. John is reading the book. [accomplishment]
c. *John is knowing the answer. [state]
d. *John is recognizing his friend. [achievement]

We see here that the activity predicate *run* in (16a) and the accomplishment predicate *read the book* in (16b) naturally appear in the progressive. Thus, if we adopt this diagnostic, both activities and accomplishments describe eventualities that can develop in time. By contrast, the state predicate *know* in (16c) and the achievement predicate *recognize* in (16d) cannot appear in the progressive. In the case of *know*, following Vendler's intuition, this is arguably because the subparts of an eventuality of John's knowing the answer cannot be qualitatively distinguished in the relevant way. In the case of *recognize*, this is because the eventualities described by the predicate are instantaneous. The progressive, because it is used to describe an eventuality in the process of realization, has to combine with a predicate that describes eventualities of a certain temporal duration (Taylor 1977, Bennett & Partee 1978, Dowty 1979). If an eventuality is too short, then any internal changes or phases cannot be distinguished.

To summarize, we can see the Vendlerian four classes of predicates as varying with respect to the values of two different features: [± telic], [± stages]. This is shown in Table 2 below. A state describes eventualities which do not progress in time and it does not associate the eventualities it

describes with an endpoint. An activity describes eventualities that progress in time, but, like states, activities do not associate the eventualities they describe with an endpoint. An accomplishment behaves like an activity in the sense that it describes eventualities that progress in time, but it associates the eventualities it describes with an endpoint[3]. Finally, an achievement describes instantaneous (or "punctual") eventualities which, as such, cannot progress in time, and therefore also associates the eventualities it describes with an endpoint. To this picture, I would like to add the idea that the endpoint relevant to telic predicates should be equated with a change of state. For instance, the point at which the eventuality described by *John die* is located separates a point where an eventuality of John's being alive is located from a point where an eventuality of John's being dead is located.

Table 2. Aspectual classification (Rothstein 2004: 12)

	[±telic]	[±stages]
States	-	-
Activities	-	+
Accomplishments	+	+
Achievements	+	-

1.2.3 Semantics of the Vendlerian aspectual classes of predicates

Now, I briefly discuss Rothstein's (2004) decompositional view of the semantics of the four Vendlerian classes, largely inspired by Dowty (1979). Adopting a neo-Davidsonian theory on which verbs give rise to predicates of events, Rothstein accounts for the properties of the Vendlerian four classes (cf. Table 2 in the previous sub-section) by conceiving their semantics as

[3] Activities and accomplishments can be further distinguished with respect to the imperfective entailment pattern (Dowty 1979: 133). Activities allow the entailment pattern *'X is V-ing* entails *X has V-ed'*, as illustrated in (i); by contrast, accomplishments do not, as shown in (ii).

(i) *John is running* entails *John has run*. [activity]
(ii) *John is building a house* does not entail *John has built a house*. [accomplishment]

The fact that there is no entailment in (ii) reflects the fact that *John build a house* associates the eventualities it describes with an endpoint: saying that an eventuality of John building a house is in progress at a given time does not entail that an eventuality of John building a house has already taken place. The fact that there is an entailment in (i) suggests both that eventualities of John running can be made up of very small sequences of running-related actions and that the progressive is only warranted when at least one very small sequence of this kind has already occurred.

constructed out of a number of different building blocks. On one of her initial proposals which is presented here, the main building blocks are predicates of events that we can call "bare event predicates" and the operators BECOME and DO adapted from Dowty. Simplifying away from a detail[4], Rothstein sees the four classes as constructed in a way made clear by the templates in (17). Each of the templates in (17) should be seen as a logical representation that generally characterizes all members of the relevant Vendlerian class.

(17)

a. States:	$\lambda e.P(e)$
b. Activities:	$\lambda e.(\text{DO}(P))(e)$
c. Achievements:	$\lambda e.(\text{BECOME}(P))(e)$
d. Accomplishments:	$\lambda e.\exists e_1 \exists e_2[e=e_1 \oplus e_2 \wedge (\text{DO}(P))(e_1) \wedge (\text{BECOME}(P'))(e_2)]$

In each of the templates given in (17), P is a variable for an arbitrary predicate, as is P'. These variables represent the idiosyncratic part of the content of the lexical item in question. More specifically, however, they stand for state predicates. On this view, then, *states* are bare event predicates without an operator, while non-stative predicates are constructed from bare event predicates by combination with the operators BECOME and DO. *Activities* are constructed from bare event predicates together with the DO operator − the role of DO, according to Dowty, is to guarantee that the eventualities described are "under the unmediated control of the agent" (Dowty 1979: 118). *Achievements* are constructed from bare event predicates together with the BECOME operator − BECOME creates a predicate that holds of instantaneous eventualities that separate a moment at which there is no eventuality satisfying the bare event predicate from a moment at which there is an eventuality satisfying the bare event predicate[5]. *Accomplishments* are more complex event

[4] In place of (17d), Rothstein actually writes (i). The summation operation that (i) makes reference to its special in that what it creates counts as a singular event. This difference will not be important to my discussion.

(i) $\lambda e.\exists e_1 \exists e_2[e=^{S}(e_1 \sqcup e_2) \wedge (\text{DO}(P))(e_1) \wedge (\text{BECOME}(P'))(e_2)]$ (Rothstein 2004: 105)

[5] Dowty saw verbs as giving rise to predicates of time intervals, and accordingly in Dowty's original formulation BECOME applies to a predicate of time intervals. For Dowty, [BECOME φ] is true at the smallest interval which consists of an interval in which ¬φ is true immediately followed by an interval in which φ is true ((i)).

(i) [BECOME φ] is true at *I* iff (1) there is an interval *J* containing the initial bound of *I* such that ¬φ is true at *J*, and (2) there is an interval *K* containing the final bound of *I* such that φ is true at *K*, and (3) there is no non-empty interval *I'* such that $I' \subset I$ and conditions (1) and (2) hold for *I'* as well as *I*.
(Dowty 1979: 141)

predicates that describe events created by summing two sub-events, a "DO-event" − that is, the kind described by an activity − and a "BECOME-event" − that is, the kind described by an achievement. In fact, though the template Rothstein presents is as in (17d), it would be natural to consider accomplishments as implicating an additional operator SUM that effects just this operation, as shown in (17d') below.

d'. Accomplishments: SUM[(DO(P))(e_1), (BECOME(P'))(e_2)]

1.3 Proposals for inchoative states in Korean

So far, I briefly provided some theoretical background related to my investigation. Specifically, I discussed the temporal properties associated with different kinds of predicates of eventualities. Based on the underlying properties of the four classes (cf. Table 2) and the kind of semantics that this suggests for them (cf. (17)), I will demonstrate in this dissertation that the class of inchoative states in Korean do not accurately fit into one of the Vendlerian four classes. In this section, I will briefly preview my proposals for the meaning of inchoative states in Korean.

In this dissertation, I show the following characteristics underlying inchoative states in Korean:

(i) An inchoative state describes an eventuality which has temporal duration, like a pure state.
(ii) An inchoative state also makes reference to a change of state, like an achievement.
(iii) An inchoative state does not associate the eventualities it describes with an endpoint (i.e. a final boundary), unlike an achievement.
(iv) However, an inchoative state does make reference to an *onset* (i.e. an initial boundary), unlike a pure state.

To account for the properties (i-iv) of inchoative states in Korean, building on Bar-el (2005), I argue that an inchoative state in Korean is a semantically complex predicate. It describes a succession of two events, one that is a change of state of the kind an achievement would describe (i.e. a BECOME event), and a second that is an eventuality of the kind a normal state would describe

(i.e. a simple P-event). Crucially, the BECOME event constitutes the prior change that brings the state about. This idea is shown in (18).

(18) Inchoative states in Korean: $\lambda e.\exists e_1 \exists e_2.\ e = e_1 \oplus e_2$ and e_2 immediately follows e_1 and $[[\text{BECOME P}]](e_1) = 1$ and $[[P]](e_2) = 1$.

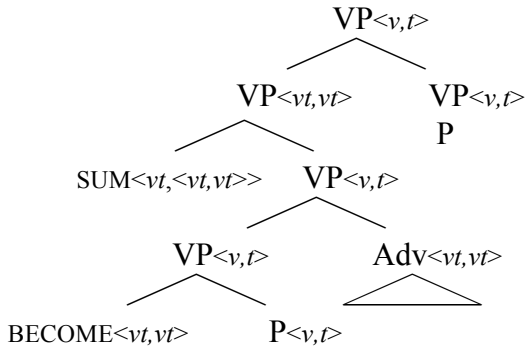
An inchoative state in Korean thus describes eventualities that are made up of a durative eventuality together with the prior change that brings this eventuality about. Crucially, I argue that each part contained in the representation of inchoative states can be modified by temporal adverbials. This gives rise to an effect of "variable telicity" for inchoative states in Korean. Puzzlingly, inchoative states allow modification by *in x time* adverbials **and** by *for x time* adverbials, as shown in (19).

(19) Juno-ka **sip-pwun-maney/tongan** hwana-ess/essess-ta.
Juno-NOM ten-minute-in/for angry-PFCT/PAST.PFCT-DEC
a. 'Juno got angry in ten minutes.'
b. 'Juno was angry for ten minutes.'

I account for the variable telicity of inchoative states in Korean with respect to modification by *in/for x time* adverbials as follows:

First, I claim that *in x time* adverbials modify the part of an inchoative state in Korean that contributes the BECOME event. As a consequence, in (19), the *in x time* adverbial measures an interval of ten minutes at the end of which a change of state event of Juno's getting angry occurs. Importantly, the BECOME event itself constitutes the onset of the durative eventuality of Juno's being angry. So, as soon as the change of state event of Juno's getting angry has ends, the eventuality of Juno's being angry starts to hold. The relevant structure of (19a) is illustrated in (20).

(20)



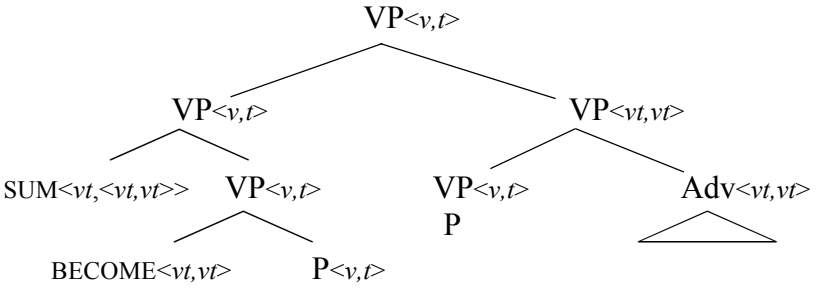
Assuming the semantics of *in x time* adverbials given earlier in (14b) and repeated in (21), the semantic value for the telic reading of the inchoative state in (19a) is as in (22).

(21) [[in ten minutes]] = $\lambda P_{<v,t>}$: *P* is telic. λe. *e* contains a *P*-event as its final part and *e* has a temporal duration of ten minutes.

(22) [[VP]] = $\lambda e.\exists e_1 \exists e_2$. $e=e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 contains an event of Juno's becoming angry as its final part and e_1 has a temporal duration of ten minutes and e_2 is an event of Juno's being angry.

Second, I argue that *for x time* adverbials modify the part of an inchoative state that contributes the simple P-event. As a consequence, in (19b), the *for x time* adverbial measures an interval of ten minutes during which the durative eventuality of Juno's being angry lasts. The structure of (19b) is illustrated in (23).

(23)



Assuming the semantics of *for x time* adverbials given earlier in (14a) and repeated in (24), the semantic value for the telic reading of the inchoative state in (19b) is as in (25).

(24) [[for ten minutes]] = $\lambda P_{<v,t>}$: *P* is atelic. λ*e*. *e* is a P-event and *e* has a temporal duration of ten minutes.

(25) [[VP]] = $\lambda e.\exists e_1 \exists e_2.\ e{=}e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 is an event of Juno's becoming angry and e_2 is an event of Juno's being angry and e_2 has a temporal duration of ten minutes.

1.3.1 Degree inchoative states in Korean

The major theoretical contribution of this dissertation is to argue for the existence of two classes of inchoative states: the first class corresponds to verbal predicates (e.g. *al* 'know', *ihayha* 'understand', *salangha* 'love'), and the second class corresponds to deadjectival predicates (e.g. *hwana* 'angry', *nulk* 'old', *saljji* 'fat'). The property which distinguishes both classes is gradability. While verbal inchoative states describe non-gradable properties, deadjectival inchoative states describe gradable properties. As such, I refer to this latter class as degree inchoative states (DegINS). This dissertation is mostly concerned with degree inchoative states in Korean. Just like inchoative states are the mirror image of achievements, degree inchoative states are the mirror image of degree achievements in that, on the telic reading, a degree inchoative state is associated with the minimal scale value of the relevant property, while a degree achievement is associated with the maximal scale value (cf. Choi & Demirdache 2014).

The novelty of this proposal should be emphasized. While many authors have argued for the existence of so-called inchoative states cross-linguistically (cf. Huang et al. 2000, Chang 2003, Bar-el 2005, Chung 2005, Marín & McNally 2005, 2011, Lee 2006, Kiyota 2008, Choi 2010, Davis 2012, Matthewson 2013, 2014), to our knowledge, the existence of degree inchoative states has not been investigated. The extent to which the class of inchoative states identified in the literature correspond to non-gradable vs. gradable inchoative states is a question that remains open for investigation.

To see why I qualify deadjectival inchoative states in Korean as degree inchoative states, as opposed to (regular) inchoative states, consider the paradigm (26). We see that a degree inchoative

state in Korean modified by *in/for x time* adverbials yields three readings, as shown in (26): (a) a change of state reading where at the end of a year, the change of state eventuality of Juno's becoming fat occurs (i.e. Juno got fat) as in (26a); (b) a resultant state reading where throughout a period of a year, the durative eventuality of Juno's being fat holds (i.e. Juno was fat) as in (26b); (c) a process of iterated changes reading where throughout a period of a year, a series of changes of state occur each of which leads to Juno attaining a new degree of fatness (i.e. Juno progressively got fatter and fatter) as in (26c). The important point is that, when modified by *for x time* adverbials, degree inchoative states allow not one, but two atelic readings: the resultant state reading in (26b) and the process of iterated changes reading in (26c), which distinguishes degree inchoative states from degree achievements (on their atelic construal) allowing only the process of iterated changes reading.

(26) a. Juno-ka **il-nyen-maney** saljji-ess-ta.
Juno-NOM one-year-in fat-PFCT-DEC
'Juno got fat in a year.'

b. Juno-ka **il-nyen-tongan** saljji-essess-ta.
Juno-NOM one-year-for fat-PAST.PFCT-DEC
'Juno had got fat and was fat for a year.'

c. Juno-ka **il-nyen-tongan** saljji-ess-ta.
Juno-NOM one-year-for fat-PFCT-DEC
'Juno got fatter and fatter for a year.'

To account for the three readings of degree inchoative states induced by *in/for x time* adverbials shown in (26a-c), I claim that degree inchoative states in Korean alternate between two senses: 'become S' or 'become S-*er*'. Crucially, I argue that the property described by a degree inchoative state in Korean becomes instantiated to at least the minimal value that counts as having the property in question (cf. Choi & Demirdache 2014). Consequently, I assume that we evaluate sentences containing degree inchoative states with respect to a degree parameter that constitutes a minimal value on the relevant scale.

The degree inchoative state in (26a) is interpreted as 'become S' and allows modification by the *in a year* adverbial measuring the time it takes to attain (at least) a minimal degree of the relevant gradable property. The semantic value for the change of state reading of the degree inchoative state in (26a) is as in (27).

(27) The VP of (26a):
$[[\text{VP}]]^d = \lambda e.\exists e_1 \exists e_2.\ e = e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 contains an event of Juno's becoming fat to degree *d* as its final part and e_1 has a temporal duration of one year and e_2 is an event of Juno's being fat to degree *d*.

The degree inchoative state in (26b) interpreted as 'become S' also allows modification by the *for a year* adverbial measuring the duration of an eventuality of Juno's being fat. The semantic value for the resultant state reading of the degree inchoative state in (26a) is as in (28).

(28) The VP of (26b):
$[[\text{VP}]]^d = \lambda e.\exists e_1 \exists e_2.\ e = e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 is an event of Juno's becoming fat to degree *d* and e_2 is an event of Juno's being fat to degree *d* and e_2 has a temporal duration of one year.

The degree inchoative state in (26c) is interpreted as 'become S-*er*'. Specifically, it describes iterated changes of the associated property – progressions to new degrees of the associated property − that occur during the interval given by *for x time* adverbials. I derive this 'become S-*er*' reading of a degree inchoative state from the semantics of a basic inchoative state given in (18), just assuming two operators: (i) a TO SOME DEGREE operator that can be applied to a basic inchoative state, giving us a predicate describing changes of state that result in possession of the relevant property to some degree or other; (ii) a REPEATEDLY operator that can apply to a predicate of eventualities, giving us a predicate describing iterated eventualities. So, if we apply the REPEATEDLY operator to the degree inchoative state *saljji* 'fat', we get a predicate that holds of an event made up of iterated eventualities Juno's attaining some degree or other of fatness (i.e. an event of Juno's getting fatter and fatter). Then, the *for a year* adverbial modifies this predicate, in

(26c). The semantic value for the process of iterated changes reading of the degree inchoative state in (26c) is as in (29).

(29) The VP of (26c)
$[[VP]]^d$ = λe. e is made up of a sequence of events in {e': There is some degree d' such that, for some e_1, e_2, e' = $e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 is an event of Juno becoming fat to degree d' and e_2 is an event of Juno being fat to degree d'} and e has a temporal duration of one year.

As such, I provide an account for the three readings of degree inchoative states in Korean induced by *in/for x time* adverbials, with the basic semantics of inchoative states proposed in (18).

1.4 Experiments

According to the theoretical claims previewed in the previous section, (degree) inchoative states in Korean fail to be classified as one of the Vendlerian four classes. Then, the questions arise with respect to language acquisition as follows: do Korean children know the underlying meaning of (degree) inchoative states? Do Korean children distinguish (degree) inchoative states from other classes?

To explore these questions of children's relevant knowledge experimentally, we carried out three experiments with 30 Korean children aged from 4;0 to 6;11 and 20 Korean adults as control group: (i) Preference task; (ii) Truth Value Judgment task and (iii) Grammaticality Judgment task. Note that we particularly investigated deadjectival inchoative states (i.e. degree inchoative states) in experimental studies, but not verbal inchoative states.

(i) Preference task

In the Preference task, we examine whether children can draw a distinction between (deadjectival) inchoative states and pure states in terms of the presence vs. absence of the BECOME event in their respective meaning. The target property of the task is the different behavior of (deadjectival) inchoative states and pure states with respect to the overt inchoative marker *-e ci* adding a BECOME operator to the meaning of a predicate. The idea is that the inchoative marker *-e ci* can freely combine with a pure state since this predicate describes a durative eventuality without referring to

the change, as shown in (30a). In contrast, the inchoative marker *-e ci* cannot freely combine with a (deadjectival) inchoative state since this predicate refers not only to a durative eventuality, but crucially also to its onset (i.e. the beginning), that is the prior change bringing the eventuality about, as shown in (30b).

(30) a. Juno-ka pikonha-**e ci**-ess-ta.
Juno-NOM tired-INCHO-PFCT-DEC
'Juno became tired.' [pure state]

b. Juno-ka cichi-***e ci**-ess-ta.
Juno-NOM tired-INCHO-PFCT-DEC
'Juno became tired.' [inchoative state]

c. Juno-ka cichi-ess-ta.
Juno-NOM tired-PFCT-DEC
'Juno became tired.' [inchoative state]

Specifically, I impute the incompatibility in (30b) to morphological blocking effect, the general idea being that one way of expressing a given meaning may block another way of expressing it. That is, a (deadjectival) inchoative state lexically expresses an inchoative meaning, as shown in (30c) in that it contains a BECOME event which is a change of state in its predicate representation.

So, (deadjectival) inchoative states and pure states do not pattern alike with respect to the distribution of the overt inchoative marker *-e ci*:

- Since pure states do not have an inherent inchoative meaning, the morphologically-derived form (PS+*-e ci*) is generated to express the latter (inchoative) meaning.
- Conversely, since (deadjectival) inchoative states are lexically specified to yield an inchoative meaning, the lexically-specified form (INS+*-Ø*) is generated to express the latter meaning.

In the preference task which will be reported in Chapter 4, we address the question of whether Korean children can infer the inherent inchoativity of (deadjectival) inchoative states and as such, can distinguish the two classes of states.

(ii) Truth Value Judgment task

In addition to the preference task, we designed another experiment, namely a truth value judgment task, to investigate further Korean children's ability to distinguish (deadjectival) inchoative states from pure states. In particular, we take the different behavior of the two classes of states with respect to the perfect marker *-ess*, as the target property of the task. Pure states and (deadjectival) inchoative states can be distinguished with respect to the perfect marker *-ess* that crucially yields different temporal readings when it combines with these two types of states, as shown in (31).

(31) a. Sue-ka **caknyeney/*cikum**-(un) nalssinha-**ess**-ta.
Sue-NOM last.year/now-TOP thin-PFCT-DEC
'Sue was thin last year.'
*'Sue is thin now.' [pure state: anterior reading]

b. Sue-ka **cikum/*caknyeney**-(un) malu-**ess**-ta.
Sue-NOM now/last.year-TOP thin-PFCT-DEC
'Sue is thin now.'
*'Sue was thin last year.' [inchoative state: simultaneous reading]

The perfect marker *-ess* affixed to the pure state predicate *nalssinha* 'thin' in (31a) yields an anterior interpretation where the described eventuality of Sue's being thin is construed as having occurred prior to the utterance time, and no longer holds at the utterance time. In contrast, *-ess* affixed to the (deadjectival) inchoative state predicate *malu* 'thin' in (31b) yields a simultaneous interpretation where the eventuality of Sue's being thin holds at the utterance time. Since

(deadjectival) inchoative states and pure states do not have the same temporal structure, when combined with the perfect marker *-ess*, they yield different temporal interpretations[6].

So, the issue of the truth value judgment task discussed in Chapter 5 is whether children can distinguish (deadjectival) inchoative states from pure states in assigning different temporal readings to these two classes of states combined with the perfect marker *-ess*.

(iii) Grammaticality Judgment task

The grammaticality Judgment task designed here investigates children's knowledge of deadjectival inchoative states as a separate class of predicates from achievements. Since a deadjectival inchoative state contains a BECOME event that contributes a change of state in its predicate meaning, it seems to belong to the class of achievements. However, as I shall show in this dissertation (cf. Chapter 3), deadjectival inchoative states can be distinguished from achievements with respect to several diagnostics. Among these, we take the different behavior of deadjectival inchoative states and achievements with respect to two diagnostics, as the target property of the grammaticality judgment task: (i) modification by adverbials such as *very* for a degree of parameter; (ii) modification by adverbials such as *slightly* for association with a lower-bound scale. This is illustrated in (32).

(32) a. Pwungsen-i il-pwun-maney ***maywu/*cokum** theci-ess-ta.
balloon-NOM one-minute-in very/slightly burst-PFCT-DEC
*'A/the balloon burst very/slightly in a minute.' [achievement]

b. Sue-ka il-nyen-maney **maywu/cokum** malu-ess-ta.
Sue-NOM one-year-in very/slightly thin-PFCT-DEC
'Sue became very/slightly thin in a year.' [deadjectival inchoative state]

[6] Note that verbal/non-gradable inchoative states combined with the perfect marker *-ess* pattern with deadjectival/gradable inchoative states, in that the described state must hold at the reference time. However, unlike deadjectival inchoative states, verbal inchoative states allow modification by present and past time adverbials, as shown in (i) below.

(i) Sue-nun ku sasil-ul **cinancue/cikum** al-ass-ta.
Sue-TOP that fact-ACC last.week/now know-PFCT-DEC
'Sue knew the fact last week. (Sue is aware of the fact now).'
'Sue has became aware of the fact now. (Sue is aware of the fact now).'

In (32a), the achievement predicate *theci* 'burst' does not allow modification by the adverbial *maywu* 'very' since it describes eventualities that cannot be intensified. Likewise, it cannot be felicitously modified by the adverbial cokum 'slightly' since it describes punctual eventualities that cannot be partially realized. In contrast, in (32b), the deadjectival inchoative state predicate *malu* 'thin' can be felicitously intensified by *maywu* 'very' specifying a certain degree to which the described property holds of the subject. It can also be felicitously modified by *cokum* 'slightly', which signals that the described eventuality is associated with a lower-bound scale. Hence, I argue that deadjectival inchoative states give rise to gradability effects and they are in fact degree inchoative states.

So, the grammaticality judgment task which will be discussed in Chapter 6 investigates experimentally the issue of gradability which is one of the relevant properties distinguishing degree inchoative states from achievements.

Thus, these experimental studies will serve to provide novel experimental evidence from child language for the meaning of (degree) inchoative states. Note that, as far as I know, the present study is the first work on children's knowledge of (degree) inchoative states which, as discussed in Section 1, are tested cross-linguistically, but typologically marked.

1.5 Outline of the dissertation

The remainder of the dissertation is organized as follows. **Chapter 2** examines the interesting fact that Korean has two types of stative predicates − pure states vs. inchoative states. I present a number of diagnostics which allows us to characterize the aspectual properties of pure states and inchoative states and furthermore, allows to distinguish these two types of states. Based on the results of the diagnostics, I provide a preliminary hypothesis: a pure state is typically lexicalized as an adjective describing a durative eventuality without transition or change into the described eventuality. In contrast, an inchoative state is lexicalized as a change-of-state verb derived from an adjectival root via affixation of a null BECOME, lexically describing a durative eventuality together with the transition (i.e. it makes a reference to a change of state).

Chapter 3 characterizes the class of (degree) inchoative states in Korean in greater detail. First, I identify two crucial properties of inchoative states that distinguish them from achievements: (i) while an achievement is associated with the culmination (i.e. the endpoint) of the described eventuality, an inchoative state is associated with the *onset* of the described eventuality; (ii) unlike

an achievement, an inchoative state describes an eventuality which has durativity, and in a way that gives rise to gradability effects. Building on Bar-el (2005)'s analysis of inchoative states in Sḵwx̱wú7mesh (Squamish) Salish, I argue that an inchoative state in Korean is a semantically complex predicate: it is made up of a BECOME event (e_1) denoting a change of state (just like an achievement), immediately followed by a normal state (e_2). Crucially, the onset of the state is represented as the initial BECOME event. I show how each component in the meaning of basic inchoative states can be itself modified by temporal adverbials: modification of the initial BECOME eventuality by *in x time* adverbials yield a telic construal, while modification of the second stative eventuality by *for x time* adverbials yield an atelic construal, thus accounting for variable telicity of basic inchoative states. Then, I deal with the issue of gradability involved in the meaning of deadjectival degree inchoative states in Korean. Specifically, I distinguish two sub-classes of inchoative states in Korean (cf. Choi & Demirdache 2014): degree inchoative states (e.g. *hwana* 'angry', *nulk* 'old') which are derived from adjectival roots and as such, gradable vs. (regular) inchoative states (e.g. *al* 'know', *ihayha* 'understand') which are verbal and are not associated with the property of gradability. I argue that degree inchoative states in Korean can alternate between two senses: 'become S(tate)' and 'become S-*er*', thus drawing a parallel with degree achievements on Abusch (1986) and Kearns (2007)' analysis. Crucially, however, I argue that degree inchoative states differ from degree achievements in two respects (cf. Choi & Demirdache 2014): First, on their telic reading, degree inchoative states are associated with a lower-bound scale − that is, a minimal value of the relevant property, unlike telic degree achievements which are associated with an upper-bound scale corresponding to a maximal value of the relevant property. As such, a telic degree inchoative state is interpreted as 'become S' (*standard telos*; Kearns 2007), but not a 'become maximally S' (*maximal telos*; Hay et al. 1999, Kennedy & Levin 2008). Second, degree inchoative states, just like degree achievements, show variable telicity. Crucially, however, when modified by *for x time* adverbials, they allow not one, but two atelic readings: (i) a resultant state reading and (ii) a process of iterated changes reading. Finally, I provide an account for the variable telicity of degree inchoative states with respect to modification by *in/for x time* adverbials.

Chapter 4 discusses a forced-choice preference task, intended to investigate whether Korean children are able to infer the BECOME event contained in the meaning of (deadjectival) inchoative states. I first lay out the target property of the experiment: a pure state describes a durative eventuality without referring to a change of state, while a (deadjectival) inchoative state is lexically

specified to refer to the change (i.e. BECOME event) into the eventuality it describes. Accordingly, to express inchoativity, a pure state obligatorily combines with the overt inchoative marker *-e ci* adding a BECOME operator to its meaning. Unlike a pure state, a (deadjectival) inchoative state is inherently inchoative and as such, it does not need to combine with *-e ci* due to the morphological blocking effect (cf. Aronoff 1976, Andrews 1990). Our results across age groups reveal a typical development pattern for pure states and interestingly a U-shaped development pattern (cf. Pinker 1984, Marcus et al. 1992) for (deadjectival) inchoative states in child language. To account for the observed asymmetric development pattern of pure states and (deadjectival) inchoative states, I argue that, by about 5 years of age, children have acquired the morphological rule of *-e ci* deriving an inchoative verb. The acquisition of this new morphological rule makes children at this age to be adult-like with pure states, but to overregularize the rule of *-e ci* to (deadjectival) inchoative states, violating the principle of morphological blocking. I also argue that children are aware of the morphological blocking principle only at age 6 and as such, are able to correctly generate the lexically-specified form for (deadjectival) inchoative states.

Chapter 5 presents a truth value judgment task, designed to investigate whether Korean children are able to distinguish the two types of states (i.e. pure states vs. (deadjectival) inchoative states) in different temporal contexts when affixed with the perfect marker *-ess*. I first review that the distribution of the perfect marker *-ess*. With a pure state, it yields an anterior reading where the described eventuality occurs prior to the reference time (here the utterance time). With a (deadjectival) inchoative state, it yields a simultaneous reading where the described eventuality holds at the reference time. The results reveal the following generalizations concerning Korean children's relevant knowledge: (i) by about 4 years of age, Korean children have adult-like knowledge of temporal interpretation of pure states; (ii) At this age, they can distinguish the two types of states combined with *-ess* at least in one of the two temporal context (i.e. the simultaneous context), like adults. Two patterns of errors were identified: First, most of the children (53.33%) unexpectedly accepted and produced *-ess* affixed to inchoative states in the anterior context. The complex reduplicant *-essess* which is the target form for an anterior interpretation of (deadjectival) inchoative states is absent from these children's grammar. I suggest a number of possible explanations for their non-target-like use of *-ess* affixed to (deadjectival) inchoative states in the anterior context: (a) these children have acquired the semantic distinction between *-ess* from *-essess* (the reduplicant of *-ess*), but they have not acquired the morpho-phonological distinction between

-*ess* and -*essess*; (b) these children have not acquired either the morphological form -*essess* or the semantic distinction between -*ess* and -*essess*; (c) these children would understand the meaning of -*ess* and -*essess*, but just they have a problem of the relevant size of the reference time (adopting Cable (2015)'s analysis of generating cessation inferences of the discontinuous past). Second, some younger children (three 4-year-olds and two 5-year-olds) accepted and volunteered -*ess* affixed to pure states and (deadjectival) inchoative states across the anterior and the simultaneous contexts. The generalization is that these children do not distinguish the two classes of states and treat the two classes of states as typical stative predicates. I account for their infelicitous use of -*ess* in the simultaneous context as follows: Adopting A & S's proposal of cessation implicatures of a past tensed stative clause, I hypothesize that these children interpreted the weaker statement (with -*ess*) as felicitous and volunteered it in the simultaneous context where the stronger statement (with -*Ø*) is more felicitous. I suggest that they understand the meaning of -*ess* affixed to a stative predicate, but they have difficulty with the cessation implicatures associated with -*ess* affixed to a stative predicate. I thus hypothesize that these children understand the meaning of -*ess* affixed to a stative predicate, but they have difficulty with the cessation implicatures triggered by the competition between -*Ø* and -*ess*.

Chapter 6 discusses a grammaticality judgment task, designed to examine Korean children's ability to draw a distinction between deadjectival inchoative states (i.e. degree inchoative states) and achievements in terms of gradability. Crucially, a degree inchoative state describes eventualities that involves gradability. It allows modification by degree adverbials such as *very* since it describes eventualities that can be intensified, but also modification by adverbials such as *slightly* since it describes eventualities that can be partially realized, and it is associated with a lower-bound scale. However, an achievement does not exhibit gradability. That is, it cannot be felicitously modified by degree adverbials such as *very* since it describes eventualities that cannot be intensified. Moreover, it does not allow modification by adverbials such as *slightly* since it describes punctual eventualities that cannot be partially realized.Our experimental results with 4, 5 and 6-year old children reveal that even younger children (4-year-olds) are able to draw a significant distinction between degree inchoative states and achievements in terms of gradability, though the acquisition of individual predicate meanings might not be fully settled at this age. However, by age 6, Korean children have adult-like knowledge of the underlying properties associated with degree inchoative states and achievements respectively.

Chapter 7 summarizes the main points of the dissertation and discusses some remaining issues for future research.

Chapter 2 Two Classes of States in Korean: (Pure) States vs. Inchoative States

2.1 Introduction

This chapter aims to establish that there are two classes of stative predicates in Korean: **pure states** vs. so-called **inchoative states** (Bar-el 2005, Kiyota 2008, Choi 2010 for this term), which, as I shall show below, have different temporal properties. Before introducing the two classes of states in Korean, let us first review the properties of states defined by the standard classification of predicates (e.g. Vendler 1967, Rothstein 2004).

A state (e.g. *know, believe, love, have, be happy*) serves to describe a state of affairs that holds uniformly throughout a given period − one that holds in the same way at every moment. Moreover, the state of affairs (for example, someone's love for someone) is not one which by its nature is intrinsically destined to expire at a particular point. In Chapter 1 (cf. Section 1.2.2), we made reference to Rothstein (2004)'s classification where the four verb classes are characterized with respect to two properties: (i) whether or not the predicate describes events with a natural endpoint; (ii) whether or not the predicate describes events that progress or develop in time, in a certain sense.

Let us first review the behavior of states with respect to the **telicity** test. As we saw in Chapter 1, the distinction between telic predicates and atelic predicates can be illustrated with the *in x time* adverbial diagnostic: only telic predicates that associate the eventualities they describe with an endpoint allow modification by *in x time* adverbials locating the endpoint (i.e. a change of state) of the described eventuality in time. With respect to this test, states reveal their atelic properties: they do not naturally occur with *in x time* adverbials, but can be modified by *for x time* adverbials measuring the duration of the described eventuality. The relevant examples are given in (1) below.

(1) a. John knew/ loved Mary *for years/*in a year*.
b. Mary was sick/angry *for two days/*in two days*.

In (1), the incompatibility with *in x time* adverbials shows that states do not associate the eventualities they describe with an endpoint. On the other hand, the compatibility with *for x time*

adverbials shows that the eventualities described by state predicates involve temporal duration, i.e., they are durative.

The second underlying feature concerns whether the eventualities described by the predicate are made up of **stages**. The property of having stages is examined by the progressive. As discussed in Chapter 1, a predicate in the progressive gets used to communicate that, at a certain point in time, an eventuality of the kind described by the verb is in the process of being realized. But for an eventuality to be in the process of being realized in the relevant sense, it has to be an eventuality with internal phases, one that develops in time. States fail to pass this test, as illustrated in (2).

(2) a. *John is *knowing/loving* Mary.
b. *John is *being* sick/angry.

As shown in (2), stative predicates are not compatible with the progressive marker *-ing*. This incompatibility is because the subparts of an eventuality described by a stative predicate cannot be qualitatively distinguished and it does not involve progress unfolding while it holds. Thus, states describe eventualities that cannot be progressively realized in time.

In addition to these two features (i.e. telicity and having stages), crucially, states can also be characterized in terms of **homogeneity**. The homogeneity of an eventuality is based on the subinterval property (Bennett & Partee 1972, Dowty 1979, 1986, Krifka 1998, Borik 2002, Borik & Reinhart 2004 among many others). Dowty (1986) proposes the following definition of the subinterval property.

(3) A sentence φ has the **subinterval property** iff the truth of φ at interval *I* entails that φ is true at subintervals *I′* of *I*. (Dowty 1986: 42)

According to the formulation in (3), states have the subinterval property. To illustrate, consider the following example.

(4) a. Mary was sick for two days. [state]

b. ——————————————— *be sick* state

|————————|------- I_b -------|————————| I_a = running time of the state specified

---------- I_a ---------- by *for two days* adverbial

If an eventuality of Mary being sick described by the stative predicate *(be) sick* in (4a) holds during the interval specified by the *for two days* adverbial (I_a), then it also holds at any time (I_b) during the given interval, as illustrated in (4b). So, states have the subinterval property and they describe homogeneous eventualities − that is, the eventualities that they describe hold in the same way at each instant within a given interval.

Note that activities also seem to have the subinterval property like states, as shown in (5).

(5) a. John ran for two hours. [activity]

b. ├——————————————————┤ *run* event

start stop

|————————|------- I_b -------|————————| I_a = running time of the whole event

---------- I_a ---------- (Kearns 2000: 164)

In (5a), the predicate *run* describes an activity eventuality of running that takes place during the interval specified by the *for two hours* adverbial. That is, John started running at a certain time and stopped at some time, as illustrated in (5b). It seems that the eventuality of John running described by the predicate is true at all times during the given interval (i.e. during the two hours), just like the case of the stative predicate in (4b). Whether activities have the subinterval property is a controversial issue in the literature. Some linguists (see e.g. Bennett & Partee 1972) argue that both activities and states have the subinterval property, while telic predicates (i.e. accomplishments and achievements) lack such property. On the other hand, Taylor (1977) and Dowty (1979) point out that a state which is true at *I* is true at all moments within *I*, but an activity eventuality can only be true at intervals larger than a moment. In other words, compared to states, the subinterval property of activity events has to pass a certain limit in size. Hence, other linguists claim that states are truly homogeneous, while activities are homogeneous relative to intervals with a minimal size (see also Rothstein 2004 and Reis Silva & Matthewson 2007 for related discussion). In this regard, I follow

Dowty and others in assuming that states are homogeneous down to instants, and activities are homogeneous down to intervals.

Summarizing, a state describes durative eventualities which do not progress in time and it does not associate the eventualities it describes with an endpoint. Based on these features, Rothstein (2004) proposes the following semantics of states, which we saw in Section 1.2.3, Chapter 1. According to the template given in (6), states are basic event predicates without an operator, indicating that they describe timeless predication. P is a variable for an arbitrary predicate. It represents the idiosyncratic content of a particular lexical item in question.

(6) States: λe.P(e) The set of events with the property P

With these characteristics of states in mind, let us now turn to Korean states. Specifically, in this chapter, I investigate the question of whether the features of states defined in the standard classification can capture the properties of stative predicates in Korean.

The remainder of this chapter is organized as follows. Section 2.2 shows that, unlike languages such as English, Korean has two classes of stative predicates, namely **pure states** vs. **inchoative states**, which do not share the same aspectual properties. In Section 2.2.1, I first show that the two types of states in Korean share the following properties: (i) durativity; (ii) gradability. In Section 2.2.2 and Section 2.2.3, I provide a set of diagnostics which allow us to distinguish morphologically and aspectually the two types of states. Section 2.2.4 discusses the temporal interpretation of the two classes of states. In particular, I show that when combined with the perfect marker *-ess*, the two classes of states yield two different readings: (i) an anterior reading with pure states; (ii) a simultaneous reading with inchoative states. On the basis of their behavior with respect to these diagnostics, Section 2.3 provides a preliminary hypothesis on the meaning of the two classes of states in Korean. Specifically, I argue that a pure state, like an English state, is typically lexicalized as an adjective describing an eventuality that takes temporal duration, and it is not associated with an endpoint (i.e. a change of state) of the described eventuality in its predicate meaning. In contrast, an inchoative state is lexicalized as a verb derived from an adjectival root via affixation of a null BECOME, lexically describing an eventuality that takes temporal duration as well as a change of state. Finally, Section 2.4 summarizes the main points of this chapter.

2.2 Korean has two classes of states: pure states vs. inchoative states

In this section, I establish that there are two classes of states in Korean: pure states vs. inchoative states. I first begin by dealing with the properties shared by pure states and inchoative states: they describe eventualities that involve durativity and gradability. Next, I show that they can be morphologically and aspectually set apart, invoking a number of diagnostics.

In the recent literature, states in Korean have been argued to divide into two sub-classes: pure states vs. so-called inchoative states (Chung 2005, Choi 2010), as shown in (7a-b).

(7) a. Pure states
celm 'young', *pisusha* 'similar', *kippu* 'happy', *nalssinha* 'thin', *khu* 'tall', *pikonha* 'tired', *sulphu* 'sad', *aphu* 'sick' …etc.

b. Inchoative states
nulk 'old', *talm* 'alike', *hwana* 'angry', *malu* 'thin', *cala* 'grown', *cichi* 'tired', *saljji* 'fat', *cec* 'wet/moist' …etc.

At first glance, it seems that both pure states and inchoative states listed in (7a-b) appear to describe certain properties of individuals or objects. For example, the pure state predicate *celm* 'young' and the inchoative state predicate *nulk* 'old' seem to share the same semantic field AGE, and the pure state predicate *nalssinha* 'thin' and the inchoative state predicate *malu* 'thin' share the semantic field PHYSICAL PROPERTY.

However, I argue that pure states and inchoative states do not describe eventualities in the same way, despite their superficial similarity. In Section 2.2.1, I first consider the properties shared by pure states and inchoative states. Then, in Sections 2.2.2 and 2.2.3, I invoke a number of diagnostics that allow us to distinguish morphologically and aspectually the two types of states in Korean.

2.2.1 Properties in common

In this section, I lay out two properties shared by pure states and inchoative states: (i) durativity; (ii) gradability. I use durative adverbial modification to investigate durativity involved in the two

classes of states. Next, I turn to degree adverbial modification and the comparative construction to investigate gradability involved in these predicates.

2.2.1.1 Durativity

Both pure states and inchoative states describe durative eventualities that take some time to be realized (cf. Comrie 1976). This property can be illustrated by the behavior of predicates with respect to modification by durative adverbials such as *for a while* or *for x time*. Consider the following examples.

(8) a. Sue-ka **hantongan** aphu/kippu-essess-ta.
Sue-NOM for.a.while sick/happy-PAST.PFCT-DEC
'Sue was sick/happy for a while.' [pure states]

b. Sue-ka **hantongan** hwana/ppichi-essess-ta.
Sue-NOM for.a.while angry/sullen-PAST.PFCT-DEC
'Sue was angry/sullen for a while.' [inchoative states]

In (8a), the pure state predicates *aphu* 'sick' and *kippu* 'happy' combined with the suffix *-essess* can be modified by the *hantongan* 'for a while' adverbial, and the sentence refers to a situation where the described eventuality of Sue's being sick/happy lasts during some interval prior to the utterance time. Likewise, in (8b), the inchoative state predicates *hwana* 'angry' and *ppichi* 'sullen' combined with *-essess* can be felicitously modified by the *hantongan* 'for a while' adverbial, and the sentence yields a reading where the described eventuality of Sue's being angry/sullen holds during some interval in the past.

Given the compatibility with the *hantongan* 'for a while' adverbial measuring the duration of the eventualities described by the predicates in (8a-b), we conclude that both pure states and inchoative states describe eventualities that have temporal duration.

2.2.1.2 Gradability

It is generally argued that most adjectives can be described as intrinsically gradable predicates (Kamp 1975, Jackendoff 1977, Croft 1991, Larson & Segal 1995 and many others). As a result,

they can participate in comparative and superlative constructions, and also allow degree modification with intensifiers such as *very* or *terribly*. This is illustrated in (9).

(9) a. This is a **very** short skirt. → a'. *This is a **very** skirt.
b. ??That bomb is **very** atomic. (Kennedy & McNally 2005: 6)

The examples in (9a-b) show that the use of the adverb *very* is restricted to modifying expressions that are both adjectives and gradable. That is, the adjective *short* which is associated with the gradable property in (9a) can be intensified with the adverb *very*, while the adjective *atomic* which is not associated with the gradability in (9b) cannot be intensified with *very*. Notice that the modifier *very* requires its argument to be an adjective, as in (9a').

Pure states and inchoative states describe eventualities that involve the gradable property, as shown in (10a-b).

(10) a. Sue-ka **maywu** yeyppu-ta.
Sue-NOM very pretty-DEC
'Sue is very pretty.' [pure state]

b. Sue-ka **maywu** nulk-ess-ta.
Sue-NOM very old-PFCT-DEC
'Sue is very old.' [inchoative state]

In (10a), the pure state predicate *yeyppu* 'pretty' can naturally co-occur with the degree adverbial *maywu* 'very' specifying a certain degree to which the described eventuality of Sue's being pretty holds. The example in (10b) involving an inchoative state predicate *nulk* 'old' shows that inchoative states pattern with pure states, i.e., they can be felicitously modified by degree adverbials.

Furthermore, pure states and inchoative states can appear in comparative constructions as illustrated in (11).

(11) a. Sue-ka Yuna-**bota** (**te**) celm-ta.
Sue-NOM Yuna-than more young-DEC
'Sue is younger than Yuna.' [pure state]

b. Sue-ka Yuna-**bota** (**te**) saljji-ess-ta.
Sue-NOM Yuna-than more fat-PFCT-DEC
'Sue is fatter than Yuna.' [inchoative state]

In (11a), the eventuality described by the pure state predicate *celm* 'young' is associated with a certain degree on a scale of the property AGE. As a result, the pure state predicate *celm* 'young' can occur in the comparative. The sentence (11a) asserts that the degree on the relevant scale (AGE) to which the eventuality of Sue's being young holds is lower than the degree to which the eventuality of Yuna's being young holds. Likewise, in (11b), since the eventuality described by the inchoative state predicate *saljji* 'fat' is also associated with a certain degree on a scale of the physical property FATNESS, the inchoative state predicate *saljji* 'fat' can appear in the comparative. The sentence (11b) yields an interpretation where the degree on the relevant scale (FATNESS) to which the eventuality of Sue's being fat holds is higher than the degree to which the eventuality of Yuna's being fat holds. Thus, pure states and inchoative states pattern alike with respect to the comparative test, in addition to degree adverbial modification.

Given that both pure states and inchoative states can take degree adverbials and felicitously appear in comparative constructions, both of them describe eventualities that has the gradable property. Gradability involved in the meaning of pure states and inchoative states suggests that these two types of states may belong to the category of adjectives in Korean. However, I argue that most pure states are lexicalized as adjectives, while inchoative states, as I shall show below (cf. Section 2.2.2.1), are not adjectives, but rather verbs.

2.2.2 Morphological distinction

Although pure states and inchoative states have some properties in common (i.e. durativity and gradability), as we saw in the previous section, they can be distinguished with respect to other critical properties. As a first step, in this section, I invoke two diagnostics that allow us to draw a morphological distinction between the two types of states (building on Chung 2005): (i) the

distribution of the non-past/present marker *-nun/-Ø* and (ii) the distribution of the inchoative marker *-e ci*. Then, I demonstrate that the two classes of states do not pattern together with respect to aspectual diagnostics in Section 2.2.3.

2.2.2.1 Non-past/present marker *-nun*[7]/*-Ø*

It has been traditionally argued that verbal predicates in Korean can be distinguished from non-verbal (or adjectival) predicates in that they take different non-past morphemes to describe on-going eventualities[8]. Verbal stems take the suffix *-nun* (or its allomorph *-n*), while non-verbal stems do not take it (cf. Han 1996, Chung 1999, Song 1999, Yoon 1996 among many others). To illustrate, consider the following examples.

(12) a. Minho-nun cikum sakwa-lul mek-**nun**-ta.
Minho-TOP now apple-ACC eat-NON.PAST-DEC
'Minho is eating an apple now.' [verbal predicate]

b. Minho-nun cikum haksayng-i-***nun/-Ø**-ta.
Minho-TOP now student-COP-NON.PAST-DEC
'Minho is a student now.' [nominal predicate]

[7] The issue on the suffix *-nun* is controversial among Korean linguists. The suffix *-nun* has received two different analyses: (i) a tense marker (a non-past marker; e.g. H.-S. Lee 1991, Yoon 1996, or a present marker; e.g. Choe 1977, Nahm 1978, Baek 1986, Chung 1999, Lee 2011); (ii) an imperfective or progressive aspect marker (Kim 1988, Lee 1991). In this dissertation, I will not investigate the different analyses of the suffix *-nun* since this is beyond the purpose of this dissertation. Following H.-S. Lee (1991) and Yoon (1996), I will consider the suffix *-nun* as a non-past marker in this dissertation.

[8] The suffix *-nun* can also yield a futurate temporal reading where a scheduled eventuality occurs in the future, allowing modification by future-time adverbials such as *nayil* 'tomorrow', as illustrated in (i).

(i) Sue-ka nayil ttena-**n**-ta.
Sue-NOM tomorrow leave-NON.PAST-DEC
'Sue is leaving tomorrow.'

The sentence in (i) involving an achievement predicate *ttena* 'leave' combined with the suffix *-nun* refers to an event of *Sue's leaving* which is planned to occur in the future. This kind of futurate reading of the present tense has been observed cross-linguistically (e.g. English, Russian, Mandarin Chinese), as shown in (ii).

(ii) The Red Sox play the Yankees tomorrow. (Copley 2002: 27)

Due to the futurate meaning that the suffix *-nun* can yield, some Korean linguists (e.g. Yoon 1996) refer to this suffix as non-past morpheme.

As illustrated in (12), to express an eventuality overlapping with the utterance time, a verbal predicate such as *mek* 'eat' in (12a) needs the overt non-past marker *-nun*, while a nominal predicate such as *haksayng* 'student' in (12b) does not.

Interestingly, the same distinction between verbal and non-verbal predicates with respect to the selection of the overt non-past marker *-nun* can also be observed between pure states and inchoative states, as illustrated in (13).

(13) a. Minho-ka pikonha-**Ø**/***nun**-ta.
Minho-NOM tired-NON.PAST-DEC
'Minho is tired.' [pure state]

b. John-to enceynkanun nulk-**nun**/***Ø**-ta.
John-also someday old-NON.PAST-DEC
'John also gets olds someday.' [inchoative state]
(modified from Song 2003)

In (13a), the bare form of the pure state predicate *pikonha* 'tired' describes an eventuality of Minho's being tired that holds at utterance time, and it cannot combine with the overt non-past marker *-nun*, just like nominal predicates in (12b). In this regard, Yoon (1996) and Song (1999) argue that when the non-past tense combines with adjectival predicates, it is realized as a phonologically null form *-Ø*. Since it takes the null form *-Ø* instead of the overt non-past marker *-nun*[9], the pure state predicate *pikonha* 'tired' in (13a) seems to be an adjectival predicate.

Unlike pure states, inchoative state predicates such as *nulk* 'old' in (13b) can felicitously combine with the overt non-past marker *-nun*, like other verbal predicates, yielding an interpretation where John is not old at utterance time, but he will surely get old in the future (see

[9] Note that pure states also include some stative verbs (e.g. *choaha* 'like', *concayha* 'exist') that take the overt non-past marker *-nun* as illustrated in (ia-b).

(i) a. Mwul-ey-to sanso-ka concayha-**n**/***Ø**-ta.
water-in-also oxygen-NOM exist-NON.PAST-DEC
'Oxygen exists in the water, too.' (Yoon 1996: 24)

b. Minho-nun Sue-lul choaha-**n**/***Ø**-ta.
Minho-TOP Sue-ACC like-NON.PAST-DEC
'Minho likes Sue.'

also Song 2003). Given the combination with the overt non-past marker *-nun*, the inchoative state predicate *nulk* 'old' in (13b) seems to be a verbal predicate.

Based on their different behavior with respect to the distribution of the non-past marker *-nun*/*-Ø*, I suggest that pure states and inchoative states do not belong to the same lexical category: pure states are adjectival predicates, while inchoative states are verbal predicates.

2.2.2.2 Inchoative marker *-e ci*

In Korean, the inchoative verb entailing a change-of-state is derived by the addition of the inchoative morpheme *-e ci*. Specifically, the morpheme *-e ci* marks the addition of a BECOME operator to the meaning of a given predicate and as such, the derived inchoative verb is roughly translated as 'become state' (Chung 2005, Joo 2008, Lim 2010). To illustrate, consider the following example.

(14) a. Sue-ka nalssinha-ess-ta.
Sue-NOM thin-PFCT-DEC
'Sue was thin.'

b. Sue-ka nalssinha-**e ci**-ess-ta.
Sue-NOM thin-INCHO-PFCT-DEC
'Sue became thin(ner).'

The sentence (14a) involves a pure state predicate *nalssinha* 'thin' describing a homogeneous eventuality of Sue's being thin without entailing a change of state. In (14b), the inchoative marker *-e ci* affixes to the pure state predicate *nalssinha* 'thin' and derives a deadjectival change-of-state verb. As such, the sentence (14b) gives rise to an inchoative interpretation where the transition from *not being thin* to *being thin* takes place and the described (resultant) eventuality of Sue's being thin holds at utterance time.

However, the inchoative marker *-e ci* cannot combine with inchoative states, as the following examples show.

(15) a. Sue-ka hwana-ess-ta.
Sue-NOM angry-PFCT-DEC
'Sue became angry.'

b. Sue-ka hwana-***e ci**-ess-ta.
Sue-NOM angry-INCHO-PFCT-DEC
*'Sue became became angry.'

In (15a), the inchoative state predicate *hwana* 'angry' on its own gives rise to an inchoative reading where the described eventuality of Sue's being angry holds at utterance time. As the example (15b) shows, the inchoative state predicate *hwana* 'angry' cannot combine with the overt inchoative marker *-e ci*, unlike the pure state predicate in (14b). The ungrammaticality of adding *-e ci* to the inchoative state predicate in (15b) suggests that the inchoative meaning is inherently coded in the basic semantics of inchoative states, blocking the addition of a BECOME operator. I argue that this incompatibility is due to morphological blocking effects according to which one way of expressing a given meaning may block another way of expressing it. Since the inchoative meaning is lexically expressed, it blocks the application of the overt inchoative morphology. This point will be considered in more detail in Chapter 4 where the contrast between pure states and inchoative states with respect to the distribution of the overt inchoative marker *-e ci* is experimentally investigated. A forced-choice preference task will be presented in Chapter 4.

On the basis of the different behavior with respect to the distribution of the overt inchoative marker *-e ci*, I argue that a pure state describes an eventuality without referring to the transition (i.e. a change of state), while an inchoative state describes an eventuality together with the transition (BECOME).

To summarize so far, we considered two diagnostics allowing us to draw a morphological distinction between pure states and inchoative states. First, the non-past marker *-nun*/*-Ø* test reveals that pure states seem to be adjectives, while inchoative states seem to be verbs. Second, the inchoative marker *-e ci* test suggests that while inchoative states inherently refer to the inchoativity of the eventualities they are associated with, pure states do not. Table 3 below summarizes the results of these two morphological criteria distinguishing the two classes of states in Korean.

Table 3.Morphological criteria distinguishing pure states from inchoative states in Korean

Criterion	Pure states	Inchoative states
Non-past marker -*nun*	×	✓
Inchoative marker -*e ci*	✓	×

2.2.3 Aspectual distinction

In addition to the morphological distinction discussed in the previous section, I invoke a number of diagnostics to demonstrate that pure states and inchoative states are distinguished aspectually. Specifically, drawing a parallel with English states, I examine how these two classes of states in Korean behave differently with respect to the two critical features underlying Rothstein's classification, that is, having stages ([± stages]) and telicity ([± telic]). First, the progressive -*ko iss* is used to examine whether or not pure states and inchoative states describe eventualities with internal phases. Next, two further diagnostics are invoked to investigate whether or not pure states and inchoative states describe eventualities which are associated with an inherent endpoint: (i) *in x time* adverbial modification; (ii) *finally* adverbial modification.

2.2.3.1 Having stages ([± stages])

In this section, I demonstrate how pure states and inchoative states behave with respect to the progressive diagnostic distinguishing eventualities that can progress in time (i.e. activities and accomplishments) from eventualities that cannot progress in time (i.e. states and achievements).

2.2.3.1.1 Progressive marker -*ko iss*

As we saw earlier (cf. Section 1.2.2, Chapter 1 and Section 2.1 in this chapter), stative predicates cannot appear in the progressive since they describe eventualities that cannot be distinguished into different temporal subparts, as illustrated in (2) and repeated in (16) below. Any part of the eventuality described by a stative predicate is of the same nature as the whole (i.e. it is homogeneous down to instants) and as such, a stative predicate describes eventualities without internal phases, one that cannot develop in time.

(16) a. *John is *knowing/loving* Mary.
b. *John is *being* sick/angry.

By contrast, activities and accomplishments can appear in the progressive since they describe eventualities consisting of different internal phases and as such, activities and accomplishments describe eventualities that can be progressively realized in time, as shown in (17).

(17) a. Mary is *singing*.
b. John is *painting* a picture.

In (17a), the activity predicate *sing* describes an eventuality of Mary's singing. The progressive with the activity predicate communicates that, at the utterance time, the described eventuality of Mary's singing is in the process of being realized. Likewise, the accomplishment predicate *paint a picture* in (17b) describes an eventuality of John's painting a picture. The progressive with the accomplishment predicate describes the painting process leading up to its endpoint, which is part of the whole eventuality. Thus, both activities and accomplishments describe eventualities consisting of internal phases, and they can progress in time.

Let us now turn to the two types of states in Korean. Pure states and inchoative states can be distinguished with the progressive test. Pure states pattern with states in English, in that they are not compatible with the progressive marker -*ko iss*, as the following example shows.

(18) *Mina-ka ice-nun celm-(e ka[10])-**ko iss**-ta.
Mina-NOM now-TOP young-go-PROG-DEC
*'Mina is being young now.' (Chung 2005: 29)

In (18), the pure state predicate *celm* 'young' does not allow the progressive marker *-ko iss*. The incompatibility of *celm* with the progressive marker *-ko iss* in (18) suggests that pure states in Korean describe eventualities that cannot be distinguished into different temporal subparts. As such, they cannot develop in time, as is the case for typical states in the standard classification. In order for the pure state predicate *celm* 'young' to felicitously occur in the progressive, it should be in the overt inchoative form *-e ci,* which, as showed in the previous section (cf. Section 2.2.2.2), corresponds to a derived inchoative verb yielding a change-of-state interpretation (*coming to be in a state*). This is shown in (19) below.

(19) Mina-ka ice-nun celm-**e ci**-(e ka)-**ko iss**-ta.
Mina-NOM now-TOP young-INCHO-go-PROG-DEC
'Mina is getting young now.'

Unlike pure states, inchoative states are perfectly compatible with the progressive form *-ko iss*, as illustrated in (20).

[10] According to Chung (2005), a change-of-state interpretation would require the use of the auxiliary verb *ka* 'go' attached to pure states in the inchoative form and inchoative states in Korean. However, native speakers of Korean that I consulted (including myself) allowed the change-of-state interpretation of pure states in the inchoative form and inchoative states given in (19-20), even in the absence of *ka* 'go', as shown in (ia-b) below.

(i) a. Wuli emma-ka cemcem nulk-*ko iss*-ta.
my mom-NOM gradually old-PROG-DEC
'My mother is gradually getting old(er).'

b. Hanul-i cemcem etwu(p)-*e ci-ko iss*-ta.
sky-NOM gradually dark-INCHO-PROG-DEC
'The sky is gradually getting dark.'

So, I suggest that the auxiliary verb *ka* 'go' does not play a crucial role in the distribution of the change-of-state interpretation of pure states in the inchoative form and inchoative states.

(20) Mina-ka ice-nun nulk-(e ka)-**ko iss**-ta.
Mina-NOM now-TOP old-go-PROG-DEC
'Mina is getting old now.' (Chung 2005: 29)

In (20), the inchoative state predicate *nulk* 'old' can appear in the progressive form -*ko iss*, yielding an interpretation where the described eventuality of Mina's being old is in the process of being realized at utterance time. That is, (20) means that Mina is getting old now. Given the compatibility of *nulk* with the progressive form -*ko iss* in (20), inchoative states describe eventualities that can develop in time.

Thus, the results of the progressive marker -*ko iss* diagnostic reveals that inchoative states do not pattern with pure states: pure states describe eventualities that cannot develop in time, while inchoative states describe dynamic eventualities that can progress in time.

2.2.3.2 Telicity ([± telic])

In this section, I invoke two diagnostics allowing us to examine whether pure states and inchoative states are predicates describing atelic eventualities or telic eventualities − that is, whether or not the predicate associate the eventualities it describes with a natural endpoint (i.e. changes of state). Recall that the classic classification characterizes states as predicates describing eventualities which are not associated with a natural endpoint.

2.2.3.2.1 *in/for x time* adverbial modification

The well-known diagnostic for telicity is, as we saw earlier (cf. Section 1.2.2, Chapter 1 and Section 2.1 in this chapter), modification by *in x time* adverbials (Dowty 1979). The idea is that *in x time* adverbials is designed to modify a telic predicate, one that associates the eventualities it describes with an endpoint, and we use the adverbial to talk about the time it takes to reach the end of an eventuality of the kind the predicate describes. We previously observed that telic predicates (i.e. accomplishments and achievements) can occur with *in*-adverbials, while atelic predicates (i.e. states and activities) cannot occur with *in*-adverbials, but rather with *for*-adverbials measuring the duration of the eventuality described by a predicate. The relevant examples that we discussed in Section 1.2.2, Chapter 1 are repeated in (21) below.

(21) a. John knew Mary *for years/*in a year*. [state]
b. John danced *for hours/*in an hour*. [activity]
c. John spotted Mary *in a few minutes/*for a few minutes*. [achievement]
d. John built the house *in a few weeks/*for a few weeks*. [accomplishment]

The examples in (21a-b) show that states and activities cannot co-occur with *in*-adverbials specifying a time of transition, but rather they can occur with *for*-adverbials measuring an interval during which the described eventuality lasts. The incompatibility with *in*-adverbials in (21a-b) illustrates that neither states nor activities associate the eventualities that they describe with an inherent endpoint (i.e. a culmination point), i.e., they are atelic. By contrast, the examples in (21c-d) illustrate that achievements and accomplishments naturally occur with *in*-adverbials. The compatibility with *in*-adverbials in (21c-d) shows that both achievements and accomplishments associate the eventualities that they describe with a natural endpoint, i.e., they are telic.

Let us now turn to the two types of states in Korean. Pure states are not compatible with *in*-adverbials, but compatible with *for*-adverbials, as shown in (22).

(22) Juno-ka **il-nyen-*maney/✓tongan** twungtwungha-ess-ta.
Juno-NOM one-year-in/for fat-PFCT-DEC
'Juno was fat *in a year / ✓for a year.' [pure state]

The example given in (22) illustrates that the pure state predicate *twungtwungha* 'fat' cannot naturally occur with the *in*-adverbial, but rather occurs with the *for*-adverbial specifying the duration of the described eventuality of Juno's being fat in the past time. It suggests that pure states in Korean pattern with states in English (cf. (21a)) in that they are not associated with a natural endpoint in their event representation. In particular, the described eventuality of Juno's being fat holding during the given interval of a year entails that at all subintervals of this interval, it holds in the same way. Pure states describe homogeneous eventualities. We can thus conclude that pure states are atelic.

Unlike pure states, inchoative states in Korean are compatible with *in*-adverbials, as shown in (23).

(23) Juno-ka **il-nyen-maney** saljji-ess-ta.
Juno-NOM one-year-in fat-PFCT-DEC
'Juno got fat in a year.'

Inchoative states such as *saljji'* fat' in (23) pattern with telic predicates (21c-d) in that they can be modified by *in*-adverbials. Importantly, notice that the *in*-adverbial with the inchoative state in (23) does not specify the endpoint (i.e. the culmination point) of the described eventuality, but specifies the time of the change into the described eventuality (*being fat*) takes place − that is, at the end of a year, the described eventuality of Juno's being fat starts to hold.

Interestingly, the very same predicate can also be modified by *for*-adverbials, as illustrated in (24).

(24) a. Juno-ka **il-nyen-tongan** saljji-ess-ta.
Juno-NOM one-year-for fat-PFCT-DEC
'Juno got fatter and fatter for a year.'

b. Juno-ka **il-nyen-tongan** saljji-essess-ta.
Juno-NOM one-year-for fat-PAST-DEC
'Juno was fat for a year.'

As can be seen in (24a-b), the inchoative state predicate *saljji* 'fat' is also compatible with the *for*-adverbial measuring the interval during which the described eventualities last, like atelic predicates including pure states. Specifically, when inchoative states are modified by durative adverbials, they yield two readings: the sentence (24a) describes a process consisting of iterated changes of state described by the inchoative state predicate during the interval given by the *for*-adverbial. The sentence (24b) describes that the property described by the inchoative state predicate holds during the interval given by the *for*-adverbial. This point will be discussed in more detail in Chapter 3.

The compatibility with *in*-adverbials in (23) suggests that an inchoative state describes a change of state eventuality (BECOME). On the other hand, the compatibility with *for*-adverbials in (24) implies that an inchoative state describes an eventuality that has temporal duration like a pure state, as also shown in (8) in Section 2.2.1.1. We can make sense of this contradictory pattern with

respect to telicity by assuming that an inchoative state in Korean is a semantically complex predicate: it contains a BECOME event (e_1) representing a change of state just like an achievement, and a normal state in its event representation, as I shall argue in Section 3.3, Chapter 3. The variable telicity of inchoative states[11] will be accounted for in Section 3.3.2, Chapter 3.

In sum, pure states and inchoative states do not pattern together with respect to the standard test for telicity: while pure states allow atelic interpretation (i.e. they can be modified only by *for*-adverbials), inchoative states allow both atelic and telic interpretations (i.e. they can be modified by both *for*- and *in*-adverbials).

2.2.3.2.2 *Finally* adverbial modification

In this section, I provide further argument for an intrinsic transition point contained in the meaning of inchoative states. I shall use the term 'transition points' to refer to changes of state. Specifically, following Bar-el (2005) and Kiyota (2008), I distinguish two kinds of transition points: an initial transition point referring to an initial change of state or an initial boundary (i.e. an inception of the described eventuality) and a final transition point referring to a final change of state or final boundary (i.e. a culmination of the described eventuality).

Kiyota (2008) argues that the Japanese adverb *tuini* 'finally' appears to focus on the last (i.e. the right-most) transition point available in an eventuality described by a given predicate. That is to say, if the described eventuality has two transition points available (i.e. initial and final boundaries), the adverb focuses on the final one which is the right-most transition point. If the described eventuality contains only one transition point available (i.e. either initial or final boundaries), it is this point that the adverb focuses on. To see this, consider the following Japanese examples.

[11] Pure states are basically atelic as we observed in (22), but when they are combined with *-e ci*, they also show the variable telicity like inchoative states as shown in (i) (Lim 2010).

(i) Allison-uy khi-ka *han-tal-tongan*/*maney* **khu-e ci**-ess-ta.
Allison-POSS height-NOM one-month-for/in tall-INCHO-PFCT-DEC
'Allison became taller for a month/in a month.' (Lim 2010)

(25) Taroo-ga **tuini** ano-kuruma-o naosi-ta.
Taroo-NOM finally that-car-ACC fix-PAST
1) *'Taroo finally started fixing the car.'
2) ✓'Taroo finally completed fixing the car.' [accomplishment]
(Kiyota 2008: 138)

The sentence (25) containing an accomplishment predicate *ano-kuruma-o naosi* 'fix the car' co-occurring with the adverb *tuini* 'finally' describes a situation where the eventuality of Taroo's fixing the car is completed. With accomplishments, the adverb *tuini* 'finally' focuses on the right-most transition point of an accomplishment which is the final boundary (i.e. the endpoint). As a result, the sentence (26) induces a completion reading, but not an inceptive reading.

(26) Taroo-ga **tuini** odot-ta.
Taroo-NOM finally dance-PAST
'Taroo finally danced (started to dance).' [activity] (Kiyota 2008: 137)

The sentence (26) involving an activity predicate *odot* 'dance' and the adverb *tuini* 'finally' refers to a situation where the described eventuality of Taroo's dancing started after some effort. It suggests that there is only one transition point that the activity predicate *odot* 'dance' makes relevant, and it is the initial point of the eventuality. Consequently, the adverb *tuini* 'finally' focuses on the coming about of the described eventuality, but not on the completion of the described eventuality. That is, it focuses the right-most transition point available of an activity eventuality which is the initial boundary (i.e. the inception) and the adverb thus yields a sole inceptive reading.

Let us now consider how pure states and inchoative states in Korean behave with respect to modification by the adverb *machimnay* 'finally', the Korean counterpart of the Japanese *tuini*.

(27) a. *Minho-ka **machimnay** pikonha-ess-ta.
Minho-NOM finally tired-PFCT-DEC

b. *Sue-ka **machimnay** twungtwungha-ess-ta.
Sue-NOM finally fat-PFCT-DEC [pure states]

The sentences in (27a-b) containing pure state predicates *pikonha* 'tired' and *twungtwungha* 'fat' show that these predicates cannot felicitously co-occur with the adverb *machimnay* 'finally'. This incompatibility is due to the fact that pure states describe continuous eventualities without changes of state. The eventualities described by pure states do not have any transition point available that the adverb can focus on. In order to felicitously occur with the adverb *machimnay* 'finally', pure states must be in the overt inchoative form, as shown in (28).

(28) a. Minho-ka **machimnay** pikonha-**e ci**-ess-ta.
Minho-NOM finally tired-INCHO-PFCT-DEC
'Minho finally got tired.'

b. Sue-ka **machimnay** twungtwungha-**e ci**-ess-ta.
Sue-NOM finally fat-INCHO-PFCT-DEC
'Sue finally got fat.' [pure states]

As shown in (28), pure state predicates combined with the overt inchoative marker *-e ci* allow modification by the adverb *machimnay* 'finally'. Specifically, the adverb focuses on the initial transition point which is added by the overt inchoative marker *-e ci* and as a result, induces an inceptive reading where the described eventualities (e.g. *Minho's being tired* in (28a), *Sue's being fat* in (28b)) started.

Unlike pure states, the bare form of inchoative states can be naturally modified by the adverb *machimnay* 'finally', as shown in (29).

(29) Juno-ka **machimnay** saljji-ess-ta.
Juno-NOM finally fat-PFCT-DEC
'Juno finally got fat (started to be fat).'

In (29), the adverb *machimnay* 'finally' co-occurring with inchoative states such as *saljji* 'fat' induces an inceptive reading and thus, it focuses the inception of the described eventuality (e.g. *Juno's being fat* but not its endpoint. To illustrate, let us look at the following example.

(30) Juno-ka **machimnay** saljji-ess-ko cikum-to kyeysok saljji-ko iss-ta.
Juno-NOM finally fat-PFCT-and now-still continuously fat-PROG-DEC
'Juno finally got fat and he is still getting fatter now.'

As shown in (30), the inchoative state *saljji* 'fat' modified by the adverb *machimnay* 'finally' can be followed by an imperfective clause without inducing any infelicity. Consequently, the adverb *machimnay* 'finally' occurring with inchoative states yields an inceptive reading, but not a completion reading. The inceptive reading induced by the adverb *machimnay* 'finally' suggests that, unlike pure states, inchoative states are associated with transition points which are the points of inception (i.e. initial boundaries). This issue will be further discussed in Chapter 3.

In sum, the results of the two diagnostics related to telicity reveal that pure states describe atelic eventualities patterning like states in the Vendlerian classes, while inchoative states describe eventualities with inherent transition points patterning like telic predicates. However, they do not exactly pattern with telic predicates since they show the variable telicity. Table 4 below summarizes the results of the aspectual diagnostics.

Table 4. Aspectual criteria distinguishing pure states from inchoative states in Korean

Criterion	Pure states	Inchoative states
Progressive marker *-ko iss*	×	✓
in x time adverbials	×	✓
for x time adverbials	✓	✓
'finally' adverb modification	×	✓

2.2.4 Different temporal readings of the perfect marker *-ess*

In this section, I briefly show that the two classes of states in Korean can also be distinguished with respect to the perfect marker *-ess* in that when combined with it, they yield different temporal readings.

The Korean perfect marker -*ess* (or its allomorphs -*ss*/-*ass*)[12] gives rise to either an anterior or a simultaneous readings relative to the context time (typically, the utterance time in a matrix clause). I assume that the distribution of the different temporal readings of -*ess* is related to the event representation of predicates with which it occurs (see also Shin 2005, Choi 2010, Lee & Ryu 2010). For instance, the perfect marker -*ess* on an activity predicate (i.e., a predicate which is not associated with an inherent endpoint of the described eventuality) refers to an eventuality occurring prior to the utterance time as shown in (31).

(31) Sue-ka **ecey/*cikum** Juno-wa wuntongcang-eyse nol-**ass**-ta.
Sue-NOM yesterday/now Juno-with playground-LOC play-PFCT-DEC
'Sue played with Juno on the playground yesterday.'
*'Sue is playing with Juno on the playground now.' [activity]

The Korean sentence in (31) contains the verb *nol* 'play' describing an activity eventuality with no inherent endpoint. The combination between -*ess* and the activity verb thus gives rise to an anterior reading where the playing eventuality occurs in the past with respect to the utterance time.

On the other hand, when -*ess* affixes to an achievement predicate (i.e., a predicate which is associated with an inherent endpoint of the described eventuality), it gives rise to an interpretation where the punctual eventuality occurs and its result state obtains at utterance time, as illustrated in (32).

(32) Sue-ka **ecey/cikum** khep-ul kkway-**ess**-ta.
Sue-NOM yesterday/now cup-ACC break-PFCT-DEC
'Sue broke/has broken a/the cup yesterday/now.' [achievement]

[12] The issue of the nature of the suffix -*ess* is controversial among Korean linguists. The suffix -*ess* has been analyzed as (i) a past tense marker (Choe 1977, An 1980, Gim 1985, Sohn 1995, Yoon 1996, Lee 2011, a.o.), (ii) a perfective aspect marker (Na 1971, Nam 1978, a.o.), and (iii) a perfect aspect marker (H.-S. Lee 1991, 1993, D.-W. Han 1996, Chung 2005, Choi 2010, Kang 2014, a.o.). In this dissertation, I will not review critical arguments for each position in detail. A specific analysis of -*ess* is not directly relevant for our present study. Assuming for concreteness that the suffix -*ess* is to be analyzed as a perfect marker, I will just show that pure states and inchoative states can be distinguished with respect to the suffix -*ess*.

The sentence in (32) contains the verb *kkway* 'break' describing an achievement eventuality − that is, a punctual eventuality. The perfect marker -*ess* affixed to the achievement predicate refers to a punctual eventuality and its result state obtaining at utterance time.

Given that the perfect marker -*ess* yields different temporal readings according to the event structure of the predicates with which it occurs, we might wonder what happens when we add -*ess* to pure states and inchoative states. Interestingly, when combined with the perfect marker -*ess*, pure states and inchoative states in Korean yield different readings, as the following examples illustrate.

(33) Sue-ka **caknyeney/*cikum** nalssinha-**ess**-ta.
Sue-NOM last.year/now thin-PFCT-DEC
'Sue was thin last year.' / *'Sue is thin now.' [pure state]

In (33), the pure state predicate *nalssinha* 'thin' combined with the perfect marker -*ess* yields an anterior reading where the described eventuality is construed as having occurred prior to the utterance time and it does not currently hold. As such, it can be modified by past time adverbials such as *caknyeney* 'last year', but not by present time adverbials such as *cikum* 'now'. Pure states pattern with activities (31) which are atelic predicates.

(34) Sue-ka **cikum/*caknyeney** malu-**ess**-ta.
Sue-NOM now/last.year thin-PFCT-DEC
'Sue is thin now.' / *'Sue was thin last year.' [inchoative state]

Unlike the pure state in (33), the inchoative state predicate *malu* 'thin' combined with -*ess* in (34) yields a simultaneous reading where the described eventuality of Sue's being thin obtains at utterance time and as such, only allows modification by present time adverbials. Inchoative states behave like achievements which are telic predicates (32), in the sense that both inchoative states and achievements imply that a certain state of affairs holds at utterance time, i.e., they yield a simultaneous reading[13].

[13] However, inchoative states do not accurately pattern with achievements. In particular, notice here that, inchoative states combined with -*ess* only allow modification by present time adverbials (e.g. *cikum* 'now') (34), while achievements allows modification by both past (e.g. *ecey* 'yesterday') and present time adverbials (32). This different

The fact that pure states and inchoative states do not behave in the same way with respect to the perfect marker *-ess* in (33-34) suggests that these two classes of states do not have the same temporal structure and thus, should be distinguished. Note that specifically, this contrast is experimentally investigated with a truth-value judgment task in Chapter 5. The purpose of the task is to examine whether Korean children aged from four to six are able to assign the different temporal readings of *-ess* to pure states and inchoative states and thus, distinguish these two classes of states.

2.3 Preliminary hypothesis

2.3.1 Meaning of the two classes of states

So far, we observed the characteristics of pure states and inchoative states in Korean. On the one hand, pure states and inchoative states pattern with each other in that both of them describe eventualities that are durative and gradable. On the other hand, they do not pattern together with respect to several diagnostics. Table 5 below summarizes the results of the diagnostics that we considered.

Table 5. Properties of pure states and inchoative states in Korean

Criterion	Pure states	Inchoative states
Gradability	✓	✓
for x time adverbials	✓	✓
in x time adverbials	×	✓
Progressive marker *-ko iss*	×	✓
'finally' adverb modification	×	✓
Non-past marker *-nun*	×	✓
Inchoative marker *-e ci*	✓	×

As can be seen in Table 5, pure states describe eventualities that cannot develop in time without being associated with changes of state. In contrast, inchoative states describe eventualities that can

behavior with respect to temporal adverbials will be one of the arguments supporting the claim that inchoative states are distinct from achievements. I will discuss this point further in Chapter 3.

develop in time and they involve changes of state. Based on these properties, I provide a preliminary hypothesis on the lexical meanings of pure states and inchoative states in Korean.

First of all, I determine the lexical category of the two classes of states in Korean. Taking the distribution of the non-past marker *-nun/-Ø* as a critical argument, I claim that pure states and inchoative states are not lexicalized in the same way. Specifically, I argue that pure states are typically lexicalized as adjectives, as shown in (35) since they do not take the overt non-past morpheme *-nun*. Note that some Korean linguists argue against the presence of the adjective category in Korean (see e.g. Maling & Kim 1998, Yu 1998, Kim 2002 for related discussion). However, following Yang (1994) who points out that Korean predicative adjectives are inherently states, I assume that Korean does have the adjective category.

(35) Adjectival pure states in Korean: [$_{Adj°}$ *state*]

In footnote 4, I mentioned that some pure states such as *choaha* 'like', *concayha* 'exist' take the overt non-past marker *-nun*, like verbal predicates. This kind of pure states are lexicalized as verbs, and they describe continuous states like adjectival pure states, as illustrated in (36) below.

(36) Verbal pure states in Korean: [$_{V°}$ *state*]

On the other hand, inchoative states are typically lexicalized as verbs since they take the overt non-past morpheme *-nun*, as illustrated in (37).

(37) Inchoative states in Korean: [$_{V°}$ [$_{Adj°}$ *state*][$_{V°}$ Ø-BECOME]]

I argue that inchoative states are verbs derived from adjectival roots [$_{Adj°}$ *state*] via zero affixation of a null inchoative morpheme BECOME. As a result of the interaction between the stative root and the null inchoative morpheme BECOME, they are lexically specified as change-of-state verbs describing eventualities as well as the transition into those eventualities. Specifically, the assumption that inchoative states are derived from adjectival roots is motivated by the fact that they show gradability, which is a general characteristic of adjectives, as we saw in Section 2.2.1.2. The hypothesis that an inchoative state describing the transition into the described state is a verb rather

than an adjective follows from Koontz-Garboden (2005)'s claim according to which 'change of state' is realized only by verbs via the mapping rule represented in (38).

(38) *Change of state mapping rule* (Koontz-Garboden 2005: 104)
[BECOME φ] → V

The mapping rule given in (38) reads as follows: if BECOME is the highest operator in an event structure, then the word whose meaning is represented by that event structure must belong to the lexical category of verb.

Thus, pure states in Korean are lexicalized either as adjectives (e.g. *celm* 'young') or as verbs (e.g. *choaha* 'like'), while inchoative states in Korean are lexicalized only as verbs (e.g. *nulk* 'old'). Specifically, languages may differ in the ways they encode a given semantic content since both 'young' and 'old' are lexicalized as adjectives in English.

2.3.2 Implications for the typology of the Vendlerian aspectual classes

We have distinguished two types of states in Korean, i.e. pure states vs. inchoative states. Now, I address the question of whether the characteristic of states in the standard classification can capture the meanings of the two types of states in Korean.

According to the results of the diagnostics discussed in Section 2.2.3, a pure state describes eventualities that cannot be distinguished into different subparts and it is not associated with a change of state point or an inherent boundary. In this respect, since pure states pattern exactly with English states, they fall into the class of states in the standard classification. Therefore, Rothstein (2004)'s event representation of states (see also Dowty 1979, Smith 1997) can capture the underlying characteristics of pure states in Korean. The event representation of states given earlier (cf. Chapter 1 and Section 2.1 in this chapter) is repeated in (39) below.

(39) (pure) States: λe.P(e)

According to (39), a pure state in Korean is a simplex event predicate describing durative eventualities.

However, inchoative states in Korean are problematic. According to the results of the diagnostics, an inchoative state is characterized as a predicate describing a durative eventuality like a pure state, but unlike a pure state, an inchoative state is associated with a change of state point. As a result, the lexical template of (pure) states in (39) cannot fully capture the meaning of an inchoative state in Korean and as such, it fails to be classified as a typical state. What is clear is that since an inchoative state is associated with a change of state like an achievement, it should contain a BECOME component in its predicate representation. But, crucially, an inchoative states is not an achievement, as I shall show in Chapter 3 in more detail, because an inchoative state, unlike an achievement, describes a durative and gradable eventuality. At this stage, inchoative states can be considered as predicates describing a type of eventualities that falls in between states and achievements. In Chapter 3, I will argue that, unlike a pure state, an inchoative state is a semantically complex event predicate: it contains a BECOME event (e_1) which is a change of state just like an achievement, and a simple P-event (e_2) which is a normal state. Crucially, I will demonstrate that an inchoative state is associated with the *onset* of the described eventuality, but not with the endpoint characterizing an achievement. The details on the analysis of inchoative states in Korean will be provided in the next chapter after further investigation on the characteristics of inchoative states.

2.4 Summary

In this chapter, we have established that there are two classes of states in Korean: pure states vs. inchoative states. The two types of states share durativity and gradability in their eventuality descriptions. However, based on the results of the distribution of the non-past marker *-nun*/*-Ø*, I have claimed that they do not belong to the same lexical category. Specifically, pure states are typically lexicalized as adjectives, while inchoative states are typically lexicalized as change-of-state verbs derived from adjectival roots via affixation of a null inchoative morpheme BECOME.

I have also argued that the two classes of states do not have the same meaning. A pure state describes a durative eventuality without referring to a change of state point, while an inchoative state describes a durative eventuality together with a change of state point (i.e. the change into the described eventuality). Since the two classes of states do not have the same temporal structure, when combined with the perfect marker *-ess*, they yield different temporal interpretations.

Thus, I conclude inchoative states are not pure states which are typical state predicates; rather, they constitute a class distinct of predicates that do not fit into the standard classification, as I shall show in more detail in the next chapter. On the basis of the discussion made in this chapter, we entirely devote the next chapter to provide an in-depth discussion on inchoative states in Korean.

Chapter 3 (Degree) Inchoative States in Korean

3.1 Introduction

This chapter aims to investigate the meaning of (degree) inchoative states in Korean in greater detail. As mentioned in Chapter 1, Korean is not the only language that has a class of inchoative states. A survey of the recent literature shows that inchoative states have been reported in languages such as Sḵwx̱wú7mesh (Bar-el 2005), Sənčáθən, Japanese (Kiyota 2008), Korean (Chung 2005, Lee 2006, Choi 2010), Niuean, St'át'imcets (Davis 2012, Matthewson 2013, 2014), Spanish (Marín & McNally 2005, 2011 for discussion of reflexive psychological verbs) and Chinese (Huang et al. 2000, Chang 2003). In this chapter, I will first provide further evidence from Korean for the existence of inchoative states. The diagnostics that I will invoke in this chapter to characterize inchoative states in Korean are adapted from Bar-el (2005) and Marín & McNally (2011). I will then argue for the existence of what I will refer to as degree inchoative states alongside the class of inchoative states. A degree inchoative state, as I shall show in this chapter, describes a property instantiated to at least a *minimal* value on the associate relevant scale. The idea is that the change of state described by a degree inchoative state is the change that leads to the attainment of this minimal value which can be seen as the *onset* of the described state (cf. Choi & Demirdache 2014). Importantly, while many authors have argued for the existence of inchoative states cross-linguistically (as mentioned just above), to our knowledge, the existence of degree inchoative states has not been investigated.

In the previous chapter, we established that there is a class of inchoative states in Korean that does not pattern exactly with typical stative predicates. Like a typical state, an inchoative state describes an eventuality which has temporal duration, but, unlike a typical state, it also describes a change of state and as such, contributes an inchoative meaning. The fact that inchoative states make reference to a change of state raises the question of whether they belong to the class of achievements. In Section 3.2, I address this question. I discuss two crucial properties of inchoative states that allow us to distinguish them from achievements: (i) while an achievement associates the eventualities it describes with a culmination point (i.e. an endpoint), an inchoative state associates

the eventualities it describes with an *onset* and (ii) unlike an achievement, an inchoative state describes an eventuality which has durativity and (for deadjectival inchoative states) gradability.

In Section 3.3, I provide an analysis to account for the meaning of inchoative states in Korean. Building on Bar-el (2005)'s analysis of inchoative states in Sḵwx̱wú7mesh (Squamish) Salish, I argue that an inchoative state in Korean is a semantically complex predicate: it describes a sequence of two events, the first of which is a change of state of the kind an achievement would describe (in what follows I will refer to the latter as a "BECOME event", making reference to Rothstein (2004)'s verb class templates), the second, an eventuality of the kind a normal state would describe (in what follows I will refer to the latter as either a "state" or, (making reference to Rothstein's templates again) "a simple P-event"). Crucially, the BECOME event represents the prior change (i.e. the onset) that brings the state about (cf. Choi & Demirdache 2014). I show how each component in the meaning of inchoative states can be itself modified by temporal adverbials: modification of the initial BECOME eventuality by *in x time* adverbials yields a telic construal, while modification of the second stative eventuality by *for x time* adverbials yields an atelic construal, thus accounting for variable telicity of inchoative states observed in Section 2.2.3.2.1, Chapter 2.

In Section 3.4, I deal with the issue of gradability involved in the meaning of deadjectival inchoative states in Korean. Specifically, I distinguish two classes of inchoative states in Korean: degree inchoative states (e.g. *hwana* 'angry') which are derived from adjectival roots and as such, are associated with the property of gradability vs. (regular) inchoative states (e.g. *al* 'know') which are verbal and are not associated with gradability. I argue that degree inchoative states in Korean can alternate between two senses: 'become S' and 'become S-*er*', thus drawing a parallel with degree achievements on Abusch (1986) and Kearns (2007)' analysis. Crucially, however, I argue that degree inchoative states differ from degree achievements in two respects (cf. Choi & Demirdache 2014): First, on their telic reading, degree inchoative states are associated with a scale that has a lower-bound − that is, a minimal value of the relevant property, unlike telic degree achievements which are associated with an upper-bound corresponding to a maximal value of the relevant property. As such, a telic degree inchoative state is interpreted as 'become S' (*standard telos*; Kearns 2007), but not a 'become maximally S' (*maximal telos*; Hay et al. 1999, Kennedy & Levin 2008). Second, degree inchoative states, just like degree achievements, show variable telicity. Crucially, however, when modified by *for x time* adverbials, they allow not one, but two atelic readings: (i) a resultant state reading and (ii) a process of iterated changes reading. Finally, I

account for the variable telicity of degree inchoative states with respect to modification by *in/for x time* adverbials.

3.2 Properties of inchoative states

This section aims to establish two critical properties of inchoative states which distinguish them from achievements: (i) all inchoative states associate the eventualities they describe with an *onset*, but not with an endpoint and (ii) all inchoative states describs eventualities which have durativity (that is, they can extend in time) and deadjectival inchoative states give rise to gradability effects. Based on these underlying features, I will provide an analysis of (degree) inchoative states in Korean in Section 3.3.

3.2.1 Inchoative states refer to the *onset* of the eventualities they are associated with

In Chapter 2, I argued that an inchoative state in Korean describes a durative eventuality together with a transition point (i.e. a change of state). I invoke two diagnostics to investigate the nature of the transition point involved in the meaning of inchoative states: (i) the addition of a punctual adverbial clause determining whether the predicate describes an eventuality with an initial transition point (i.e. an inception); (ii) the event continuation diagnostic determining whether the predicate describes an eventuality with a final transition point (i.e. a culmination).

3.2.1.1 Diagnostics for initial boundaries

3.2.1.1.1 English vs. Squamish Salish

My discussion here will be based on Bar-el (2005), who starts from the view that predicates can be associated generally with logical representations of the kind we attributed to Rothstein in Chapter 1. Inspired by Smith (1997), Bar-el considers readings induced by punctual adverbial clause modification in order to determine whether the representations of Squamish Salish predicates include a part that designates the onset of some state of affairs. The addition of a punctual adverbial clause can induce three readings according to the aspectual class of the perfective predicate in the main clause, as given in (1).

(1) a. **inceptive** (*inchoative*) reading: the eventuality described by the main clause begins simultaneously with the eventuality described by the punctual clause.

b. **medial** (*overlapping*) reading: the eventuality described by the main clause begins before and overlaps with the eventuality described by the punctual clause.

c. **culminating** reading: the eventuality described by the main clause ends simultaneously with the eventuality described by the punctual clause.

Following Bar-el (2005) and Kiyota (2007), I shall interpret an inceptive (inchoative) reading as evidence for an initial change of state point (i.e. an onset), and a culminating reading as evidence for a final change of state point (i.e. an endpoint). To illustrate, consider first the following examples in English.

(2) a. Mary was asleep when the bell rang. [state]
b. John ran when the bell rang. [activity]
c. The train left when the bell rang. [achievement]
d. #Mary took a bath when the bell rang. [accomplishment]

In (2a), the state predicate in the past yields a medial reading where the eventuality of Mary's being asleep begins before, and overlaps with the punctual eventuality of the bell's ringing. In (2b), the activity predicate in the past yields an inceptive reading where the eventuality of John's running begins simultaneously just after the punctual eventuality of the bell's ringing. In (2c), the achievement predicate in the past is also compatible with the punctual adverb, yielding a so-called "entire event" or instantaneous reading (cf. Bar-el 2005). That is, the punctual adverb [*when the bell rang*] here serves to establish the entire eventuality described by the achievement predicate, so it is difficult to determine whether the achievement predicate associates the eventuality it describes with an initial point or with a final point. In (2d), unlike the other cases, the accomplishment predicate in the past is odd with the punctual adverb.

Let us now turn to Squamish Salish predicates. Consider the examples given in (3-5).

(3) chen xay-m [kwi-n-s kw'ach-nexw kwa John].
1S.SG laugh-INTR DET-1POSS-NOM see-TR(LC) DET John
'I laughed when I saw John.'
a. ✓I started to laugh when I saw John. [activity]
b. ×I was laughing when I saw John.
c. ×I stopped laughing when I saw John. (Bar-el 2005: 153)

In (3), the punctual clause [*when I saw John*] is added to a matrix clause containing a predicate *xay* 'laugh' that Bar-el considers to be an activity predicate. The sentence (3) refers to a situation where the eventuality of laughing described by the predicate in the main clause begins just after the eventuality of seeing John described by the punctual clause. That is, the punctual clause serves to establish the initial boundary (i.e. the onset) of the eventuality that the main clause is used to describe. As such, the sentence means that *it is when (and possibly because) I saw John that I **started** to laugh*, i.e., the sentence (3) can be accepted only under an inceptive reading. Thus, Bar-el concludes that the predicate *xay* 'laugh' should be represented in a way that makes reference to the onset of a state of affairs, the initial point at which it holds. The same conclusion would hold for English activities like (2b).

(4) chen xel'-t kwi book [kwi-s-es tl'ik kwa John]
1SG write-TR DET book DET-NOM-3POSS arrive DET John
'I wrote a book when John arrived.'
a. ×I started to write a book when John arrived. [accomplishment]
b. ×I was writing a book when John arrived.
c. ✓I finished writing a book (I wrote the last word) when John arrived.
(Bar-el 2005: 160)

The sentence in (4) contains a perfective accomplishment predicate in the main clause to which a punctual clause [*when John arrived*] is added. Unlike the accomplishment in English in (2c), a perfective accomplishment in Squamish Salish is felicitous with a punctual adverbial clause. Note, however, that, in contrast to (3), the sentence (4) refers to a situation where the eventuality of writing a book described by the accomplishment predicate ends simultaneously with the eventuality

of the punctual clause. That is, the punctual adverbial clause is used to qualify the final boundary (i.e. the endpoint) of the eventuality described by the main clause, i.e., the sentence (4) can be accepted only under the culminating reading in (4c). For Bar-el, this fact shows that these predicates should not be given a representation that makes reference to an onset.

(5) chen ts'ulh-um kwi s-es k̲en'p ta senk̲wem.
1SG cold-INTR DET nom-3POSS set DET sun
'I felt cold when the sun went down.'

a. ✓I was warm before, but I felt cold when the sun went down.

b. × I was (already) feeling cold when the sun went down. [state]

(Bar-el 2005: 172)

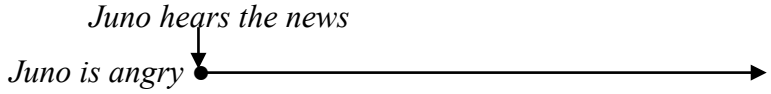
The sentence (5) containing a stative verb *ts'ulh* 'cold' in Squamish Salish can be accepted only under an inchoative reading, that is, only under the context in (5a) where at the moment when the sun goes down, the subject starts to feel cold. On the basis of the judgment pattern given in (5), Bar-el concludes that all stative predicates in Squamish Salish like *ts'ulh* 'cold' are inchoative states that contain intrinsic initial transition points in their predicate meaning, unlike states in English in (2b).

3.2.1.1.2 Korean

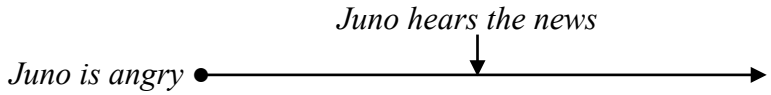
The addition of a punctual adverbial clause distinguishes two classes of states in Korean. Pure states pattern together with all states in English (cf. (2b)), while inchoative states pattern together with all states in Squamish Salish (cf. (5)). To illustrate, consider the following examples.

(6) Juno-nun [ku sosik-ul tul-ess-ul ttay] hwana-ess-ta.
Juno-NOM that news-ACC hear-PFCT-when angry-PFCT-DEC
'Juno was angry when he heard that news.'

a. ✓'Juno was not angry before, but he became angry because of the news.'



b. ×'Juno was already angry when he heard the news.'



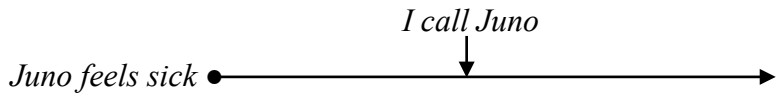
The sentence in (6) contains the inchoative state predicate *hwana* 'angry' in the main clause co-occurring with a punctual clause. The utterance in (6) can be accepted only under an inceptive reading ((6a)) where the described eventuality of Juno's being angry in the main clause begins simultaneously with the eventuality described by the punctual clause. A medial reading ((6b)) is not available for this sentence. Consequently, if we adopt Bar-el's line of thought, the inchoative state in Korean in (6) should be represented as making reference to an onset. That is, its temporal structure contains the transition point, the prior change that brings the eventuality of being angry about.

In contrast, pure states show different behavior with respect to this diagnostic as illustrated in (7) below.

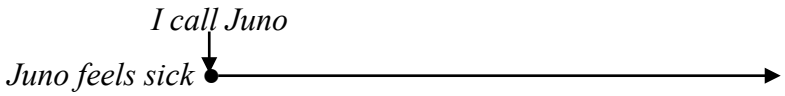
(7) *Pure state in Korean*

[nay-ka cenhwahay-ss-ul ttay] Juno-nun aphu-ess-ta.
I-NOM call-PFCT-when Juno-TOP sick-PFCT-DEC
'Juno was sick when I called him.'

a. ✓Juno was already sick when I called him.



b. ×Juno was not sick before, but he got sick when I called him.



In contrast to (6), the sentence in (7) containing the pure state predicate *aphu* 'sick' can be accepted only under the medial interpretation illustrated in (7a). The unavailability of an inceptive reading for the sentence in (7) suggests that a pure state in Korean does not associate the eventualities it

describes with an initial point in the same sense that an inchoative state does. Looking at things in Bar-el's way, the change of state is not included in its representation. Consequently, the punctual adverb does not serve to localize a change of state from *not being sick* to *being sick*, rather the described eventuality of Juno's being sick begins before and overlaps with the punctual eventuality.

We have seen here that the inceptive reading is the only available reading when an inchoative state co-occurs with a punctual clause. Thus, unlike a typical stative predicate, an inchoative state allows us to use a punctual adverb to designate the point at which a change of state occurs. Specifically, in the case of a verb like *hwana* 'angry', we use the punctual adverb to designate the onset of a state of the kind we would use the English verb *angry* to describe. Looking at things in Bar-el's way, we would say that the verb has a representation that makes reference to an *onset* (i.e. an initial boundary).

3.2.1.2 Diagnostics for final boundaries

We have shown that inchoative states refer to an onset of the eventualities they describe, but not to an endpoint since the addition of a punctual clause yields a sole inceptive reading. In this section, I provide a further argument for the absence of an endpoint for an inchoative state in its predicate representation.

Recall our discussion of telicity in Chapter 1. We noted there that the meaning of *run to the store* is such that, once Mary has run to the store, she cannot continue running to the store. On this basis, we motivated the position that *Mary run to the store* associates the eventualities it describes with an endpoint. For Bar-el, this kind of diagnostic specifically serves to establish whether a verb's representation makes reference to an endpoint. Bar-el's diagnostic frame involves a clause containing a predicate in the past conjoined with a clause asserting that the state of affairs (may have) continued (e.g. *He V-ed… and (maybe) he's still V-ing*). This frame is judged felicitous as long as the predicate in question does not involve a final point in its representation. To illustrate, consider the examples given in (8).

(8) a. Lily swam and maybe she is still swimming. [activity]
b. *The train left and maybe it's still leaving. [achievement]

The English sentence (8a) illustrates that the first clause containing an activity predicate *swim* in the past can be felicitously conjoined with an imperfective clause. The use of *still* shows that the eventuality of Lily's swimming described by the activity in the past can be extended. This means that the activity does not associate the eventualities it describes with a final boundary, and, adopting Bar-el's point of view, that the representation of activities does not make reference to an endpoint. In contrast, the sentence (8b) shows that conjoining the clause containing the achievement predicate *leave* in the past with an imperfective clause induces a contradiction. That is, the eventuality of the train's leaving described by the perfective achievement cannot be extended further. This is because an achievement describes a punctual eventuality which begins and ends instantaneously. In other words, achievement predicates associate the eventualities that they describe with an endpoint.

Let us now turn to Korean inchoative states. With respect to the event continuation diagnostic, an inchoative state in Korean combined with the perfect marker can be felicitously conjoined with an imperfective clause without inducing any contradiction as the following example illustrates.

(9) Sue-nun han-tal-maney saljji-ess-ta. Cikum-to (yecenhi) saljji-ko iss-ta.
Sue-TOP one-month-in fat-PFCT-DEC now-too still fat-IMPERF-DEC
'Sue got fat in one month and she's still getting fat now.'

(9) then shows that the eventuality described by the inchoative state predicate *saljji* 'fat' can be extended into a longer eventuality of the same kind. Inchoative states in Squamish Salish display the same behavior as illustrated in (10).

(10) chen t'ayak' ti natlh. i na7-xw chen wa t'a-t'ayak'
1SG angry DET morning CONJ RL-still 1SG IMPERF REDUP-angry
'I got mad this morning and I'm still mad.' (Bar-el 2005: 94)

Similarly to the Korean sentence (9), the sentence (10) reveals that the perfective inchoative state predicate *t'ayak'* 'angry' in Squamish Salish describes an eventuality which can be continued and as such, it can be conjoined with an imperfective clause. The sentences (9-10) show that inchoative states in these two languages do not associate the eventualities that they describe with a final boundary. Note that achievements do not pattern with inchoative states.

(11) ??Juno-ka il-nyen-maney cwuk-ess-ta. Cikum-to yecenhi cwuk-(eka)-ko iss-ta.
Juno-NOM one-year-in die-PFCT-DEC now-even still die-go-PROG-DEC
*'Juno died in a year. He is still dying even now.'

In (11), the perfective achievement predicate *cwuk* 'die' conjoined with an imperfective clause induces an infelicity. Since the achievement predicate describes a punctual eventuality of the change from one state (i.e. Juno is alive) to another state (i.e. Juno is dead), once the eventuality described by the achievement occurs, it cannot be extended into another eventuality of the same kind.

Thus, inchoative states do not associate the eventualities they describe with an endpoint, unlike achievements. I shall show in the next section in more detail that they do not pattern with achievements.

3.2.2 Inchoative states are not achievements

In Chapter 2, on the basis of several diagnostics, we established that an inchoative state in Korean can be used to describe an eventuality with duration but also that it can be used to describe an eventuality that involves a change of state. In the latter case, we seem to associate these predicates with an inchoative meaning. On this view, the question that arises here is whether an inchoative state could be analyzed as an achievement since it describes the transition from one state (i.e. not having the target property) to another state (i.e. having the target property) just like an achievement. However, our two previous diagnostics (i.e. the addition of a punctual adverbial clause; the event continuation test) established that inchoative states do not pattern with achievements. I will now present some other ways in which inchoative states in Korean can be set apart from achievements (Choi & Demirdache 2014): (i) their behavior with respect to durative adverbial modification; (ii) the readings of the progressive marker; (iii) their behavior with respect to durative degree and manner adverbial modification; (iv) temporal adverbial modification.

3.2.2.1 Durative adverbial modification

As we saw earlier (cf. Section 2.2.1.1, Chapter 2), inchoative states are compatible with durative adverbials such as *for a while* or *for x time*, just like pure states which are stative predicates. The relevant examples which were discussed in Chapter 2 are repeated in (12) below.

(12) a. Sue-ka **hantongan** hwana/ppichi-essess-ta.
Sue-NOM for.a.while angry/sullen-PAST.PFCT-DEC
'Sue was angry/sullen for a while.'

b. Juno-ka **il-nyen-tongan** saljji-ess-ta.
Juno-NOM one-year-for fat-PFCT-DEC
'Juno got fatter and fatter for a year.'

The examples in (12) show that the inchoative state predicates like *hwana* 'angry, *ppichi* 'sullen', *saljji* 'fat' can be felicitously modified by the durative adverbials *hantongan* 'for a while' and *il-nyen-tongan* 'for a year'.

However, achievements cannot be modified by durative adverbials, as illustrated in (13).

(13) a. *Juno-ka cip-ey **hantongan** tochakha-essess-ta.
Juno-NOM home-LOC for.a.while arrive-PAST.PFCT-DEC
*'Juno arrived home for a while.'

b. *Pwungsen-i **il-pwun-tongan** theci-ess-ta.
balloon-NOM one-minute-for burst-PFCT-DEC
*'A/the balloon burst for a minute.'

In (13), the achievement predicates *tochakha* 'arrive' and *theci* 'burst' are not compatible with the durative adverbials *hantongan* 'for a while' and *il-pwun-tongan* 'for a minute.' Arguably, this is because they describe punctual or instantaneous eventualities, and durative adverbials can only modify predicates that describe eventualities with temporal duration.

Inchoative states and achievements can thus be distinguished with respect to durative adverbial modification. This in turn suggests that inchoative states can describe eventualities with temporal duration.

3.2.2.2 Readings of the progressive

Recall that the progressive is felicitous only with predicates that can describe eventualities which take place with some duration and can be broken into different temporal phases. As discussed in Chapters 1 and 2, the canonical reading of the progressive is the on-going process reading according to which an eventuality of the kind described by the predicate is in the process of being realized. The examples discussed earlier are repeated in (14a-b).

(14) a. John is *running to the store*. [accomplishment]
b. John is *running*. [activity]

In (14a-b), both the accomplishment predicate *run to the store* and the activity predicate *run* are compatible with the progressive. In both cases, the predicate in the progressive gets used to express that the realization of a running eventuality is on-going at utterance time.

The progressive is typically infelicitous with stative predicates, as we saw in the previous chapters (cf. Chapters 1 & 2). The relevant examples are repeated in (15).

(15) a. ??John is *loving* Mary.
b. ??John is *knowing* French.

The reason why stative predicates cannot occur in the progressive is that they describe the eventualities that are too homogeneous to be distinguished into different temporal subparts.

We saw that the progressive is also infelicitous with achievements since they describe punctual or instantaneous eventualities that involve no temporal duration to be realized. This is illustrated in (16) below.

(16) a. *John is *recognizing* his friend.
b. *John is *losing* his key.

Interestingly, as is well-known, there are some achievement predicates that can felicitously occur in the progressive (cf. Verkuyl 1989, Mittwoch 1991, Smith 1997, Kearns 2003, Rothstein 2004 many others) as the following examples illustrate.

(17) a. The train is *leaving* the station.
b. John is *reaching* the summit.

In (17), the progressive is felicitous with the achievement predicates *leave* or *reach* which are considered to describe punctual changes. However, it does not yield the same reading as with activities and accomplishments in (14a-b). The sentences (17a-b) can be accepted only under a *preliminary circumstance* reading (Kearns 2003) − that is, the preliminary circumstance progressive in (17a-b) refers to a preparatory phase leading up to the realizations of the achievement eventualities. Note that the sentence (17a) does not permit us to conclude right after the utterance that the train left the station and similarly, the sentence (17b) does not permit us to conclude that John reached the summit at utterance time; these sentences thus do not express that the change of state is effected at the moment of utterance. In these cases, the eventualities described by the achievement predicates will occur in the future.

Summarizing, activities and accomplishments in the progressive yield an on-going process reading where the eventuality described by the predicate is progressively realized. The progressive is typically infelicitous with achievements, but some achievement predicates such as *die, arrive, reach, leave* in the progressive describes the prelude process stage leading up to the realization of the punctual eventualities they describe, i.e. they yield a preliminary circumstance reading[14].

With these readings of the progressive in mind, let us now turn to inchoative states and achievements in Korean to examine whether or not they pattern together. Like achievements in English, achievements in Korean generally cannot co-occur in the progressive, but some of them allows the preliminary circumstance progressive. This is shown in (18).

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[14] Note that progressive achievements in English also has a so-called 'futurate' reading (Dowty 1977, Smith 1997) as the following example illustrates.

(i) John is leaving tomorrow.

In (i), the achievement predicate *leave* can occur in the progressive and the progressive achievement predicate describes an eventuality which is planned to take place in the future. However, this reading is not available for progressive achievements in Korean as shown in (ii).

(ii) *Jon-un nayil ttena-**ko iss**-ta.
John-TOP tomorrow leave-PROG-DEC
'John is leaving tomorrow.'

As can be seen (ii), the progressive achievement predicate cannot co-occur with the future temporal adverbial *nayil* 'tomorrow'.

(18) a. *Sue-ka Minsu-lul alabo-**ko iss**-ta.
Sue-NOM Minsu-ACC recognize-PROG-DEC
*'Sue is recognizing Minsu.'

b. ✓Kicha-ka yek-ul ttena-**ko iss**-ta.
train-NOM station-ACC leave-PROG-DEC
'The train is leaving the station.'

In (18a), the typical achievement predicate *alabo* 'recognize' describes a punctual eventuality of Sue's recognizing Minsu that cannot be progressively realized and as such, is not compatible with the progressive. However, in (18b), the achievement predicate *ttena* 'leave' felicitously occurs in the progressive, yielding a preliminary circumstance reading where the train is moving but has not yet left the station completely (Lee 2006).

Inchoative states in Korean, as shown earlier (cf. Section 2.2.3.1.1, Chapter 2) also can appear in the progressive form, as illustrated in (19).

(19) a. Mina-ka ice-nun nulk-(e ka)-**ko iss**-ta.
Mina-NOM now-TOP old-go-PROG-DEC
'Mina is getting old now.' (Chung 2005: 29)

b. John-i cemcem apeci-lul talm-**ko iss**-ta.
John-NOM gradually father-ACC resemble-PROG-DEC
'John is becoming more like his father.' (Song 2003: 14)

Interestingly, in (19a-b), the progressive inchoative states describe a process consisting of iterated changes of state, or more precisely changes in the degree to which an individual can be said to have a particular property (the property of being old, the property of being like one's father). Crucially, this process comes after the change of state that would result in the property being possessed at all, e.g. the change from *Mina's not being old* to *Mina's being (minimally) old* in (19a). We might see this as follows: the sentence communicates that the state that the inchoative state predicate is basically associated with has started (i.e. Mina has the property of oldness now), but at the same

time it communicates that the degree to which the relevant property is realized is increasing over time (i.e. Mina continues to get older).

In particular, while the sentence in (18b) does not entail that an eventuality of the kind described by the achievement predicate *ttena* 'leave' has already taken place, the sentences in (19) *do* entail that an eventuality of the kind described by the inchoative state has taken place: if (19a) is true, then the sentence *Mina has gotten old* in Korean is also true. So, while in the case of (18b) the progressive apparently describes a preliminary stage leading up to the realization of an eventuality of the kind described by the predicate, (19) does not seem to behave in the same way.

Thus, the reading induced by the progressive distinguishes inchoative states from achievements.

3.2.2.3 Manner and degree adverbial modification

Piñón (1997) notes that achievements are incompatible with adverbs expressing that the eventuality described by a predicate is partially completed or realized such as *partially*, *halfway*, as illustrated in (20).

(20) a. #Rebecca *partly* (*partially, half, partway, halfway*) reached the summit.
b. #Anita *partly* (*partially, half, partway, halfway*) recognized Peter.

(Piñón 1997: 5)

According to Piñón, since achievements typically describe punctual eventualities which have no proper parts, partial realization in the sense conveyed by these adverbs is not possible. These adverbs can only be used to talk about eventualities that extend over time. Due to this lack of temporal parts or duration, achievements are also incompatible with certain uses of manner adverbs such *quickly*, *slowly* which can only occur with predicates that describe eventualities involving some sort of internal development over time (De Miguel 1999) as shown in (21).

(21) a. #Rebeca *quickly (slowly)* reached the summit.
b. #Anita *quickly (slowly)* recognized Peter.
c. #Astrid *quickly (slowly)* won the race.
d. #The patient died *quickly (slowly)*. (Piñón 1997: 6)

When a manner adverb such as *quickly* modifies an activity or accomplishment predicate describing an eventuality, it can give rise to a reading on which the adverb describes the speed with which an eventuality takes place of the kind the predicate describes, i.e., it yields an eventuality-related interpretation (Piñón 1997). This is illustrated with the following examples.

(22) a. John walks *quickly (slowly)*.
b. Mary wrote a letter *quickly (slowly)*.

The sentences in (22a-b) containing an activity predicate *walk* and an accomplishment predicate *write a letter* modified by a manner adverb express that the described eventualities take place quickly or slowly. This reading is possible because both activities and accomplishments involve temporal duration and dynamicity in their eventuality descriptions.

However, as can be seen in (21a-d), when manner adverbs modify an achievement predicate describing a punctual or an instantaneous eventuality, they do not induce an interpretation that we could see in this way. Since the eventualities of the kind described by the predicate are punctual, they cannot be distinguished with respect to the speed at which they take place. Rather, these sentences express that it takes a short (long) period of time for the eventuality to take place. For instance, the sentence (21a) could be used to describe how quickly (or slowly) Rebecca climbed, but it cannot be used to describe how quickly (or slowly) the eventuality of reaching the summit itself takes place.

Thus, since the eventualities described by achievement predicates are punctual and without duration, they cannot be realized partially and it makes little sense to evaluate as long or short the speed at which they take place.

Let us now observe how inchoative states in Korean behave differently from achievements with respect to modification by these adverbials. Korean achievements pattern with English achievements in that they cannot be modified by adverbs such as *partially*, *slightly* and by manner adverbs, either, as the following example illustrate.

(23) Juno-ka kyenggi-lul ***cokum/*ppalli** iki-ess-ta.
Juno-NOM race-ACC slightly/quickly win-PFCT-DEC
*'Juno slightly/quickly won the race.'

As can be seen in (23), the achievement predicate describing an instantaneous eventuality of winning the race does not allow modification either by the adverb *cokum* 'slightly' expressing that the eventuality described by a predicate is partially realized, or by the manner adverb *ppalli* 'quickly' specifying the speed at which the eventuality itself takes place.

However, inchoative states in Korean show a different pattern of behavior with respect to these adverbs, as shown in (24).

(24) a. Sue-ka **cokum** malu-ess-ta.
Sue-NOM slightly thin-PFCT-DEC
'Sue became slightly thin.'

b. Elum-i **chenchenhi** nok-ass-ta.
ice-NOM slowly melt-PFCT-DEC
'The ice slowly melted.'

The compatibility of inchoative states with the adverbs in (24) suggests that, unlike achievements, inchoative states in Korean describe eventualities that do not take place instantaneously, but can be progressively realized over time. A possible conclusion is that in these contexts the inchoative state predicate *malu* 'thin' gets used to describe eventualities of Sue's being thin (but one that results from a change of state), while the inchoative state predicate *nok* 'melt' gets used to describe eventualities of the ice's melting. The adverb *cokum* 'slightly' then gets used to talk about the partial realization of eventualities of Sue's being thin, while the adverb *chenchenhi* 'slowly' gets used to restrict the eventualities of the ice's melting under consideration to those that develop slowly.

Another difference between achievements and (many, but not all) inchoative states in Korean is related to gradability. As shown earlier in Chapter 2 (cf. Section 2.2.1.2), inchoative states seem to be able to describe gradable properties, in a manner similar to adjectives. As a result, they allow modification by degree adverbials such as *very*, *terribly* and they can also appear in comparative/superlative constructions. The examples given in Chapter 2 are repeated in (25) below.

(25) a. Sue-ka **maywu** nulk-ess-ta.
Sue-NOM very old-PFCT-DEC
'Sue is very old.'

b. Sue-ka Yuna-**bota** (**te**) saljji-ess-ta.
Sue-NOM Yuna-than more fat-PFCT-DEC
'Sue is fatter than Yuna.'

In (25a), the inchoative state predicate *nulk* 'old' can be felicitously modified by the adverbial *maywu* 'very' intensifying the property described by the predicate. Furthermore, in (25b), the inchoative state predicate *saljji* 'fat' is felicitous with the comparative. This means that the sentence (25b) makes reference to eventualities of Sue being fat and of Yuna being fat to some degree: it says that there is some degree such that we can find an eventuality of Sue being fat to that degree, but we cannot find an eventuality of Yuna being fat to that degree

However, achievements do not allow modification by degree adverbials and are not compatible with the comparative.

(26) a. *Juno-ka **maywu** cwuk-ess-ta.
Juno-NOM very die-PFCT-DEC
*'Juno died very.'

b. *i pwungsen-i ce pwungsen-**bota** (**te**) theci-ess-ta.
this balloon-NOM that balloon-than more burst-PFCT-DEC
*'This balloon burst more than that balloon.'

The example in (26a) illustrates that, unlike inchoative states in (26), achievements disallow modification by degree adverbials such as *maywu* 'very'. In addition, in (26b), the achievement predicate *theci* 'burst' in the comparative results in oddness for the sentence. Based on the contrast

shown in (25-26), I suggest that gradability is one important property that set inchoative states apart from achievements[15].

To summarize, inchoative states do not pattern with achievements in the following way: achievements describe punctual eventualities that cannot be partially realized. The eventualities described by achievements cannot develop over time since they involve no temporal duration. In contrast, (deadjectival) inchoative states describe eventualities that can be partially realized, and relatedly they display effects of gradability. The eventualities described by inchoative states can develop over time and thus involve temporal duration. Note that this is precisely the contrast which was investigated in Experiment 3 and reported in Chapter 6. The main goal of this experiment was to examine whether Korean children aged from 4 to 6 are able to draw a distinction between inchoative states and achievements even though both classes appear to describe a change of state.

3.2.2.4 Temporal adverbial modification

Another property that distinguishes Korean inchoative states from achievements concerns temporal adverbial modification. In Chapter 2, we saw that when combined with the perfect marker *-ess* yielding an anterior or a simultaneous reading with respect to the utterance time in simple clauses, inchoative states seem to pattern with achievements in that they yield a reading which conveys that a certain state of affairs holds at the utterance time (cf. Section 2.2.4). However, consider the examples given in (27-28).

(27) Juno-ka **cinancue/cikum** seoul-ey tochakha-ess-ta.
Juno-NOM last.week/now Seoul-LOC arrive-PFCT-DEC
'Juno has arrived in Seoul last week/now.' [achievement]

When the achievement predicate *tochakha* 'arrive' combines with the perfect marker *-ess* in (27), it describes a punctual eventuality of Juno's arriving in Seoul that results in Juno's being in Seoul at the utterance time. The achievement predicate in (27) allows modification by past adverbials such as *cinancue* 'last week' specifying the (past) interval within which the eventuality described

[15] As will be made explicit in Section 3.4 below, gradability hold of deadjectival inchoative states, but no verbal inchoative states (e.g. *al* 'know').

by the predicate comes to its end, as well as by present adverbials such as *cikum* 'now' specifying the interval during which the result state holds.

Similarly to this last example, the inchoative state predicate *malu* 'thin' combined with *-ess* in (28) describes an eventuality of Sue's being thin holding at the utterance time. However, unlike the achievement in (27), the inchoative state predicate – while allowing modification by present adverbials − does not allow modification by past adverbials.

(28) Sue-ka **cikum/*caknyeney**-nun malu-ess-ta.
Sue-NOM now/last.year-TOP thin-PFCT-DEC
'Sue is thin now. / Sue was thin last year.' [inchoative state]

Inchoative states and achievements thus also show a different pattern of behavior with respect to temporal adverbial modification when they are combined with the perfect marker *-ess*.

Summarizing Section 3.2.2, I have shown a number of ways in which (deadjectival) inchoative states fail to pattern with achievements. The difference between the two classes of predicates considered so far are summarized in Table 6.

Table 6. Difference between (deadjectival) inchoative states and achievements

		Inchoative states	**Achievements**
the progressive *-ko iss*		✓	× (only preliminary circumstance reading)
for x time adverb		✓	×
cokum 'slightly' adverb		✓	×
maywu 'very' adverb[16]		✓	×
perfect marker *-ess*	past adverbials	×	✓
	present adverbials	✓	✓

[16] Only deadjectival inchoative states can be modified by the *cokum* 'slightly' adverb and the *maywu* 'very' adverb. I will come back to this point in Section 3.4.1.

On the basis of the different pattern of behavior shown above, I claim that (deadjectival) inchoative states can be differentiated from achievements in the following way:

- An achievement describes punctual eventualities − eventualities lacking temporal duration − that cannot be partially realized. An achievement associates the eventualities it describes with an endpoint bringing about a result state.

- All inchoative states make reference to an onset of the eventualities they describe, not to an endpoint. Inchoative state eventualities can extend over time: they may have temporal duration. (Deadjectival) inchoative states describe gradable eventualities that can be partially realized, and in a way that can implicate degrees.

3.3 Analysis of inchoative states in Korean

In this section, based on the properties of inchoative states in Korean that we found so far, I provide an analysis of inchoative states. Specifically, building on Bar-el (2005)'s analysis of inchoative states in Squamish Salish, I claim that an inchoative state in Korean is a semantically complex predicate. It is constructed out of two predicates of eventualities, and describes a succession of two eventualities, which these predicates are used to characterize. The first of the two eventualities is a change of state of the kind an achievement would describe (a "BECOME event") and the second is a durative eventuality of the kind a normal state would describe ("a simple P-event"). Then, I show how each component in the meaning of inchoative states can be itself modified by temporal adverbials.

3.3.1 Proposal based on Bar-el (2005)'s analysis

So far, we established the following characteristics underlying inchoative states in Korean:

(i) An inchoative state describes an eventuality which has temporal duration, like a pure state.

(ii) An inchoative state also makes reference to a change of state, like an achievement.

(iii) An inchoative state does not associate the eventualities it describes with an endpoint (i.e. a final boundary), unlike an achievement.

(iv) However, an inchoative state does make reference to an *onset* (i.e. an initial boundary), unlike a pure state.

Since inchoative states in Korean show not only properties of pure states (i.e. typical stative predicates), but also those of achievements, they fail to be classified either as pure states or as achievements. The representations for states and achievements entertained[17] by Rothstein (2004) which were discussed in Section 1.2.3, Chapter 1 are repeated in (29). P is a variable for an arbitrary predicate but it always corresponds to the kind of predicate of eventualities that states yield. It represents the idiosyncratic part of the content of the lexical item in question. States are basic event predicates without an operator, and achievements are constructed from bare event predicates together with the BECOME operator. As discussed in Chapter 2, I assume that pure states in Korean which pattern exactly with states in English, deserve the same event representation, as in (29a).

(29) a. States: λe.P(e)

b. Achievements: λe.(BECOME(P))(e)

Now, the template of states in (29a) can capture the property of inchoative states (i), namely durativity, but cannot capture the property (ii), namely change of state. Conversely, the representation of achievements in (29b) can capture the property of inchoative states (ii) which is change of state, but cannot capture the property (i) which is durativity. Crucially, neither the representation of states in (29a) nor that of achievements in (29b) can capture *both* the property of inchoative states (iii), namely the absence of an endpoint of the associated eventualities, and the property (iv), namely the presence of an inception point of the associated eventualities.

We have seen in the template for accomplishments that these verbs are represented as giving rise to events that are the sum of two sub-events where the second is a BECOME event. The BECOME event corresponds to a change of state. Bar-el (2005) accepts this idea and argues that verbs can also have another kind of representation: one that is similar but where the *first* sub-event in the sum is a BECOME event. She argues that verbs that make reference to endpoints are of the first kind,

[17] But not ultimately adopted in this form.

while verbs that make reference to onsets are of the second kind. On the basis of this assumption, Bar-el proposes the predicate representation for inchoative states in Squamish Salish, simplified slightly[18] as in (30).

(30) Inchoative states: $\lambda e.\exists e_1 \exists e_2 [e = e_1 \oplus e_2 \wedge \text{BECOME}(P)(e_1) \wedge P(e_2)]$

(Bar-el 2005)

According to the template given in (30), an inchoative state describes events that consist of two sub-events: an initial BECOME event (e_1) that constitutes a change of state, and a simple P-event (e_2) of the kind a normal state would describe. As such, an inchoative state is accurately represented as a predicate describing eventualities that both have a durative component (i.e. a state-like component) and a component that consists of the change that leads into that durative component. Crucially, the initial BECOME event represents the *onset* of the described eventuality, not its endpoint.

Building on Bar-el, I argue that an inchoative state in Korean is a semantically complex predicate which is made up of two ingredients: a predicate of "BECOME events" and a predicate which is a normal state. These two ingredients are put together by a SUM operator that is essentially Rothstein's (2004) (cf. Section 1.2.3, Chapter 1) – though I will indicate explicitly that the summation operation imposes temporal contiguity of the ingredients. The semantic value for the SUM operator is given in (31) and is written in a way that makes the connection to Bar-el's proposal transparent.

(31) $[[\text{SUM}]] = \lambda P_{<v,t>}.\lambda Q_{<v,t>}.\lambda e.\exists e_1 \exists e_2.$ $e = e_1 \oplus e_2$ and e_2 immediately follows e_1 and $P(e_1)=1$ and $Q(e_2)=1$.

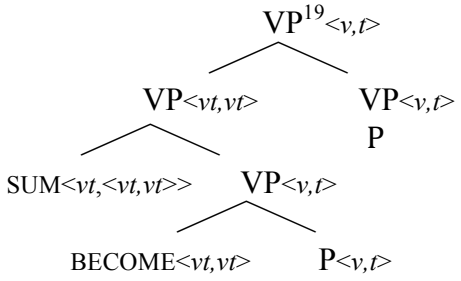
The basic semantics of inchoative states in Korean as well as the relevant structure are given in (32-33). The main idea here is that the same basic state predicate (P) gets used twice: it contributes

[18] Note that the representation of inchoative states given in (30) is simplified in the same way that the representation of accomplishments given in Chapter 1 is simplified. Bar-el follows Rothstein in writing $^{S}(e_1 \sqcup e_2)$ (cf. (17) and Footnote 5, in Chapter 1).

both to the achievement part of the inchoative state and to the state part. Crucially, however, this predicate only gets pronounced once.

(32) Inchoative states in Korean: $\lambda e.\exists e_1 \exists e_2.\ e = e_1 \oplus e_2$ and e_2 immediately follows e_1 and [[BECOME P]](e_1) = 1 and [[P]](e_2) = 1.

(33)



According to the semantics given in (32), the BECOME event itself represents the onset of the durative eventuality (i.e. simple P-event) As such, an inchoative state in Korean thus describes eventualities that are made up of a durative eventuality together with the prior change that brings this eventuality about. Thus, the semantics in (32) can capture the underlying properties of inchoative states in Korean given in (i-iv) above.

Lee (2006) can be seen as adopting the same position we have taken here – that the meaning of inchoative states incorporates not only a durative eventuality but also a BECOME event that corresponds to its onset, rather than to its culmination. Lee proposes the schema of events in Korean shown in (34) below.

(34)

preparatory phase	transition point	result state
I	II	III

(Lee 2006: 699)

[19] Here, I have chosen to label all the verbal constituents VP, but nothing important depends on this; indeed, later, I will suggest that some of them may really be APs.

The schema given in (34) is similar to the schema for events in English proposed by Kamp & Reyle (1993: 558), except that the culmination point is replaced by a transition point. Lee (2006: 699) argues that "*the fact that events have the transition (change) in their eventuality description appears to be a cognitive universal, but Korean and English differ as to whether to take this transition to be the culmination of part I only or the inception of part III as well*". In the spirit of Lee's proposal, I have argued here that an inchoative state in Korean should be represented in such a way as to incorporate a transition (i.e. a BECOME event), like a telic predicate (i.e. an accomplishment, an achievement). However, an inchoative state is distinguished from a telic predicate in that the transition of an inchoative state corresponds to the inception of part III (result state), while that of a telic predicate corresponds to the culmination of part I (preparatory phase).

To summarize, an inchoative state in Korean is a complex predicate. As a result of the way in which it is constructed, it describes eventualities that are made up of two sub-events: a "BECOME event" (e_1) which is a change of state – an eventuality of the kind an achievement could describe − immediately followed by a "simple P-event" (e_2) – an eventuality of the kind a typical state could describe. Consequently, inchoative states do not fall under one of the four classes defined in the standard aspectual classification, but rather constitute a distinct class of predicate.

3.3.2 Accounting for the variable telicity of inchoative states in Korean

Now, I show how each component in the meaning of inchoative states can be itself modified by temporal adverbials. Recall that inchoative states allow modification both by *in x time* and by *for x time* adverbials. This is a puzzle to the extent that modification by these adverbials serves as a telicity diagnostic. The modification facts seem to lead to the conflicting conclusions that inchoative states are telic and that they are atelic. One possibly direction to take in order to resolve this puzzle could be to say that inchoative states are literally ambiguous between telic and atelic readings. However, the idea that inchoative states are complex predicates, with an achievement part and a state part (the two different pieces of (32) that constitute the arguments of SUM), makes possible a different solution: different temporal adverbials can modify different parts of the complex predicate.

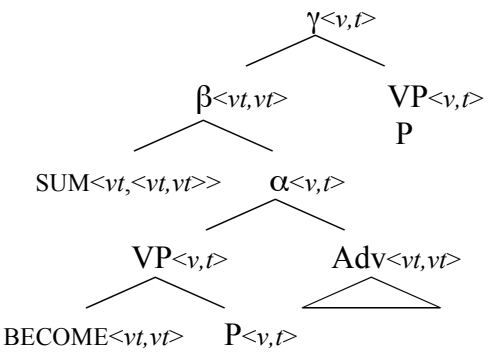
First, I claim that *in x time* adverbials modify the part of an inchoative state in Korean that contributes the BECOME event. As a consequence, in (35), the *in x time* adverbial measures an interval of an hour at the end of which a change of state event of Juno's getting angry occurs.

Importantly, as I have argued, the BECOME event itself constitutes the onset of the durative eventuality of Juno's being angry. So, as soon as the change of state event of Juno's getting angry has ends, the eventuality of Juno's being angry starts to hold.

(35) a. Juno-ka **sip-pwun-maney** hwana-ess-ta.
Juno-NOM ten-minute-in angry-PFCT-DEC
'Juno got angry in ten minutes.'

The structure of (35) is illustrated in (36), where the VP *BECOME Juno angry* (of type <*v,t*>) combines with the *in ten minutes* adverbial (of type <*vt,vt*>) and then the SUM operator applies to [[BECOME Juno angry in ten minutes]] and [[Juno angry]] (of the type <*v,t*>).

(36)



The semantic values of the components in (36) are given in (37). Assuming the semantics of the *in ten minutes* adverbial in (37c), the telic reading of the inchoative state in (35) can be derived as in (38).

(37) a. [[BECOME Juno angry]] = λ*e*. *e* is an event of Juno's becoming angry.
b. [[Juno angry]] = λ*e*. *e* is an event of Juno's being angry.
c. [[in ten minutes]] = λP: *P* is telic. λ*e*. *e* contains a *P*-event as its final part and *e* has a temporal duration of ten minutes.
d. [[SUM]] = $\lambda P_{<v,t>}.\lambda Q_{<v,t>}.\lambda e.\exists e_1 \exists e_2$. $e=e_1 \oplus e_2$ and e_2 immediately follows e_1 and $P(e_1)=1$ and $Q(e_2)=1$.

(38) Calculation:

a. [[α]] = λ*e*. *e* contains an event of Juno's becoming angry as its final part and *e* has a temporal duration of ten minutes.

b. [[β]] = $\lambda Q_{<v,t>}.\lambda e.\exists e_1 \exists e_2$. $e=e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 contains an event of Juno's becoming angry as its final part and e_1 has a temporal duration of ten minutes and $Q(e_2)=1$.

c. [[γ]] = $\lambda e.\exists e_1 \exists e_2$. $e=e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 contains an event of Juno's becoming angry as its final part and e_1 has a temporal duration of ten minutes and e_2 is an event of Juno's being angry.

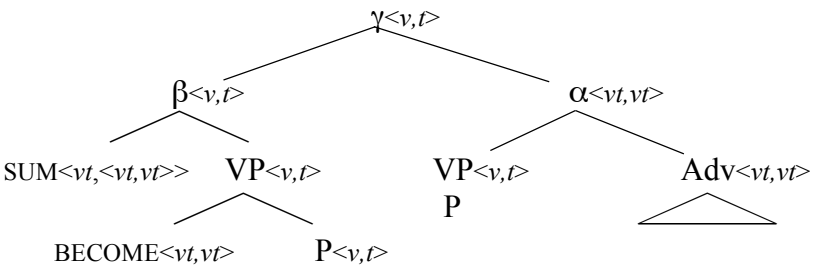
In this way, the inchoative state *hwana* 'angry' modified by the *in ten minutes* adverbial in (35) yields a change of state reading where at the end of ten minutes, the change of Juno's becoming angry occurs, that is Juno got angry, and this change leads into a state of Juno's being angry.

Second, I argue that *for x time* adverbials modify the part of an inchoative state that contributes the simple P-event. As a consequence, in (39), the *for x time* adverbial measures an interval of ten minutes during which the durative eventuality of Juno's being angry lasts.

(39) Juno-ka **sip-pwun-tongan** hwana-essess-ta.
Juno-NOM ten-minute-for angry-PAST.PFCT-DEC
'Juno had got angry and was angry for ten minutes.'

The structure of (39) is illustrated in (40), where the VP *Juno angry* (of type <*v,t*>) combines with the *for ten minutes* adverbial (of type <*vt,vt*>) and then the SUM operator applies to [[BECOME Juno angry]] and [[Juno angry for ten minutes]].

(40)



Assuming the semantics of the *for ten minutes* adverbial in (41), the derivation of the atelic reading of the inchoative state in (39) is given in (42).

(41) [[for ten minutes]] = λP: *P* is atelic. λ*e*. *e* is a P-event and *e* has a temporal duration of ten minutes.

(42) Calculation:

a. [[α]] = λ*e*. *e* is an event of Juno's being angry and *e* has a temporal duration of ten minutes.

b. [[β]] = $\lambda Q_{<v,t>}.\lambda e.\exists e_1 \exists e_2$. $e=e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 is an event of Juno's becoming angry and $Q(e_2)=1$.

c. [[γ]] = $\lambda e.\exists e_1 \exists e_2$. $e=e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 is an event of Juno's becoming angry and e_2 is an event of Juno's being angry and e_2 has a temporal duration of ten minutes.

In this way, the inchoative state *hwana* 'angry' modified by the *for ten minutes* adverbial in (39) yields a reading where throughout a period of ten minutes, the durative eventuality of Juno's being angry holds, as a result of a change bringing about that eventuality.

Thus, with our analysis of inchoative states as put together as in (32), I showed how inchoative states can be modified by *in/for x time* adverbials.

3.4 Degree inchoative states in Korean

In this section, I deal with the issue of the gradability involved in the meaning of deadjectival inchoative states in Korean (cf. Section 2.2.1.2, Chapter 2 and Section 3.2.2.3 in this chapter). In particular, I distinguish, as I shall show shortly, two classes of inchoative states in Korean (Choi & Demirdache 2014): (i) "degree inchoative states" which are derived from adjectival roots (cf. Section 2.3.1, Chapter 2) and as such, exhibit gradability vs. (regular) inchoative states which are verbal predicates and are not associated with gradability. I argue that degree inchoative states in Korean can alternate between two senses: 'become S' and 'become S-*er*', thus making a parallel with degree achievements on Abusch (1986) and Kearns (2007)' analysis. Crucially, however, I argue that degree inchoative states differ from degree achievements in two respects: First, on their

telic reading, degree inchoative states are associated with a lower-bound scale − that is, a minimal value of the relevant property, unlike telic degree achievements which are associated with an upper-bound scale corresponding to a maximal value of the relevant property. As such, a telic degree inchoative state is interpreted as 'become S' (*standard telos*; Kearns 2007), but not a 'become maximally S' (*maximal telos*; Hay et al. 1999, Kennedy & Levin 2008). Second, degree inchoative states, just like degree achievements, show variable telicity. Crucially, however, when modified by *for x time* adverbials, they allow not one, but two atelic readings: (i) a resultant state reading and (ii) a process of iterated changes reading. Finally, I provide an account for the variable telicity of degree inchoative states with respect to modification by *in/for x time* adverbials.

3.4.1 Two classes of inchoative states in Korean

In Section 3.2.2.3, we observed that, unlike achievements, inchoative states in Korean allow modification by degree adverbials such as *maywu* 'very', *cokum* 'slightly' and they can appear in comparatives. The relevant examples are repeated in (43) below.

(43) a. Sue-ka **maywu/cokum** malu/nulk-ess-ta.
Sue-NOM very/slightly thin/old-PFCT-DEC
'Sue became very/slightly thin/old.'

b. Sue-ka Yuna-**bota** (**te**) malu/nulk-ess-ta.
Sue-NOM Yuna-than more thin/old-PFCT-DEC
'Sue is thinner/older than Yuna.'

The examples in (43) show that inchoative states such as *malu* 'thin', *nulk* 'old' describe eventualities in a way that involve degrees.

However, some inchoative states in Korean such as *al* 'become aware/know', *ihayha* 'understand' show different behavior, as shown in (44).

(44) a. Sue-nun ku sasil-ul ***maywu/*cokum** al-ass-ta.
Sue-TOP that fact-ACC very/slightly know-PFCT-DEC
Intended: *'Sue got slightly aware of the fact.' / *'Sue is very aware of the fact.'

b. *Sue-nun	Yuna-**bota**	ku	sasil-ul	(**te**)	al-ass-ta.
Sue-TOP	Yuna-than	that	fact-ACC	more	know-PFCT-DEC

Intended: *'Sue got aware of the fact more than Yuna did.'

In (44a), the inchoative state predicate *al* 'become aware/know' does not allow modification by the degree adverbials *maywu* 'very', *cokum* 'slightly'. Moreover, this predicate cannot felicitously appear in comparatives, as in (44b). The examples in (44) show that the inchoative state *al* 'become aware/know' does not exhibit gradability.

On the basis of the observation in (43-44), I distinguish two classes of inchoative states in Korean (cf. Choi & Demirdache 2014): (i) "degree inchoative states" which are associated with gradability; vs. (ii) (regular) inchoative states which are not associated with this property. Recall the preliminary hypothesis given in Section 2.3.1, Chapter 2. I argued that an inchoative state in Korean is a verb derived from an adjectival root [$_{Adj^\circ}$ *state*] via zero affixation of a null inchoative morpheme BECOME[20]. As such, one might naturally expect the verb to be associated with gradability to the same extent that the base adjective is. I suggest now that this analysis applies to inchoative states like *nulk* 'old', *malu* 'thin', *saljji* 'fat', which allow modification by degree adverbials: they are deadjectival predicates. I refer to these predicates as degree inchoative states. When it comes to other inchoative states like *al* 'know', *ihayha* 'understand', which do not allow modification by degree adverbials, I suggest that these are essentially verbal. I refer to the latter predicates as (regular) inchoative states. Note that the main focus of this thesis is deadjectival inchoative states, i.e. degree inchoative states.

3.4.2 Variable telicity of degree inchoative states in Korean

I have distinguished two classes of inchoative states in Korean: degree inchoative states vs. verbal inchoative states. Now, I examine the difference between these two classes of inchoative states with respect to the readings induced by *in/for x time* adverbials.

Consider first verbal inchoative states modified by *in/for x time* adverbials.

[20] In light of the last section, we would now say that the structure is more complicated, and that this adjectival root, which contributes a state, appears twice – within the achievement part of the predicate and also within the state part.

(45) a. Sue-ka ku sasil-ul **i-nyen-maney** al-ass-ta.
Sue-NOM that fact-ACC two-year-in know-PFCT-DEC
'Sue became aware of the fact in two years.'

b. Sue-ka ku sasil-ul **i-nyen-tongan** al-assess-ta.
Sue-NOM that fact-ACC two-year-for know-PAST.PFCT-DEC
'Sue was aware of the fact for two years.'

In (45a), the verbal inchoative state *al* 'know' modified by the *in x time* adverbial yields a change of state reading where at the end of two years, the change of Sue's becoming aware of the fact occurs, that is Juno became aware of the fact. In (45b), the predicate modified by the *for x time* adverbial yields a resultant state reading where throughout a period of two years, the described eventuality of Sue's being aware of the fact holds. These atelic and telic readings of verbal inchoative states can be accounted for, as shown in (35-42) in the previous section.

Interestingly, degree inchoative states modified by *in/for x time* adverbials yield **three** readings, as illustrated in (46) below.

(46) a. Juno-ka **il-nyen-maney** saljji-ess-ta.
Juno-NOM one-year-in fat-PFCT-DEC
'Juno got fat in a year.'

b. Juno-ka **il-nyen-tongan** saljji-essess-ta.
Juno-NOM one-year-for fat-PAST.PFCT-DEC
'Juno had got fat and was fat for a year.'

c. Juno-ka **il-nyen-tongan** saljji-ess-ta.
Juno-NOM one-year-for fat-PFCT-DEC
'Juno got fatter and fatter for a year.'

In (46a), the degree inchoative state *saljji* 'fat' modified by the *in x time* adverbial yields the kind of change of state reading we have seen: at the end of a year, the change of state eventuality of

Juno's becoming fat occurs (i.e. Juno got fat). However, the degree inchoative state *saljji* 'fat' modified by the *for x time* adverbial gives rise to two different readings: (i) a result state reading where throughout a period of a year, the durative eventuality of Juno's being fat holds, as in (46b); (ii) a process of iterated changes reading where throughout a period of a year, a series of changes of state occur each of which leads to Juno attaining a new degree of fatness (i.e. throughout a period of a year, Juno progressively got fatter and fatter), as in (46c). To recapitulate, just like (regular) inchoative states, degree inchoative states modified by *in/for x time* adverbials yield a change of state reading and a result state reading. However, unlike (regular) inchoative states, degree inchoative states modified by *for x time* adverbials also yield a third reading, namely a process of iterated changes reading.

We now draw a parallel with a class of verbs which show a similar pattern of behavior. These verbs derived from gradable adjectives such as *cool*, *lengthen*, *darken, widen* and *straighten* (Dowty 1979, Abusch 1986, Hay et al. 1999, Kennedy & Levin 2007 among many others) are known as "degree achievements" (henceforth DAs; Dowty 1979).

As is well-known, many DAs like *cool* display atelic and telic properties in appearing with both *for*-adverbials and *in*-adverbials, as is the case of inchoative states in Korean. This is illustrated in (47).

(47) a. The soup cooled *in ten minutes*.
b. The soup cooled *for ten minutes*. (Dowty 1979: 88)

According to Abusch (1986), the verb *cool* construed as telic in (47a) describes that the soup became completely cool in ten minutes, implying that the end state 'coolness' has been reached. On the other hand, the atelic *cool* in (47b) describes that the soup became cooler and cooler for ten minutes, but it did not necessarily become completely cool. The atelic *cool* does not necessarily imply that the end state 'coolness' has been reached. Thus, the telic DA *cool* in (47a) is interpreted as *become cool*, while the atelic DA *cool* in (47b) is interpreted as *become cooler*.

In much the same spirit, I argue that degree inchoative states in Korean can alternate between two senses: 'become S(tate)' and 'become S-*er*'. However, I will show that degree inchoative states in Korean can be distinguished from degree achievements in Section 3.4.4. Now, the question that arises is how to explain the 'become S' and 'become S-*er*' interpretations of degree inchoative

states in Korean. The same question applies to DAs since they also appear to give rise to two interpretations. Before providing an analysis to account for the case of inchoative states in Korean, I first consider how the variable telicity of DAs has been investigated in the literature. In particular, I present Hay et al. (1999)'s analysis of DAs in English in what follows.

3.4.3 Hay, Kennedy & Levin (1999)'s analysis of DAs in English

As mentioned in the previous section, DAs are change-of-state verbs derived from gradable adjectives. The eventuality described by a DA involves change in the degree to which an object (or an individual) possesses a gradable property.

Hay, Kennedy & Levin (1999) claim that the telicity of a DA is related to the scalar structure that is associated with the gradable adjectival base from which the verb is derived. Assuming that gradable adjectives are associated with a scale (e.g. *cool* is associated with a scale of coolness), they maintain that there are three possible scale structures (Hay et al. 1999, Rotstein & Winter 2004, Kennedy & McNally 2005, Kennedy 2007, Levin 2010 among many others). Note that Kennedy (2001), Kennedy & McNally (2005) and Levin (2010) define a SCALE as a set *S* of degrees (i.e. points or intervals indicating measurement values) on a particular dimension (e.g. cost, depth, height, temperature), with an ordering relation. The three possible scale structures are given below.

- **open** (unbounded) scale: the property has neither a minimal nor maximal degree of instantiation (e.g. *cool, deep, tall, long, wide*…).

- **lower-bound** scale: the property is instantiated to at least a minimal degree immediately following the zero point of the scale (e.g. *wet, dirty, bent, scratched*…).

- **upper-bound** scale: the property has a maximal degree of instantiation, corresponding to a maximal value on the scale (e.g. *clean, quiet, flat, straight*…).

According to Kennedy & McNally (2005) and Rotstein & Winter (2004), the acceptability of degree modifiers tracks the scale structure of a gradable adjective. *Completely*/*totally* makes reference to the endpoint of the relevant scales (Lehrer 1985) and as such, it can only modify gradable adjectives associated with scales that have a maximal degree, as shown in (48).

(48) a. The paint is *completely* dry.
b. ??The man is *completely* tall.
c. ??The gap is *completely* wide. (Hay et al. 1999)

The sentence (48a) conveys that the degree to which the paint is dry is the maximal degree of the scale associated with dryness. This is fine since the scale of dryness has a maximal value. However, the sentences (48b-c) are unacceptable because the scale of tallness in (50b) and that of wideness in (48c) have no maximal value.

Slightly can only modify gradable adjectives associated with lower-bound scales, as illustrated in (49).

(49) a. The towel is *slightly* wet.
b. ??The rope is *slightly* long.
c. ??The room is *slightly* clean. (Hay et al. 1999)

The sentence (49a) is fine since the scale of wetness that the adjective *wet* is associated with is a lower-bound scale, and the adverb *slightly* makes reference to a minimal value just above the zero point. But the adjectives *tall* and *clean* in (49b-c) are not compatible with this adverb because the scale of tallness and that of clean have no lower limit.

Hay et al. argue that the telicity of DAs is determined by the scalar structure of their base adjectives, and that a telic interpretation arises when a DA is interpreted with reference to a closed property scale. Specifically, Hay et al. treat DAs as predicates of events that are true if the degree to which a certain object possesses the gradable property associated with the base adjective at the end of the event exceeds the degree to which it possesses that property at the beginning of the event. Hay et al. refer to this degree of change as the *difference value*, which is a measure of the amount that an object changes as a result of participating in the eventuality. According to Hay et al., for a DA to be interpreted as telic, this difference value should be identified as bounded (or quantized); otherwise, the DA is interpreted as atelic. Specifically, Hay et al. assume that the difference value is bounded when the maximal value (i.e. 'maximal change') on the scale is attained. So, if the adjectival base is associated with a scale that contains a maximal value, then the DA derived from this adjectival base can have a telic interpretation. If it is associated with a scale that does not have

a maximal value, then the DA derived from this adjectival base cannot have a telic interpretation involving maximal change − unless some other basis exists for determining a bound for the difference value. To illustrate, consider the following examples taken from Hay et al.

(50) a. They are straightening the rope. ⇏ They have straightened the rope.
b. The clothes are drying. ⇏ The clothes have dried.
c. They are lengthening the rope. ⇒ They have lengthened the rope.
d. The snow is slowing. ⇒ The snow has slowed.

The examples in (50a-b) show that the DAs *straighten*, *dried* display telic properties, as diagnosed by the entailment of the progressive form. Recall that perfect forms of atelic predicates (i.e. activities) can be entailed by their progressive forms, while telic predicates (i.e. accomplishments) cannot due to the subinterval property (cf. Footnote 2, Chapter 1 and Section 1, Chapter 2), as repeated in (51).

(51) a. Kim is singing. ⇒ Kim has sung. [activity]
b. Kim is writing a song. ⇏ Kim has written a song. [accomplishment]
(Hay et al. 1999: (1a-b))

The reason why the DAs in (50a-b) behave telically is because the scale associated with their adjectival bases has a maximal value of the relevant property, i.e., the degree of change is identified at the end of the scale. In contrast, the examples in (50c-d) illustrate that the DAs *lengthen*, *slowed* display atelic properties because the scale associated with their adjectival base lacks a maximal value and as such, a specific bounded degree of change cannot be inferred.

Note that according to Hay et al., the difference value can also be inferred from contextual cues or knowledge about conventional properties of an object. Consider the examples given in (52).

(52) a. The tailor lengthened my pants.
b. The tailor is lengthening my pants. ⇏ The tailor has lengthened my pants.
(Hay et al. 1999: (29a))

In (52a), the DA *lengthened* is derived from an adjectival base which is associated with a scale lacking a maximal value. Hay et al. assume that a bound on the difference can nonetheless be inferred in (52a). That is, "real-world knowledge" can give us the information about a conventional maximal length for pants. This knowledge allows for the difference value to be assigned a bound. So, in this context, the eventuality described by the DA in (52a) is interpreted as 'maximal'. As such, the DA *lengthened* behaves like a telic predicate with respect to the test involving entailments of the progressive, as illustrated in (52b). In this case, it is not the scale structure that gives rise to the telic interpretation of the DA, but rather knowledge about conventional properties of pants. See Hay et al. (1999; Section 3.3) for detailed discussion.

Therefore, on Hay et al.'s account, a telic DA is interpreted as 'become maximally S' (i.e. *maximal telos*). This is a conclusion that the literature overwhelmingly converges on (Hay 1998, Lin 2004, Caudal 2005, Caudal & Nicolas 2005, Kennedy & Levin 2008, Chen 2011 many others). In the next sub-section, I present diagnostics allowing us to determine whether a degree predicate is associated with a scale that has a maximal value. Specifically, I aim to demonstrate that, unlike a telic DA, "a telic degree inchoative state" in Korean lacks a maximal value on a scale and consequently, the analysis we have seen of telic DAs in English cannot be extended to telic degree inchoative states in Korean.

3.4.4 Degree inchoative states in Korean vs. degree achievements in English

In this section, I invoke two diagnostics to examine whether a deadjectival predicate (i.e. DA) is associated with a scale that has a maximal value: (i) endpoint-oriented adverb modification; (ii) the presence of certain inference patterns. Then, by applying these diagnostics to degree inchoative states in Korean, I show that they are not associated with a scale that has a maximum value. Rather, they are associated with a scale that has a **minimal** value (cf. Choi & Demirdache 2014).

3.4.4.1 Endpoint-oriented adverbial modification

In the previous section, the examples in (48a-c) showed that endpoint-oriented adverbs such as *completely* can be used to determine whether a gradable predicate is associated with a scale that has a maximal value. Specifically, Kearns (2007) proposes that the endpoint-oriented adverb *completely* gives rise to the following entailment: 'x is completely S' entails 'x could not be S-*er'*. With this in mind, consider the example in (53a). When taken together with *The clothes are*

completely dry now, the clause *they could be drier* induces a contradiction. This shows that the adjective *dry* is associated with an upper-bound scale, one with a maximal value. The contradiction is due to the fact that *the clothes are completely dry* expresses that the clothes are dry to the maximal degree, while *they could be drier* expresses that there is a value of dryness higher than the value that the clothes currently have. To the extent that (53b) is acceptable (as Kearns claims), this shows that the situation is in fact a little more complicated. The acceptability of (53b) shows that *completely cool* in (53b) does not express that the soup is maximally cool, and indeed we characterized *cool* earlier as associated with an open scale. Kennedy & McNally (1999) conclude that when *completely/totally* modify open-scaled adjectives like *cool*, they have an intensifier use that is roughly synonymous with *very*. Thus, it is specifically the use of *completely/totally* that is oriented toward an endpoint of a scale that serves to identify an adjective as associated with an upper-bound scale.

(53) a. *The clothes are *completely* dry now, but they could be *drier*. [upper-bounded]
b. The soup is *completely* cool now, but it could be *cooler*. [open]
(Kearns 2007: 42)

Let us consider degree inchoative states in Korean with respect to this diagnostic. This is illustrated in (54) below.

(54) Juno-ka sip-nyen-maney ***wancenhi*** nulk/saljji-ess-ta.
Juno-NOM ten-year-in completely old/fat-PFCT-DEC
*'Juno became completely old/fat in ten years.'

In (54), the degree inchoative states *nulk* 'old', *saljji* 'fat' modified by the *in ten year* adverbial do not felicitously co-occur with the adverb *wancenhi* 'completely' oriented toward an endpoint of the scale. This suggests that degree inchoative states are not associated with a scale that has a maximal value.

However, as we saw earlier (cf. Section 2.2.3), degree inchoative states in Korean felicitously co-occur with *cokum* 'slightly' which is oriented toward the lower bound of a scale. This is illustrated in (55).

(55) Juno-ka sip-nyen-maney **cokum** nulk/saljji-ess-ta.
Juno-NOM ten-year-in slightly old/fat-PFCT-DEC
'Juno became slightly old/fat in ten years.'

Given the compatibility with *cokum* 'slightly in (57), I suggest that a degree inchoative state are associated with a lower-bound scale – and are thus derived from adjectives associated with a lower-bound scale. To summarize, unlike a DA in English, a degree inchoative state in Korean (modified by *in x time* adverbials) is not associated with a property scale that has a maximal value, but rather with one that has a minimal value.

3.4.4.2 Inference pattern for a minimal vs. maximal standard

Another diagnostic allowing us to detect the presence of a maximal value on a property scale is related to the inference pattern for a maximal standard schematized in (56) (Kennedy & McNally 2005, Kennedy 2007, Toledo & Sasson 2011).

(56) a. X is emptier than Y. ⇒ Y is not empty. [maximal standard]
b. X is dirtier than Y. ⇒ X is dirty. [minimal standard]
c. X is taller than Y. ⇏ X is tall. Y is not tall. [relative standard]
(Toledo & Sassoon 2011: 137)

In (56a), the standard for the adjective *empty* involves the maximal degree of the scale: to say that something is empty is to say that it is empty to the maximal degree. Thus, since the comparative in (56a) entails that *Y*'s property of emptiness does not reach the maximal degree, we can infer from this comparative that *Y* is not empty. Conversely, in (56b), the standard for the adjective *dirty* corresponds to a minimal degree just above the zero point of the scale. Since the comparative in (56b) entails that *X*'s property of dirtiness exceeds the zero point, we can infer that *X* counts as dirty. Finally, the standard for the adjective *tall* in (56c) is relative and context-dependent (Kennedy 2007). So, even though the comparative in (56c) conveys that the height of *X* exceeds the height of *Y*, we cannot infer whether or not *X* and *Y* exceed the contextual standard.

Turning to the case of degree inchoative states in Korean, consider the following examples.

(57) a. Juno-ka il-nyen-maney Sue-bota (te) nulk[21]/saljji-ess-ta.
Juno-NOM one-year-in Sue-than more old/fat-PFCT-DEC
'Juno became older/fatter than Sue in a year.'

b. Juno-ka nulk/saljji-ess-ta.
Juno-NOM old/fat-PFCT-DEC
'Juno is old/fat.'

The sentence (57a) entails that Juno's oldness/fatness exceeds the minimum age/fatness that counts as old/fat. In this case, it is legitimate to infer the sentence (57b), that is, Juno is old/fat. At the same time, (57a) does *not* entail that Sue is not old (or that Sue is old). This inference pattern suggests again that telic degree inchoative states in Korean are associated with a scale that has a minimal value, but lacks a maximal value.

So far, the diagnostics proposed in the literature have revealed that a telic degree inchoative state in Korean is associated with a scale that does not have a maximal possible value of the relevant property. So an analysis according to which the telos of deadjectival change-of-state verbs is provided by a maximal scale value – as seems to be the case for DAs – would not account for the behavior of degree inchoative states in Korean. In what follows, I will claim that a telic degree inchoative state does not have the meaning of 'become maximally S', but rather '**become (at least minimally) S**'.

[21] Note that the inchoative state predicate *nulk* 'old' in (59) cannot be used for children. In that case, the intended meaning has to be expressed with another lexical item, as shown in (i).

(i) a. *Minsu-ka Sue-bota(te) nulk-ess-ta.
Minsu-NOM Sue-thanmore old-PFCT-DEC
'Minsu is older than Sue.'

b. Minsu-ka Sue-bota nai-ka (te) manh-ta.
Minsu-NOM Sue-than age-NOM more much-DEC
'Minsu is older than Sue.'

Imagine a situation where there are two children, Minsu and Sue. Minsu is 10 years old and Sue is 7 years old. In this context, if we want to say a sentence like *Minsu is older than Sue*, the use of the inchoative state predicate *nulk* 'old' (as in (ia)) is not natural in Korean. Rather, we express that Minsu is older than Sue by saying that Minsu's age is greater than Sue's, as in (ib).

3.4.5 Accounting for the variable telicity of degree inchoative states in Korean

Now, I provide an analysis to account for the variable telicity of degree inchoative states in Korean, one that takes into account their gradability. Before doing that, I recall the three readings of degree inchoative states discussed earlier, those induced by modification by *in/for x time* adverbials.

(58) a. Juno-ka **il-nyen-maney** saljji-ess-ta.
Juno-NOM one-year-in fat-PFCT-DEC
'Juno got fat in a year.'

b. Juno-ka **il-nyen-tongan** saljji-essess-ta.
Juno-NOM one-year-for fat-PAST.PFCT-DEC
'Juno had got fat and was fat for a year.'

c. Juno-ka **il-nyen-tongan** saljji-ess-ta.
Juno-NOM one-year-for fat-PFCT-DEC
'Juno got fatter and fatter for a year.'

When modified by *in x time* adverbials, degree inchoative states yield a change of state reading on which the sentence expresses that a change occurs, at the end of a period of x time, resulting in an individual having a property that he didn't have before (e.g. at the end of a period of a year, Juno got fat in (58a)). When modified by *for x time* adverbials, degree inchoative states yield two readings: (i) a (resultant) stative reading – unlike DAs − on which the sentence expresses that, as a result of a change, an individual has a property for the duration of a period of x time that he didn't have before (e.g. throughout a period of a year, Juno was fat in (58b)); (ii) a sequence of iterated changes reading – like DAs − on which the sentence expresses that, throughout a period of a year, a series of changes of state occur each of which results in an individual attaining a new degree of a gradable property (i.e. throughout a period of a year, Juno progressively got fatter and fatter in (58c)).

On the basis of this observation, I claim that a degree inchoative state in Korean alternates between two senses, 'become S' and 'become S-*er*', yielding the three readings in (58a-c). In the following sub-sections, each of these two senses is discussed in more detail.

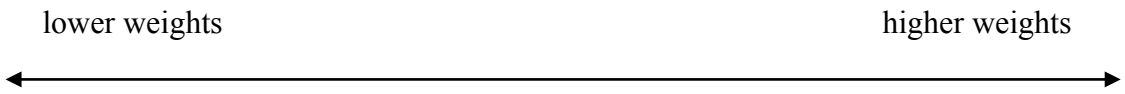
3.4.5.1 'become S' sense of degree inchoative states in Korean. When the onset is the telos.

I begin by investigating the basic sense of degree inchoative states in Korean. I previously argued that degree inchoative states are verbs derived from adjectival roots [$_{Adj°}$ *state*] via zero affixation of a null inchoative morpheme BECOME, as repeated in (59) (cf. Section 2.3.1, Chapter 2). Recall that the derivation from adjectival roots is motivated by the fact that they show the same gradability effects that the adjectives that they intuitively correspond to seem to show (cf. Section 2.2.1.2, Chapter 2). Here I will continue to take the position that degree inchoative states are derived from adjectives in this way, although as I have argued in earlier sections, the full structure of a degree inchoative state is larger than this.

(59) Degree inchoative states in Korean: [$_{V°}$ [$_{Adj°}$ *state*][$_{V°}$ Ø-BECOME]]

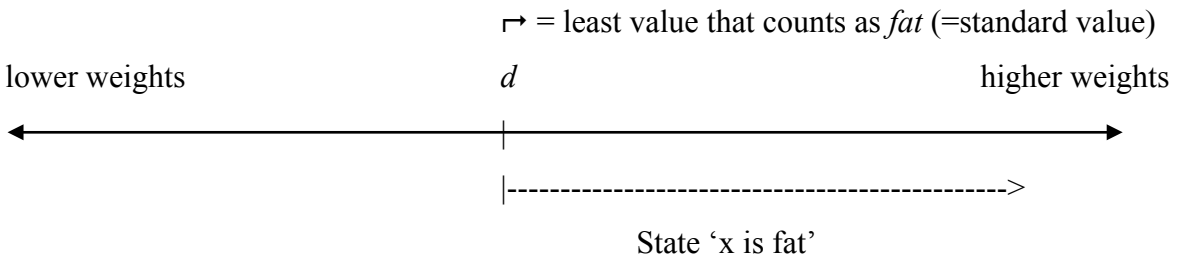
Building on Kearns (2007), I argue that there is a root element ADJ° which describes the whole property scale of degrees and from which a degree inchoative state is derived (see also Kennedy & Levin 2008), as represented in (60).

(60) Property scale described by [$_{ADJ°}$ *fat*]



Given that a degree inchoative state in Korean behaves in favor of a minimal value (cf. Sections 3.4.4.1 and 3.4.4.2 for the results of the relevant diagnostics), I claim that a degree inchoative state gets used to describe cases where the relevant property is instantiated to at least a minimal value – a value just above zero − on the associated scale. In other words, when it comes to the change of state described by a degree inchoative state, we can consider the basic case to be a change of state that leads to the attainment of this minimal value of the relevant property I shall refer to this minimal value as a *standard value* (following Kearns 2007). This is represented in (61) below.

(61) 'x *saljji*': [$_{V°}$ [$_{Adj°}$ *fat*][$_{V°}$ Ø-BECOME]]

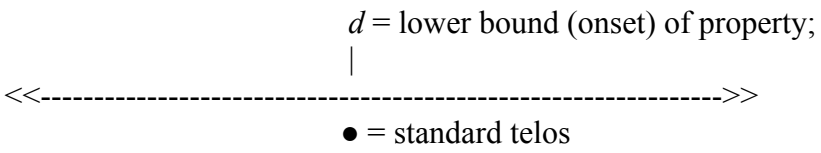


State 'x is fat'

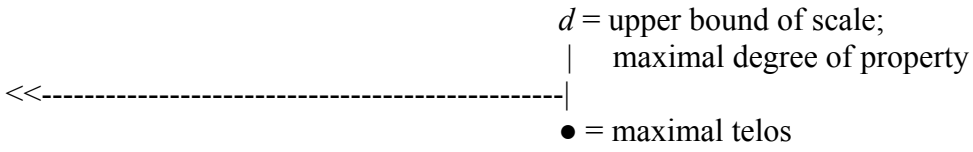
In (61), *d* is a least value that counts as *fat*, i.e. the property described by the degree inchoative state predicate *saljji* 'fat'. The gradable property of being fat is such that, if an individual attains this value *d*, then we can say that he starts to bear the property. Now, the question arises as to how to account for the 'telos' of a degree inchoative state – that is, the state whose attainment the predicate refers to – given that these predicates are associated with a scale that lacks a maximal value of the described property.

Crucially, Kearns (2007) proposes two kinds of telos with deadjectival verbs: **a standard telos** vs. **a maximal telos**. A standard telos is a non-maximal scale value of the relevant property as represented in (62a) which can be seen as an onset, while a maximal telos is a maximal scale value of the relevant property as represented in (62b).

(62) a. Standard telos



b. Maximal telos



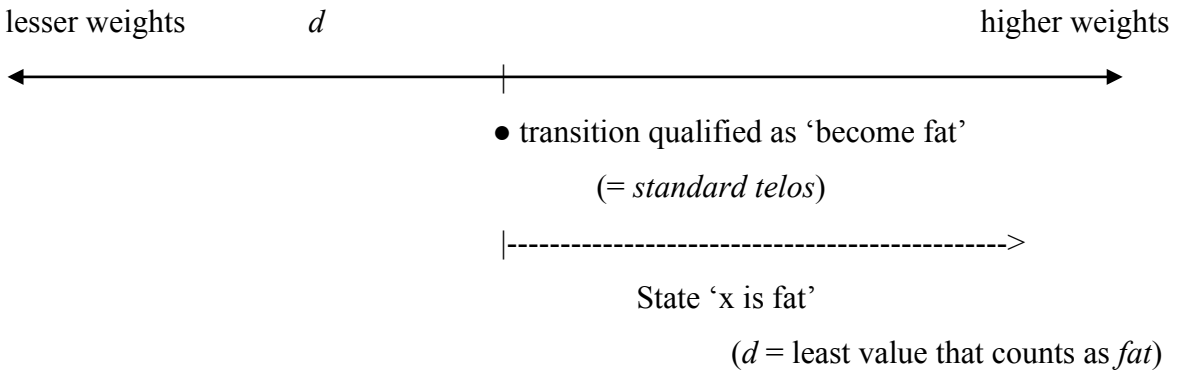
(Kearns 2007: 38)

The standard telos represents a point of transition to the standard value, and attainment of this point thus qualifies as 'becoming S'; in this case, one can continue towards higher degrees of the relevant gradable property. In contrast, the maximal telos represents a transition to the maximal scale degree,

and attainment of this point thus qualifies as 'becoming maximally S'; once the maximal telos is attained, one cannot continue towards higher degrees of the relevant gradable property (see also Fleischhauer 2013).

Adopting Kearns' proposal, I claim that the "telos" of degree inchoative states in Korean corresponds to the point at which the standard value of the associated adjective is attained – degree inchoative states thus make reference to the **onset** of the state of having that property to the standard value, as shown in (63).

(63) 'x *saljji*': [$_{V°}$ [$_{Adj°}$ *fat*][$_{V°}$ Ø-BECOME]]



In (63), the standard telos of the state described by the predicate *saljji* 'fat' is represented by the black spot. Accordingly, the telic degree inchoative state refers to the transition that qualifies as 'become fat', and not to a transition that qualifies as 'become maximally fat'.

Our proposal that telic degree inchoative states are interpreted as 'become S' correctly predicts that on the telic reading, the property described by a degree inchoative state could progress further on the relevant scale after reaching the telos, as shown in (64).

(64) a. Sue-ka twu-tal-maney saljji-ess-ta. Kulena acik maywu saljji-ci an-ass-ta.
Sue-NOM two-month-in fat-PFCT-DEC but yet very fat-NEG-PFCT-DEC
'Sue became fat in two months, but she is not yet very fat.'

b. Sue-ka twu-tal-maney (manhi) malu-ess-ta.
Sue-NOM two-month-in much thin-PFCT-DEC
kulena taiethu-lul kyeysokha-myen te malu-l-swuto-iss-ta.
but diet-ACC continue-if more thin-FUT-could-be-DEC
'Sue got (very) thin in two months, but if she keeps the diet up, she could be thinner.'

The continuation in (64a-b) expresses that it is possible to proceed to a higher value on the relevant scale; this is coherent because the telos of inchoative states is not provided by a maximal scale degree.

A degree inchoative state interpreted as 'become S' allows modification by *in x time* adverbials measuring the time it takes to attain (at least) a minimal degree of the relevant gradable property (cf. Choi & Demirdache 2014), as in (65). The sentence (65) below is naturally understood as asserting that at the end of a period of a year, Juno starts to be fat.

(65) Juno-ka **il-nyen-maney** saljji-ss-ta.
Juno-NOM one-year-in fat-PFCT-DEC
'Juno got fat in a year.'

A degree inchoative state interpreted as 'become S' also allows modification by *for x time* adverbials measuring the duration of an eventuality of Juno's being fat, as in (66).

(66) Juno-ka **il-nyen-tongan** saljji-essess-ta.
Juno-NOM one-year-for fat-PAST.PFCT-DEC
'Juno had got fat and was fat for a year.'

As such, a degree inchoative state interpreted as 'become S' can be modified by *in/for x time* adverbials, yielding a change of state reading (65) and a resultant stative reading (66).

Now, I show how the analysis of basic inchoative states discussed in Section 3.3.1 (cf. (32)) allows us to derive these two readings of degree inchoative states induced by *in/for x time* adverbials in (65-66). The basic idea is that standards are provided by a parameter of evaluation, so that *Sue is thin* would have a semantic value as in (67a). However, to simplify the discussion I

will imagine as in (67b) that the parameter of evaluation is just a degree, the one relevant to the predicate we are considering. On this view, to the extent that we use a sentence like *Sue is thin* to express that Sue is minimally thin, this is because we evaluate a sentence like *Sue is thin* with respect to a degree that is a minimal value on the scale of thinness, just above zero.

(20) a. $[[\text{Sue thin}]]^s = \lambda e$. There is some degree s such that THIN(s) is the minimal degree of thinness. e is an event of Sue's being thin to degree s.

b. $[[\text{Sue thin}]]^s = \lambda e$. e is an event of Sue's being thin to degree THIN(s).

We can now derive the two readings we just considered, assuming that we evaluate sentences with inchoative states with respect to a degree that constitutes a minimal value on the relevant scale – I assume that we have a general tendency to behave in this way with predicates associated with lower-bound scales. The structures and calculations are exactly parallel to what we saw earlier (cf. Section 3.3.2). We obtain:

(21) The VP of (65):
$[[\text{VP}]]^d = \lambda e.\exists e_1 \exists e_2$. $e = e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 contains an event of Juno's becoming fat to degree d as its final part and e_1 has a temporal duration of one year and e_2 is an event of Juno's being fat to degree d.

(22) The VP of (66):
$[[\text{VP}]]^d = \lambda e.\exists e_1 \exists e_2$. $e = e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 is an event of Juno's becoming fat to degree d and e_2 is an event of Juno's being fat to degree d and e_2 has a temporal duration of one year.

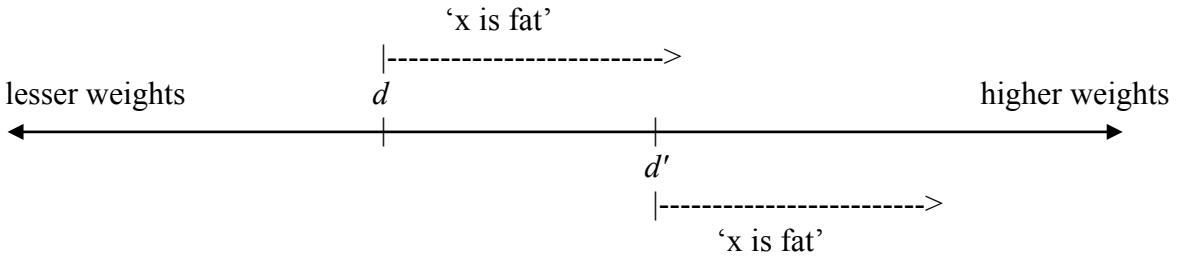
3.4.5.2 'become S-*er*' sense of degree inchoative states in Korean

Now, we turn to another atelic reading of a degree inchoative state modified by *for x time* adverbials. The relevant example given earlier in (58c) is repeated in (70).

(23) Juno-ka **il-nyen-tongan** saljji-ess-ta.
Juno-NOM one-year-for fat-PFCT-DEC
'Juno got fatter and fatter for a year.'

I claim that the degree inchoative state *saljji* 'fat' in (70) is interpreted as 'become S-*er*'. Specifically, it describes iterated changes of the associated property – progressions to new degrees of the associated property − that occur during the interval given by *for x time* adverbials (cf. Choi & Demirdache 2014). This is represented in (71) below.

(24) 'x *saljji'*: [$_{V°}$ [$_{Adj°}$ *fat*][$_{V°}$ Ø-BECOME]]



As illustrated in (71), during some interval specified by the durative adverbial, the same individual bears the property of being fat to different degrees along some continuum. That is, a degree inchoative state interpreted as 'become S-*er*' describes a sequence of iterated changes of fatness from a situation in which x's level of fatness is assigned a value *d* on the associated scale, to a situation in which x's level of fatness is assigned a value *d'* higher than *d* on the associated scale. As such, the sentence (70) means that throughout a period of a year, the individual attains progressively higher degrees of the relevant property (e.g. throughout a period of a year, Juno progressively got fatter and fatter), like atelic DAs.

We can derive this 'become S-*er*' reading of a degree inchoative state starting from the very same ingredients that we have seen thus far. We simply need to say that there are some additional semantic operations that can apply once we have created the same kinds of semantic values that we have seen (and in the same way). To begin with, I assume that there is a TO SOME DEGREE operator (72) that can be applied to a basic inchoative state. This gives us a predicate that is also a basic inchoative state: it describes changes of state that result in possession of the relevant property to some degree or other. For example, given that the basic inchoative state *Juno fat* (with no

adverbial modification) would have the semantics in (73), once we apply this operator we get a predicate with the semantics in (74). The predicate in (74) describes eventualities that are made up of a change of state resulting in the attainment by Juno of some degree or other of fatness, followed by an eventuality of Juno being fat to that degree.

(25) $[[\text{TO SOME DEGREE}]]^d = \lambda f_{<d,vt>}.\lambda e$. There is some degree d' such that f(d')(e) = 1.

(26) $[[\text{Juno fat}]]^d = \lambda e.\exists e_1 \exists e_2$. $e = e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 is an event of Juno becoming fat to degree *d* and e_2 is an event of Juno being fat to degree *d*.

(27) $[[\text{TO SOME DEGREE Juno fat}]]^d$ [22]

$= [[\text{TO SOME DEGREE}]]^d (\lambda d'. [[\text{Juno fat}]]^{d'})$

$= \lambda e$. There is some degree d' such that, for some e_1, e_2, $e = e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 is an event of Juno becoming fat to degree d' and e_2 is an event of Juno being fat to degree d'.

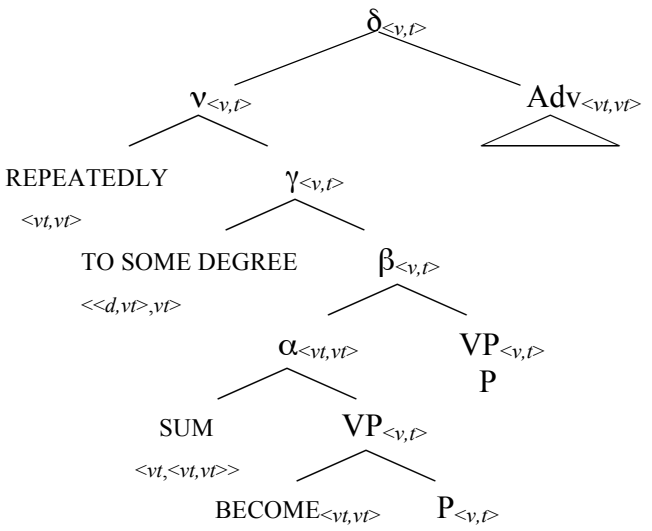
Next, I suppose that there is a REPEATEDLY operator that can apply to a predicate of eventualities and give us a predicate describing iterated eventualities of that kind. The semantic value for the REPEATEDLY operator is given in (75). If we apply the REPEATEDLY operator to the inchoative state from above, we get a predicate that holds of an event made up of iterated eventualities of Juno's attaining some degree or other of fatness (i.e. an event of Juno's getting fatter and fatter). Crucially, one event of the kind described by this predicate can be included in another which extends later in time. As such, it is an atelic predicate. I claim that this is the predicate that the *for a year* adverbial modifies in the example we considered: *for a year* here serves to specify that there is such a sequence of iterated eventualities that lasts a year.

(28) $[[\text{REPEATEDLY}]]^d = \lambda P_{<v,t>}.\lambda e$. e is made up of a sequence of events in {e': P(e') = 1}.

[22] The operation of semantic composition in (Z) is analogous to the rule of "intensional functional application" used by Heim and Kratzer (1998).

The whole structure of the modified predicate in (70) is given in (76) below. The SUM operator applies to two components [[BECOME Juno fat]] and [[Juno fat]]. This gives us a basic inchoative state describing eventualities which are made up of a durative eventuality of Juno's being fat together with the prior change (i.e. Juno's getting fat) that brings this eventuality about. Then, the TO SOME DEGREE operator applies to the basic inchoative state, giving us a predicate that describes eventualities of Juno's becoming and then being fat to some degree or other. Then, the REPEATEDLY operator applies, giving us a predicate that holds of an event of iterated eventualities of that kind (i.e. an event of Juno's getting fatter and fatter). Finally, this obtained predicate gets modified by the *for a year* adverbial, specifying that there is an event of that kind that lasts a year. These details of the semantics are shown in (77).

(29)



(30) Calculation:

a. $[[\alpha]]^d = \lambda Q_{<v,t>}.\lambda e.\exists e_1 \exists e_2.$ $e=e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 is an event of Juno's becoming fat and $Q(e_2)=1$.

b. $[[\beta]]^d = \lambda e.\exists e_1 \exists e_2.$ $e=e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 is an event of Juno's becoming fat and e_2 is an event of Juno's being fat and e_2 has a temporal duration of a year.

c. $[[\gamma]]^d = \lambda e.$ There is some degree d' such that, for some e_1, e_2, $e = e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 is an event of Juno becoming fat to degree d' and e_2 is an event of Juno being fat to degree d'.

d. $[[\nu]]^d$ = λe. e is made up of a sequence of events in {e': There is some degree d' such that, for some e_1, e_2, e' = $e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 is an event of Juno becoming fat to degree d' and e_2 is an event of Juno being fat to degree d'}.

e. $[[\delta]]^d$ = λe. e is made up of a sequence of events in {e': There is some degree d' such that, for some e_1, e_2, e' = $e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 is an event of Juno becoming fat to degree d' and e_2 is an event of Juno being fat to degree d'} and e has a temporal duration of one year.

Thus, the sequence of iterated changes reading of the inchoative state *saljji* 'fat' induced by the *for a year* adverbial in (75) can be derived: throughout a period of a year, the argument bears iterated eventualities of becoming fat and then being fat, i.e., Juno got fatter and fatter.

Summing up, a degree inchoative state modified by *in/for x time* adverbials yields three different readings: (i) a change of state reading; (ii) a resultant state reading; (iii) a process of iterated changes reading. To account for the readings (i-ii), I said that we should see degree inchoative states as based on predicates associated with a lower-bound scale, and I noted that we generally take the standard degree for a predicate with a lower-bound scale to be a degree on the scale just above the zero point. I suggested moreover that we should see sentences as evaluated with respect to a parameter that determines standard degrees for gradable predicates. Then, to account for the reading (iii), I claimed that there is a TO SOME DEGREE operator which has the effect of bringing us to degrees other than the standard degree when we have a gradable predicate, and I suggested that in these cases we apply a REPEATEDLY operator to the degree inchoative state we obtain once we perform the TO SOME DEGREE operation. The result is a predicate that holds of a sequence of eventualities that are each made up of a BECOME event and a simple P-event.

3.5 Summary

In this chapter, I provided an in-depth discussion of (degree) inchoative states in Korean. First, I identified two critical properties of inchoative states allowing to distinguish them from achievements: (i) while an achievement is associated with the culmination (i.e. the endpoint) of the described eventuality, all inchoative states are associated with the *onset* of the described eventuality;

(ii) unlike an achievement, all inchoative states describe eventualities which have durativity, and deadjectival inchoative states give rise to gradability effects. To capture the meaning of inchoative states, following Bar-el (2005), I argued that an inchoative state in Korean is a semantically complex predicate: it is made up of a BECOME event (e_1) which is a change of state just like an achievement, immediately followed by a simple P-event (e_2) which is a normal state. Crucially, the onset of the described state is represented as the initial BECOME event. Assuming that the predicate meaning of inchoative states in Korean can be decomposed into two parts (i.e. the BECOME event and the simple P-event), I showed how each part contained in the meaning of basic inchoative states can be modified by *in/for x time* adverbials.

Second, I distinguished two classes of inchoative states in Korean (cf. Choi & Demirdache 2014): degree inchoative states which are derived from adjectival roots and as such, are associated with gradability vs. (regular) inchoative states which are verbal and do not exhibit gradability. In particular, I demonstrated that degree inchoative states in Korean (which were the main focus of the present study) modified by *in x time* adverbials yield (i) a change of state reading. Crucially, however, when modified by *for x time* adverbials, degree inchoative states in Korean yield two atelic readings: (ii) a resultant state reading and (iii) a process of iterated changes reading, unlike degree achievements yielding only one atelic reading (i.e. the reading (iii)). To account for these readings, I argued that degree inchoative states in Korean can alternate between two senses: 'become S' and 'become S-*er*', drawing a parallel with degree achievements which show a similar pattern on Abusch (1986) and Kearns (2007)' analysis. Importantly, I argued that degree inchoative states in Korean differ from degree achievements in two respects (cf. Choi & Demirdache 2014): First, on their telic reading, degree inchoative states are associated with a lower-bound scale − that is, a minimal value of the relevant property −, unlike telic degree achievements which are associated with an upper-bound scale − that is, a maximal value of the relevant property. In other words, the change of state described by a degree inchoative state is the change that leads to the attainment of the minimal scale value which can be seen as the *onset* of the described state. Second, degree inchoative states, just like degree achievements, show variable telicity. Crucially, however, when modified by *for x time* adverbials, they allow not one, but two atelic readings: (i) the resultant state reading and (ii) the process of iterated changes reading. Finally, I provided an account for the variable telicity of degree inchoative states with respect to modification by *in/for x time* adverbials, taking into the property of gradability involved in their meaning.

Chapter 4 Children's Knowledge of the Inherent Inchoativity of (Deadjectival) Inchoative States

4.1 Introduction

This chapter aims to report an experiment designed to examine children's knowledge of the distinction between two types of states in Korean. In Chapter 2, we established that there are two classes of state predicates in Korean: pure states vs. (deadjectival) inchoative states. In particular, I provided arguments for the claim that (deadjectival) inchoative states do not belong to the class of pure states (i.e. stative predicates). Apparently, both pure states and (deadjectival) inchoative states appear to describe certain properties of individuals or objects, as listed in (1) below, but they can be distinguished in terms of the inherent inchoativity.

(1)

Pure states	vs.	Inchoative states	
celm 'young'		*nulk* 'old'	
nalssinha 'thin'		*malu* 'thin'	
pikonha 'tired'		*cichi* 'tired'	
twungtwung 'fat'		*saljji* 'fat'	…etc.

Recall our proposal on the meaning of pure states and (deadjectival) inchoative states. A pure state describes a durative eventuality without referring to the transition or the change into the described eventuality. As such, it is represented as basic event predicate describing the property P with no operator (cf. Section 2.3, Chapter 2), as repeated in (2) below.

(2) (Pure) States: λe.P(e)

In contrast, a (deadjectival) inchoative state is lexically specified to refer to the transition into the eventuality it describes, − a transition which itself defines the onset of the described eventuality. To capture this meaning, I proposed that an inchoative state in Korean is a semantically complex

predicate: it is made up of a BECOME event (e_1) which is a change of state just like an achievement, immediately followed by a simple P-event (e_2) which is a normal state, as repeated in (3) below.

(3) Inchoative states: $\lambda e.\exists e_1 \exists e_2.\ e=e_1 \oplus e_2$ and e_2 immediately follows e_1 and $[[\text{BECOME P}]](e_1) = 1$ and $[[P]](e_2) = 1$.

Accordingly, the two predicates in (1) both describing an eventuality of being thin, for instance, do not have the same lexical meaning: one is a (deadjectival) inchoative state predicate (i.e. *malu* 'thin') that contains a BECOME event giving rise to an inchoative meaning and the other one is a pure state predicate (i.e. *nalssinha* 'thin') yielding a stative meaning.

We now ask the question of whether children can draw a distinction between (deadjectival) inchoative states and pure states in terms of the presence vs. absence of the BECOME event component in their lexical (respective) meaning. To explore this question experimentally, we carried out a preference task where the target property of the experiment was the different behavior of each class of states with respect to the distribution of the overt inchoative marker *-e ci*.

This chapter is structured as follows. Section 4.2 discusses the key property under investigation in this experiment. I briefly review the respective pattern of behavior of pure states and (deadjectival) inchoative states with respect to the overt inchoative marker *-e ci* discussed earlier in Section 2.2.2, Chapter 2. Section 4.3 reports on the experiment conducted with children aged from 4 to 6 and its results. After some discussion of the results of the experiment, Section 4.4 summarizes the main points of this chapter.

4.2 Target property of experiment: BECOME event of (deadjectival) inchoative states

In this section, I first go through the target property under investigation in our experimental study to which Section 4.3 will be devoted, i.e. the inherent inchoativity of inchoative states. To illustrate this property, I review the distribution of the overt inchoative marker *-e ci*, which I took as one of the diagnostics of the inherent inchoativity of (deadjectival) inchoative states.

As we saw earlier (cf. Section 2.2.2.2, Chapter 2), the suffix *-e ci* is an inchoative marker that derives an inchoative verb via the addition of a BECOME operator to the meaning of a predicate. The inchoative marker *-e ci* can freely combine with pure states, as shown in (4b).

(4) a. Juno-ka pikonha-Ø-ta.
Juno-NOM tired-PRES-DEC
'Juno is tired.' → [tired (Juno)]]

b. Juno-ka pikonha-**e ci**-ess-ta.
Juno-NOM tired-INCHO-PFCT-DEC
'Juno became tired.' → [BECOME [tired (Juno)]]

The sentence (4a) includes the pure state predicate *pikonha* 'tired' describing an eventuality of Juno's being tired, that does not involve an intrinsic transition into the described eventuality. In (4b), the inchoative marker -*e ci* can take this pure state predicate as its argument without inducing ungrammaticality of the resulting sentence. Consequently, the combination of the pure state predicate with the overt inchoative marker -*e ci* thus yields an inchoative interpretation, i.e., *Juno comes to be tired*. Since pure states are lexically stative, a BECOME operator marked by -*e ci* can be felicitously added.

However, the inchoative marker -*e ci* cannot felicitously combine with (deadjectival) inchoative states, as illustrated in (5b).

(5) a. Juno-ka cichi-ess-ta.
Juno-NOM tired-PFCT-DEC
'Juno became tired.' → [BECOME [tired (Juno)]]

b. Juno-ka cichi-***e ci**-ess-ta.
Juno-NOM tired-INCHO-PFCT-DEC → [***BECOME** [BECOME [tired (Juno)]]

In (5a), the bare form of the inchoative state predicate *cichi* 'tired' gives rise to an inchoative interpretation, i.e., *Juno comes to be tired*, on a par with that of the inchoative pure state derived by -*e ci* in (4b). This is because (deadjectival) inchoative states contain a BECOME event component in their predicate representation and as such, are inherently inchoative. Given the BECOME event of the inchoative state predicate *cichi* 'tired' in (5a), the combination of the predicate with the overt inchoative marker -*e ci* itself adding a BECOME operator (as in (5b)) is illicit. I impute this

incompatibility to morphological blocking effect, the general idea being that one way of expressing a given meaning may block another way of expressing it.

On the assumption that the lexicon and morphology are different components, it has been argued that morphological blocking takes place as the result of *competition* between a lexically-specified form and a rule-derived/morphologically-derived form (cf. Aronoff 1976, Andrews 1990 and many others). In this competition, a stored form in the lexicon wins and blocks a form generated by morphology. According to this proposal, when speakers have a simple form lexically expressing a certain meaning listed in the lexicon, they will not resort to a morphological rule combining other morphemes to generate a form which would be semantically and syntactically identical to the stored form. Take the past tense of *give* in English, which is the irregular form *gave* stored in the lexicon. Lexical specification of the irregular past form blocks the otherwise expected form *gived* derived by application of the past tense suffix *-ed* to the verb, as illustrated in (6).

(6) Past tense of *give*

a. lexically-specified form: *gave* ***blocking***

b. rule-derived form: *gived*

English speakers do not generate the morphologically-derived form *gived* since they already have an equivalent form *gave* stored in their lexicon which they can just use. As such, a morphological blocking effect occurs.

Let us turn to the sentence (5). Assuming morphological blocking, the ungrammaticality of the sentence (5b) can be explained. I have argued that a (deadjectival) inchoative state lexically expresses an inchoative meaning in that it contains a BECOME event which is a change of state in its meaning. This bare/lexically-specified form of the inchoative state predicate *cichi* 'tired' in (5a) will thus block the derivation of the semantically identical form **cichi-e ci* putatively derived by application of the overt inchoative marker *-e ci*, as represented in (7).

(7) Inchoativity of *cichi* 'tired'

a. lexically-specified form: *cichi* ***blocking***

b. rule-derived form: *cichi-e ci*

Hence, once Korean speakers have the word *cichi* 'tired' stored as a (deadjectival) inchoative state predicate expressing an inchoative meaning in their lexicon, they do not apply the morphological rule *-e ci* to the predicate *cichi* 'tired' to generate a new inchoative predicate. This means that, in a change of state context, the lexically-specified/bare form of (deadjectival) inchoative states (i.e. INS+-*Ø*) is preferred over the morphologically-derived form of inchoative states (i.e. *INS+-*e ci*).

However, such morphological blocking effects do not occur in the case of pure states since they do not have an inherent inchoative meaning. As such, the rule-derived form (i.e. PS+-*e ci*) is freely generated for inchoative pure states, as in (4b).

So far, I have shown that pure states and (deadjectival) inchoative states do not pattern alike with respect to the distribution of the overt inchoative marker *-e ci*: (i) since pure states do not have an inherent inchoative meaning, the morphologically-derived form (PS+-*e ci*) is generated to express the latter (inchoative) meaning; (ii) conversely, since (deadjectival) inchoative states are lexically specified to yield an inchoative meaning, the lexically-specified form (INS+-*Ø*) is generated to express the latter meaning. Now, we might wonder whether Korean children can infer the inherent inchoativity of (deadjectival) inchoative states and as such, can distinguish the two classes of states. To address this question, an experiment was carried out with children aged from 4 to 6, which will be reported in the following section. In particular, the results of the experiment across age groups will show a typical development pattern for pure states and interestingly a U-shaped development pattern for (deadjectival) inchoative states.

4.3 Experiment: forced-choice preference task

Given the target property discussed in the previous section, we turn to an experiment designed to investigate children's ability to infer inchoativity, by hypothesis lexically specified with (deadjectival) inchoative states, but morphologically specified with pure states. The purpose of this experiment is to provide empirical evidence for the meaning of (deadjectival) inchoative states proposed in Chapter 3.

4.3.1 Research question and predictions

Recall that a pure state describes a durative eventuality without referring to a change of state, while a (deadjectival) inchoative state is lexically specified to make reference to the change into the described eventuality, − a change which itself defines the onset of the described property.

Accordingly, to describe inchoativity (i.e. *coming to be in a state*), a pure state obligatorily combines with the overt inchoative marker -*e ci* adding a BECOME operator to its meaning. In contrast, a (deadjectival) inchoative state is inherently inchoative and as such, it does not need to combine with -*e ci* due to the morphological blocking effect.

The experiment aims to examine whether Korean children can draw a distinction between pure states and (deadjectival) inchoative states in terms of the inherent inchoativity, i.e., whether children know that the two classes of states do not pattern alike with respect to the distribution of the overt inchoative marker -*e ci*. The research questions are summarized in (8).

(8) **Research questions**:

a. Do Korean children distinguish between pure states (PS) and (deadjectival) inchoative states (INS) in terms of the inherent inchoativity?

b. Do they know the distribution of the overt inchoative marker -*e ci* with two classes of states?

We expect that if children know that inchoativity is lexically specified in (deadjectival) inchoative states together with the distribution of the overt inchoative marker -*e ci*, then thy will accept the lexically-specified/bare form inchoative states (i.e. INS+-*Ø*), but reject the morphologically-derived for of inchoative states (i.e. INS+-*e ci*). Likewise, if children know that pure states lack inherent inchoativity together with the distribution of the overt inchoative marker -*e ci*, then they will accept the morphologically-derived form of pure states (i.e. PS+-*e ci*), but reject the lexically-specified/bare form of pure states (i.e. PS+-*Ø*). If children do not know that (deadjectival) inchoative states are inherently inchoative, while pure states are stative, then they will mismatch the inchoative (morphological vs. bare) form with the two classes of (inchoative vs. pure) states. These predictions are summarized in Table 7.

Table 7. PT: Predictions

	Pure states	Inchoative states
morphologically-derived form (-*e ci*)	✓	×
lexically-specified/bare form (*Ø*)	×	✓

4.3.2 Method

4.3.2.1 Participants

The study included thirty (n=30) Korean children in total: ten 4-year-olds (from 4; to 4;9 with a mean of 4;5), ten 5-year-olds (from 5;0 to 5;9 with a mean of 5;4) and ten 6-year-olds (from 6;0 to 6;8 with a mean of 6;3) and twenty (n=20) Korean adults (from 24 to 38 with a mean of 30;7) as the control group. All children and adults who participated in this task were native Korean speakers. The experiment was run in the Kyunggido area kindergarten[23].

4.3.2.2 Procedure

To address the research questions in (7), we conducted a forced-choice Preference Task (henceforth PT)[24] (cf. Montrul 1998, Geeslin & Guijarro-Fuentes 2006, Cuza & Franck 2011, Stringer et al. 2011 among many others). The goal of this task was to investigate the preference that Korean children and control adults had regarding the way of expressing an inchoative context with a given stative predicate.

Children were tested individually in a separate room by an experimenter. Before the experiment began, they were presented two puppets named *Sandy* and *Rady*, who wanted to play a game with children, and the experimenter explained to children the instruction of the game. Children were then provided two warm-up items to familiarize them with the task followed by the experimental items. Children were presented with visual materials depicting a change-of-state in

[23] I am very grateful to the *Anyang* kindergarten in Seoul for granting me permission to conduct this experiment.

[24] There are several reasons why a preference task was adopted, although elicited production tasks (cf. Berko 1958, van Hout 1996 a.o.) are the best way of probing of children's grammar. One of the reason is that a production task is difficult to carry out with young children. In a pilot study, I used an elicited production task, designed to induce a production of the inchoative inchoative morpheme *-e ci*. Most participants, however, did not volunteer the target lexical item as shown in (i).

(i) a. target sentence: Kom-i **twungtwungha-eci**-ess-eyo.
bear-NOM fat-INCHO-PFCT-DEC "A/the bear became fat."

b. volunteered sentences: a. Kom-i ice-nun **an** **nalssinha**-eyo.
bear-NOM now-TOP NEG thin-DEC "A/the bear is not thin now."

b. Kom-i **twungtwungha-ta**-yo.
bear-NOM fat-INFIN-DEC "A/the bear fat (infinitive form)."

Accordingly, the criterion of scoring a response as 'correct' or 'incorrect' was very ambiguous. This is why I changed experimental method in this study, in order to get results that would be more straightforward than those of a production task.

the form of animated PowerPoint slides, and a target sentence without a predicate. Then, two puppets were asked to complete the given sentence according to what they observed in the context: one puppet uttered a test sentence with the overt inchoative morpheme *-e ci* and the other uttered it without *-e ci*. After the two variants of target sentence had been uttered, the children were asked to choose which of the two puppets described well the given context. There was no third or fourth options made available to the children, i.e. accepting both or none. This was done to make sure that the participants made a straightforward decision as to which option they preferred according to the context, and to avoid '*I don't know*' answers.

The experiment took twenty minutes, but the children were reminded that they could go back to their classroom whenever they wanted to. The responses were written on an answer sheet as well as audio-taped.

4.3.2.3 Materials

The experimental conditions were constructed with predicate type (*pure states* vs. *(deadjectival) inchoative states*) and inchoative form (*lexically-specified form* vs. *morphologically-specified form*) as factors. Participants were presented a change-of-state context where an individual or an object undergoes a transition from one state (*not having the target property*) to another state (*having the target property*) as the experimental context. In the pure state condition, both the lexically-derived form and the morphologically-derived form were simultaneously each given by a puppet. Likewise, in the (deadjectival) inchoative state condition, the two variants (lexically-specified vs. morphologically-specified) of the inchoative form were simultaneously each given by a puppet. The experimental conditions are summarized in Table 8.

Table 8. PT: Experimental Conditions

Condition 1 :	Pure states	lexically-specified form (PS+-*Ø*) morphologically-specified form (PS+-*e ci*)
Condition 2 :	Inchoative states	lexically-specified form (INS+-*Ø*) morphologically-specified form (INS+-*e ci*)

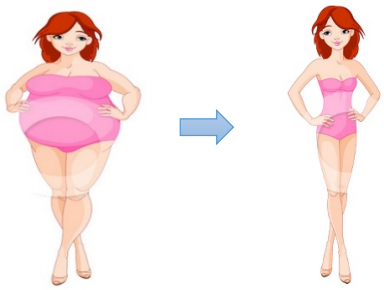
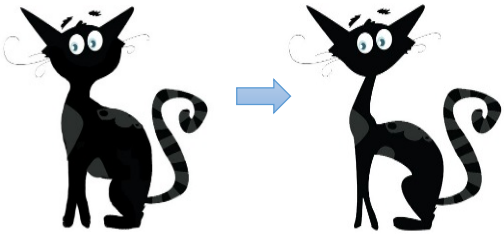
Recall our predictions. If children know that inchoativity is lexically specified in (deadjectival) inchoative states together with the distribution of the overt inchoative marker *-e ci*, then thy will

accept the lexically-specified/bare form of inchoative states (i.e. INS+-*Ø*), but reject the morphologically-derived form of inchoative states (i.e. INS+-*e ci*). Likewise, if children know that pure states lack inherent inchoativity together with the distribution of the overt inchoative marker -*e ci*, then they will accept the morphologically-derived form of pure states (i.e. PS+-*e ci*), but reject the bare form of pure states (i.e. PS+-*Ø*).

We created test materials by making use of computer animation in Microsoft PowerPoint, instead of using two-dimensional images or videos (cf. Stringer et al. 2011), so that the intended interpretation, i.e. the change-of-state reading, could be naturally shown to participants. The animation was carried out in the following way. First of all, we selected, for each test item, one picture depicting a given property or a state of an individual, which we call the source state. By retouching this picture on the program Adobe Photoshop CS6, we created a second picture depicting a resulting change of state, what we call the target state, that is, the state resulting from a change. To illustrate, consider Figure 1 below. The picture 1 describes the source state ¬THIN and the picture 2 describe the target state THIN. The sequence of the two pictures ultimately presents to children a depicted change from the source state to the target state. All of the pictures designed were then incorporated into PowerPoint slides and arranged in layers. The test sentences were pre-recorded and the resulting sound files were synchronized with animated pictures of two puppets.

Each participants received twelve test items interspersed with twelve distractors and control items, for a total of twenty four items. Notice that each of the six pure state predicates is paired with the six inchoative state predicates sharing same semantic fields. To illustrate, consider the pure state *nalssinha* ‘thin’ and the (deadjectival) inchoative state *malu* ‘thin’ given Figure 1 below.

Figure 1. PT: minimal pair of the PS *nalssinha* 'thin' vs. the INS *malu* 'thin'

a. PS *nalssinha* 'thin'	b. INS *malu* 'thin'
Picture 1 Picture 2 	Picture 1 Picture 2 
Target sentence: Yeca-ka _____. woman-NOM 'A/the woman _____.'	Target sentence: Koyangi-ka _____. cat-NOM 'A/the cat _____.'
Puppet 1 (*Rady*): nalssinha-Ø-ss-eyo. thin-Ø-PFCT-DEC 'A/the woman ***was thin***.'	Puppet 1 (*Rady*): malu-Ø-ess-eyo. thin-Ø-PFCT-DEC 'A/the cat ***became thin***.'
Puppet 2 (*Sandy*): nalssinha-e ci-ess-eyo. thin-INCHO-PFCT-DEC 'A/the woman ***became thin***.'	Puppet 2 (*Sandy*): malu-e ci-ess-eyo. thin-INCHO-PFCT-DEC 'A/the cat ***became became thin***.'
Target-like preference: Puppet 2	Target-like preference: Puppet 1

As can be seen in Figure 1, both the pure state *nalssinha* 'thin' and the (deadjectival) inchoative state *malu* 'thin' in a change-of-state context from the source state (¬THIN) to the target state (THIN). What we want to find out is whether children know that *nalssinha* 'thin' is the pure state one, while *malu* 'thin' is the (deadjectival) inchoative state one in the pair of [$thin_{PS}$-$thin_{INS}$]. All test items used in the preference task are listed in Table 9.

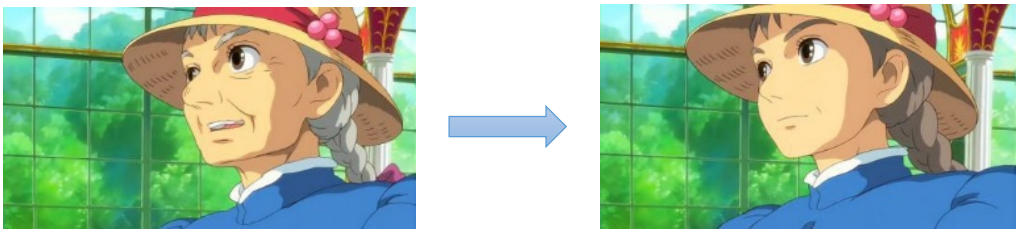
Table 9. PT: Experimental Items

Pure States (6)	**Inchoative states** (6)
celm 'young'	*nulk* 'old'
pisusha 'similar'	*talm* 'alike'
nalssinha 'thin'	*malu* 'thin'
ttwungttwungha 'fat'	*salcci* 'fat'
hayngpokha 'happy'	*hwana* 'angry'
chwukchwukha 'moist'	*cec* 'moist'

The role of the control items was to check whether children understood the task. Participants who failed more than two control items were excluded from the experiment. Test items, distractors and control items were presented in a random order, which was kept constant across participants. The number of target patterns given by each puppet was balanced across items. This was important in so far as it allows to prevent any general preferences that children may show for one puppet or for particular items. Figures 2-3 below give examples of the experimental conditions translated into English. The full list of the original items used in the experiment is given in Appendix 1.

Figure 2. **Condition 1 of PT**: Pure states +-*Ø* vs. -*e ci*

Picture 1 Picture 2



Target sentence: Halmeni-ka _____.
old.woman-NOM
'An/The old woman _____.'

Puppet 1 (*Rady*): celm-***Ø***-ss-eyo.
young-Ø-PFCT-DEC
'An/The woman ***was young***.' (*non-target pattern*)

Puppet 2 (*Sandy*): celm-***e ci***-ess-eyo.
young-INCHO-PFCT-DEC
'An/The woman ***became young***.' (*target pattern*)

Question: *Which puppet describes well the story?*

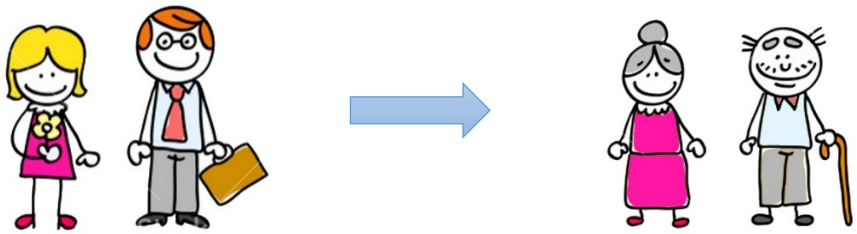
Correct description: An/The old woman became young.

Expected choice: **Puppet 2** ('Halmeni-ka ***celm-eci***-ess-eyo.')
old.woman-NOM young-INCHO-PFCT-DEC

Figure 2 proposes the pure state predicate *celm* 'young' in a change-of-state context where the subject undergoes a change from *not being young* to *being young*. To describe the given context, the puppet 1 proposes the bare form/lexically-specified form of the pure state (i.e. *celm*+-*Ø*), while the puppet 2 proposes the morphologically-specified form of the pure state (i.e. *celm*+-*e ci*). By hypothesis, a pure state predicate describes a state without referring to the transition into the described state. That is, it does not contain an intrinsic BECOME event in its meaning. If children know that pure states lack inherent inchoativity together with the distribution of the overt inchoative marker -*e ci*, then they will prefer the morphologically-derived form (i.e. *celm*+-*e ci*), over the bare form of the pure state (i.e. *celm*+-*Ø*).

Figure 3. **Condition 2 of PT**: Inchoative states +-*Ø* vs. -*e ci*

Picture 1 Picture 2



Target sentence: Yeca-wa namca-ka _____.
woman-and man-NOM
'A/The woman and a/the man _____.'

Puppet 1 (*Rady*): nulk-***Ø***-ess-eyo.
old-Ø-PFCT-DEC
'got old.' (*target pattern*)

Puppet 2 (*Sandy*): nulk-***e ci***-ess-eyo.
old-INCHO-PFCT-DEC
'got got old.' (*non-target pattern*)

Question: *Which puppet describes well the story?*

Correct description: A/the woman and a/the man got old.

Expected choice: **Puppet 1** ('Yeca-wa namca-ka ***nulk-Ø***-ess-eyo.')
woman-and man-NOM old-Ø-PFCT-DEC

Figure 3 proposes the (deadjectival) inchoative state predicate *nulk* 'old' in a change-of-state context where the subjects undergo a change *from not being old* to *being old*. To describe the given context, the puppet 1 proposes the lexically-specified/bare form of the inchoative state (i.e. *nulk*+-*Ø*), while the puppet 2 proposes the morphologically-derived form of the inchoative state (i.e. *nulk*+-*e ci*). By hypothesis, a (deadjectival) inchoative state predicate describes a state as well as the transition into the described state. That is, it contains an inherent BECOME event in its lexical meaning. If children know that inchoativity is lexically specified in (deadjectival) inchoative states together with the distribution of the overt inchoative marker -*e ci*, then thy will prefer the lexically-

specified/bare form (i.e. *nulk*+-*Ø*) over the morphologically-derived form of the inchoative state (i.e. *nulk*+-*e ci*).

4.3.3 Results

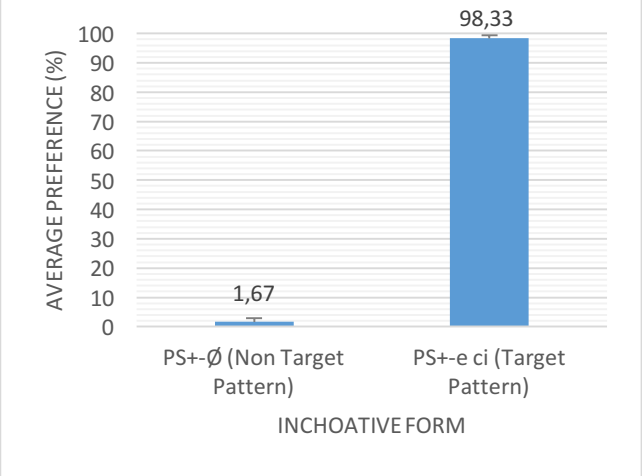
The dependent variable in the following analyses was the percentage of preference. All participants performed well on the control items; no participant was thus excluded from the analysis.

4.3.3.1 Results for the adult control group

Let us first consider the results for the adult control group provided in Figure 4 and 5 below. Adults showed the expected target preference on both the pure state and the inchoative state conditions.

Figure 4. PT: Average preference for the inchoative form

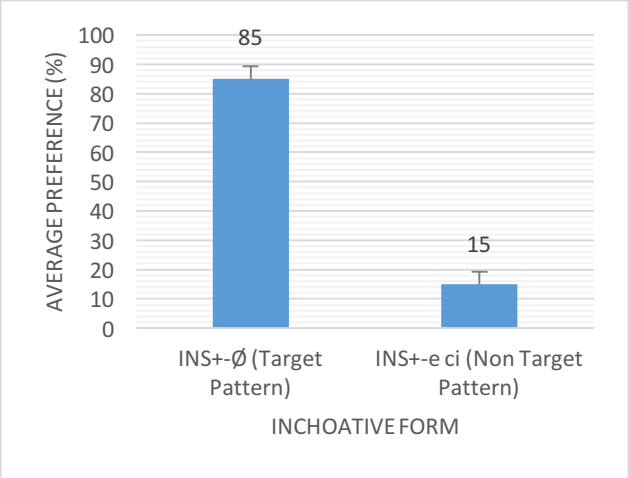
on the PS condition by adults (n=20)



As illustrated in Figure 4 above, on the pure state condition, the adult control group showed a very strong tendency to prefer the morphologically-derived form, i.e., PS+-*e ci* (98.33% of preference) over the bare form of pure states, i.e., PS+-*Ø* (1.67% of preference), as expected. A paired sample t-test revealed that the adult control group significantly preferred the morphologically-derived form over the bare form for pure states ($t(19) = 71.398$, $p < .001$).

Figure 5. PT: Average preference for the inchoative form

on the INS condition by adults (n=20)



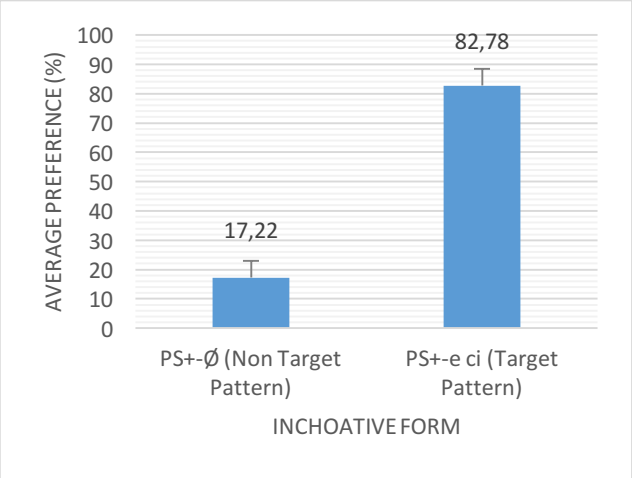
On the (deadjectival) inchoative state condition, the adult control group showed relatively higher levels of preference for the lexically-specified/bare form (85% of preference), which is the target pattern, compared to the morphologically-derived form (15% of preference). The statistical analysis revealed that their preference for the lexically-specified form over the morphologically-derived form of inchoative states was significant ($t(19) = 8.060$, $p < .001$).

Thus, the adult control group showed the expected target preference for the morphologically-derived form of pure states and the lexically-specified form of (deadjectival) inchoative states, suggesting that they correctly know the relevant lexical meaning of the two classes of states, respectively. Given the results of the adult control group, let us now look at the results of children.

4.3.3.2 Children overall results

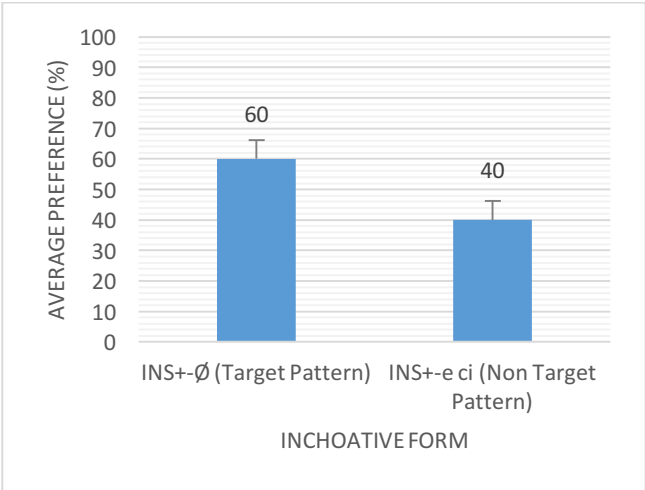
Figures 6 and 7 below present the overall results for children in the preference task. Recall our prediction. If children infer the BECOME event which is lexically contained in the meaning of a (deadjectival) inchoative state, and the absence of the BECOME event in the meaning of a pure state, then they will prefer both the lexically-specified/bare form for inchoative states (i.e. INS+-*Ø*) and the morphologically-derived form for pure states (i.e. PS+-*e ci*), just like the adult control group.

Figure 6. PT: Average preference for the inchoative form on the PS condition by children (n=30)



Overall, on the pure state condition, children showed the target-like preference for the morphologically-derived form with pure states (82.78% of preference), just like adults. The paired sample t-test revealed that children significantly preferred the morphologically-derived form over the bare form for pure states ($t(29) = 17.796$, $p < .001$).

Figure 7. PT: Average preference for the inchoative form on the INS condition by children (n=30)



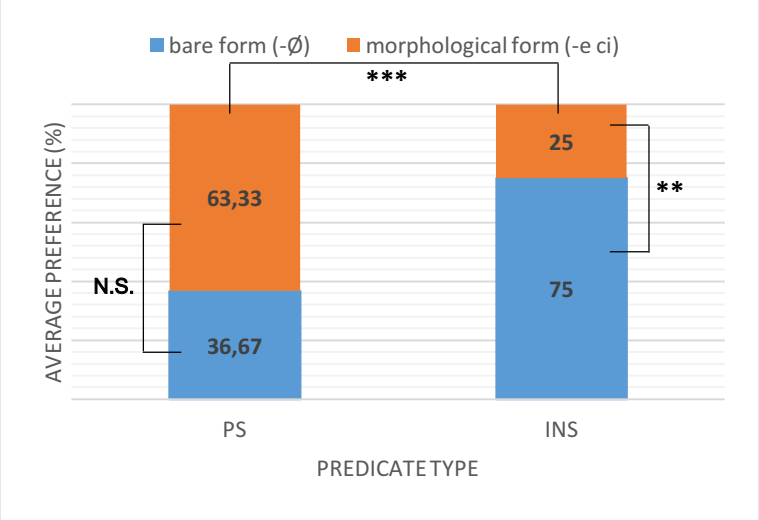
However, on the (deadjectival) inchoative state condition, children did not clearly show the target-like preference, in that they accepted not only the lexically-specified/bare form (60% of preference) but also the morphologically-specified form (40% of preference) for inchoative states, unlike adults. The paired sample t-test revealed that children did not make a statistically significant difference between the two types of the inchoative form for inchoative states ($t(29) = 1.621$, $p = .116$).

These overall results show that children are target-like in expressing an inchoative meaning with pure states, while they have some difficulties in expressing it with (deadjectival) inchoative states. In the following section, we attempt to break down the results by age groups to investigate whether the observed non-target-like pattern with (deadjectival) inchoative states is related to the age factor.

4.3.3.3 Results by age groups

The results by age groups are provided in Figure 8-10. Let us first consider the results for 4-year-olds given in Figure 8 below.

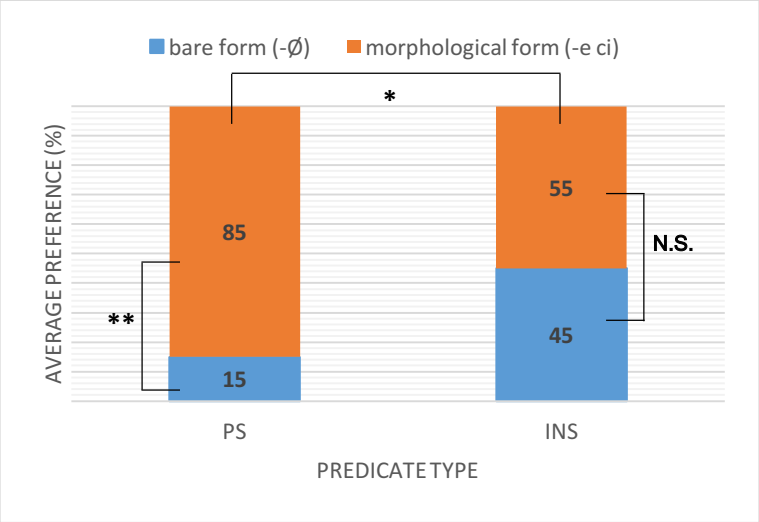
Figure 8. PT: Average preference for the inchoative form on the PS/INS conditions by 4-year-olds (n=10)



As shown in Figure 8 above, on the pure state condition, 4-year-olds showed slightly higher levels of preference for the morphologically-derived form (PS+-*e ci*; 63.33% of preference) than the bare form (PS+-Ø; 36.67% of preference). The chi-square goodness-of-fit test revealed that their

preference on the morphologically-derived form of pure states (63.33%) was not statistically significant ($\chi^2(1) = 3.76$, $p = .053$). On the (deadjectival) inchoative state condition, 4-year-olds correctly preferred the lexically-specified/bare form (INS+-*Ø*; 75% of preference) over the morphologically-derived form (INS+-*e ci*; 25% of preference) and this preference was statistically significant ($\chi^2(1) = 14.02$, $p = .002$). Furthermore, the paired sample t-test revealed that 4-year-olds significantly distinguished between pure states (63.33%) and (deadjectival) inchoative states (25%) with respect to the use of the overt inchoative marker -*e ci* ($t(9) = 7.985$, $p < .001$).

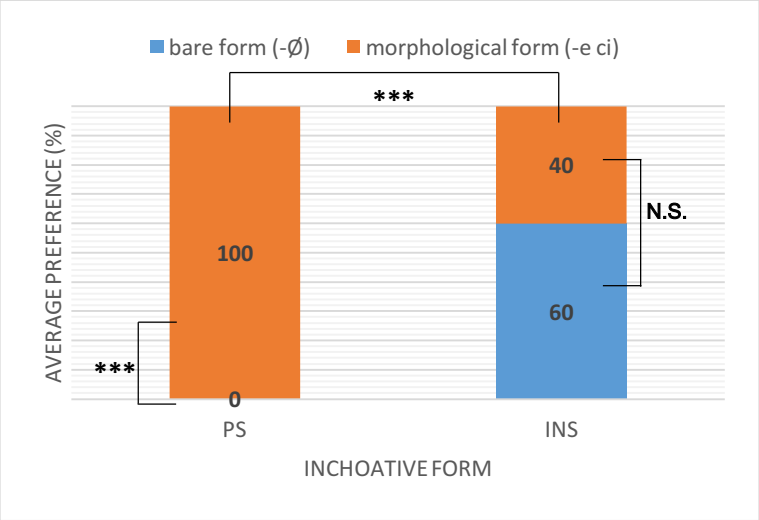
Figure 9. PT: Average preference for the inchoative form
on the PS/INS by 5-year-olds (n=10)



As illustrated in Figure 9 above, on the pure state condition, 5-year-olds performed better than 4-year-olds. They mostly preferred the morphologically-derived form (85% of preference) over the bare form (15% of preference), as expected. The chi-square goodness-of-fit test revealed that the 5-year-olds' preference for the morphologically-derived form for pure states (85%) was significant ($\chi^2(1) = 28.02$, $p < .001$). However, on the (deadjectival) inchoative states condition, 5-year-olds showed a surprising pattern: they accepted both the lexically-specified/bare form (45% of preference) and the morphologically-derived form (55% of preference) for inchoative states. The statistical analysis revealed that 5-year-olds did not make a significant difference between the two types of the inchoative form ($\chi^2(1) = 0.42$, $p = .517$), suggesting that the choice they made was done by chance between the lexically-specified/bare and the morphologically-derived forms for

(deadjectival) inchoative states. This pattern is very surprising since they performed worse than 4-year-olds on the (deadjectival) inchoative state condition. Crucially, however, 5-year-olds distinguished between pure states (85%) and (deadjectival) inchoative states (55%) regarding the use of the overt inchoative marker *-e ci* ($t(9) = 4.150$, $p = .002$).

Figure 10. PT: Average preference for the inchoative form on the PS/INS by 6-year-olds (n=10)



As shown in Figure 10 above, under the pure state condition, 6-year-olds perfectly and significantly preferred the morphologically-derived form (100% of preference) as expected ($\chi^2(1) = 58.02$, $p < .001$). They performed better than younger children under this condition. Under the (deadjectival) inchoative state condition, they showed slightly higher levels of preference for the lexically-specified form (60% of preference) than the morphologically-derived form (40% of preference). Their performance under the (deadjectival) inchoative state condition is better than that of 5-year-olds (45% of preference for the lexically-specified form), but it is still worse than that of 4-year-olds (75% of preference for the lexically-specified form). The statistical analysis revealed that 6-year-olds, like 5-year-olds, showed no significant difference between the lexically-specified form and the morphologically-derived form for (deadjectival) inchoative states ($\chi^2(1) = 2.02$, $p < .155$). But, 6-year-olds, like other children, significantly distinguished between pure states (100%) and (deadjectival) inchoative states (40%) with respect to the use of the overt inchoative marker *-e ci* ($t(9) = 5.511$, $p < .001$).

To summarize so far, the overall results showed that Korean children were generally accurate in choosing the morphologically-derived form of pure states to express an inchoative meaning. Moreover, the results by age groups revealed that the target-like preference of children improves with age. In contrast, the overall results showed that children have some difficulties with (deadjectival) inchoative states in also choosing the morphologically-derived form. Interestingly, breaking down the results by age groups shows that the non-target-like pattern of behavior holds for 5-year-olds and 6-year-olds who did not clearly prefer the lexically-specified form over the morphologically-derived form of inchoative states, but much less so for 4-year-olds who performed much better than older children (in that they correctly preferred the lexically-specified form for inchoative states). The questions that arise now are: why did 5-year-olds and 6-year-olds incorrectly chose the morphologically-derived form for (deadjectival) inchoative states to express an inchoative meaning? Why do 5-year-olds and 6-year-olds seem to regress in inferring the inherent inchoativity of (deadjectival) inchoative states, as compared to 4-year-olds?

4.3.3.4 Children's error patterns

In this section, we attempt to determine the children's patterns of behavior, considering the results of pure states and (deadjectival) inchoative states broken down by minimal pairs of predicates. Recall that each of the six pure state predicates used in the test materials are paired with six (deadjectival) inchoative state predicates sharing same semantic fields (e.g. *celm* 'young$_{PS}$' vs. *nulk* 'old$_{INS}$', *nalssinha* 'thin$_{PS}$' vs. *malu* 'thin$_{INS}$') (cf. Table 9). We now examine how children discriminated a pure state vs. a (deadjectival) inchoative state in a given pair of predicates sharing the same semantic field and what kind of errors they committed across these minimal pairs of predicates. In (9) below, we list the six minimal pairs of pure states vs. (deadjectival) inchoative states with their corresponding translation into English given between square brackets.

(9) a. *celm - nulk* [*young*$_{PS}$ - *old*$_{INS}$]
b. *pisusha - talm* [*similar*$_{PS}$ - *alike*$_{INS}$]
c. *nalssinha - malu* [*thin*$_{PS}$ - *thin*$_{INS}$]
d. *hayngpokha - hwana* [*happy*$_{PS}$ - *angry*$_{INS}$]
e. *ttwungttwungha - saljji* [*fat*$_{PS}$ - *fat*$_{INS}$]
f. *chwukchwukha - cec* [*moist*$_{PS}$ - *moist*$_{INS}$]

Breaking down the results by minimal pairs of predicates yields three patterns of behavior provided in Table 10 below and as a result, children will be divided into three groups: one target-like group and two non-target-like groups.

Table 10. PT: Children's patterns of behavior

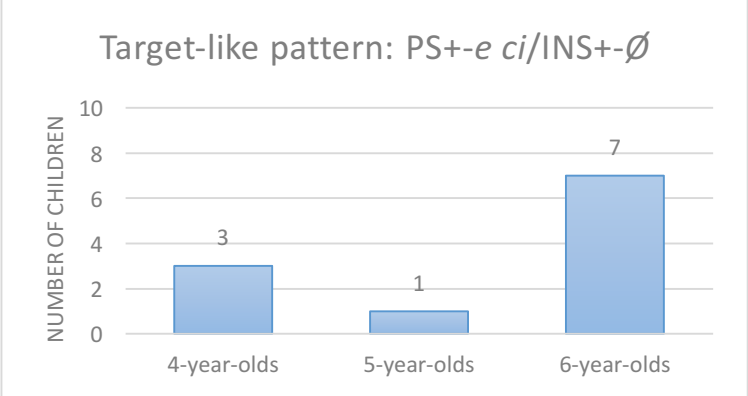
Target-like pattern:	PS+-*e ci* / INS+-*Ø*
Error pattern 1:	PS+-*e ci* / INS+-*e ci*
Error pattern 2:	PS+-*Ø* / INS+-*Ø*

4.3.3.4.1 Target-like pattern: PS+-*e ci* / INS+-*Ø*

The first group includes children who showed the expected target pattern with respect to both pure states and (deadjectival) inchoative states in minimal pairs. That is, they correctly preferred both the morphologically-derived form for the pure state and the lexically-specified form for the inchoative state (i.e. PS+-*e ci*/INS+-*Ø*). These children are fully adult-like because they crucially know that: (i) inchoative states are lexically inchoative and as such, do not combine with the overt inchoative marker -*e ci*; (ii) pure states are lexically stative and as such, obligatory combine with -*e ci* to express an inchoativity.

Figure 11 below presents the results for target-like children across age groups. The majority of 6-year-olds (7 out of 10) were target-like in preferring the relevant inchoative form for the two classes of states, while only some 4-year-olds (3 out of 10) and only one 5-year-old out of 10 was target-like.

Figure 11. PT: Results for children showing target-like pattern across age groups

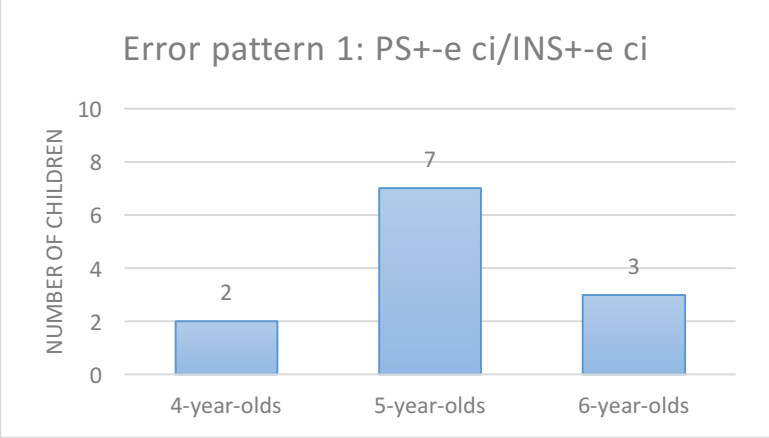


4.3.3.4.2 Error pattern 1: PS/INS+-*e ci*

The second group includes children tending to add the overt inchoative marker -*e ci* to both items of the relevant minimal pair. That is, these children chose the morphological form regardless of the type of predicates (i.e. PS+-*e ci*/INS+-*e ci*). They correctly know that pure states obligatorily combine with the overt inchoative marker -*e ci* to express inchoativity. However, they committed errors with inherently (deadjectival) inchoative states in overusing -*e ci*.

Figure 12 below presents the results of children showing error pattern 1 (PS+-*e ci*/INS+-*e ci*) across ages. Interestingly, most 5-year-olds (7 out of 10) are included in this group, while only few 4-year-olds (2 out of 10) and some 6-year-olds (3 out of 10) displayed this pattern.

Figure 12. Results for children showing error pattern 1 across age groups



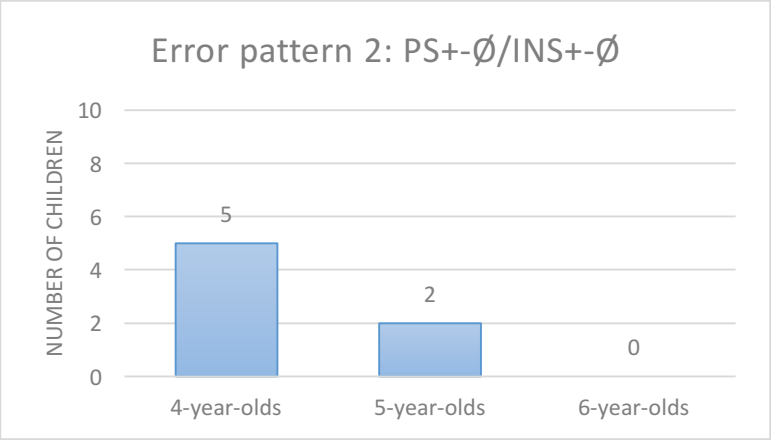
4.3.3.4.3 Error pattern 2: PS/INS+-*Ø*

The third group includes children tending to prefer the lexically-specified/bare form to both items of the relevant minimal pair to express inchoativity (i.e. PS+-*Ø*/INS+-*Ø*). As opposed to children in the second group, children in this group were accurate in preferring the lexically-specified form for (deadjectival) inchoative states, suggesting that they might know that (deadjectival) inchoative states are inherently inchoative. However, they committed errors with pure states in overusing the bare form.

Figure 13 below presents the results of children showing error pattern 2 (PS+-*Ø*/INS+-*Ø*) across ages. Half of 4-year-olds (5 out of 10) and few 5-year-olds (2 out of 10) displayed this pattern in that they correctly preferred the lexically-specified/bare form for inchoative states but

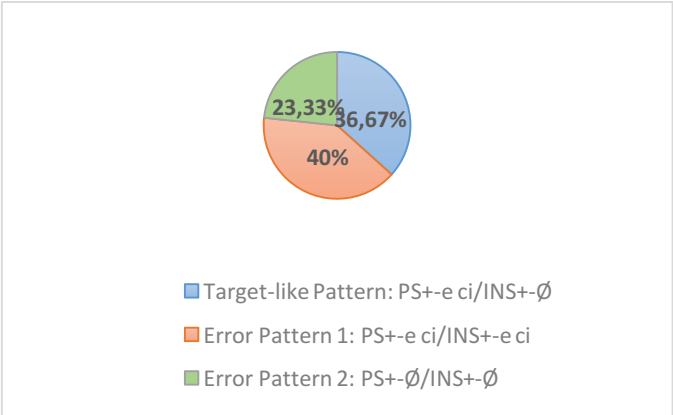
incorrectly preferred the very same form for pure states. No 6-year-olds showed this behavior. This error pattern thus decreases with age.

Figure 13. PT: Results for children showing error pattern 2 across age groups



Let us now consider the overall distribution of children's patterns of behavior as shown in Figure 14. 40% of the child participants showed error pattern 1 in that they correctly preferred the morphologically-derived form for pure states, but incorrectly generalized it to (deadjectival) inchoative states. 36.67% of the children were target-like in that they correctly preferred the morphologically-derived form for pure states and the lexically-specified form for (deadjectival) inchoative states, respectively. Finally, 23.33% of the children showed error pattern 2 in that they correctly preferred the lexically-specified form for (deadjectival) inchoative states, but incorrectly generalized it to pure states in the minimal pairs of predicates.

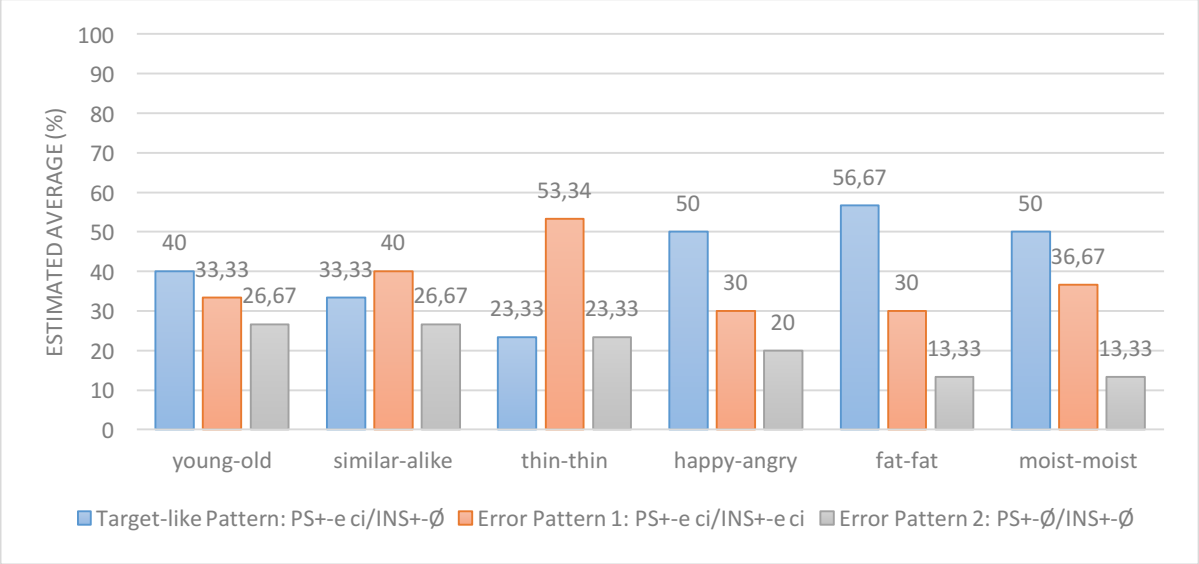
Figure 14. PT: Overall distribution of children's patterns



4.3.3.5 Distribution of error patterns across minimal pairs of predicates

Let us now look at the distribution of children's error patterns across the minimal pairs of predicates, as shown in Figure 15.

Figure 15. Distribution of children's error patterns across the minimal pairs of predicates



For three minimal pairs of predicates, namely *happy*$_{PS}$-*angry*$_{INS}$, *fat*$_{PS}$-*fat*$_{INS}$, *moist*$_{PS}$-*moist*$_{INS}$, approximately half of the children showed the target-like pattern (56.67% of children for the *fat*$_{PS}$-*fat*$_{INS}$ minimal pair; 50% of children for the *happy*$_{PS}$-*angry*$_{INS}$ as well as the *moist*$_{PS}$-*moist*$_{INS}$ minimal pairs). That is, roughly half of the children correctly figured out which predicate of the two is a pure state vs. a (deadjectival) inchoative state for a given minimal pair, preferring the morphologically-derived form with pure states vs. the lexically-specified form with (deadjectival) inchoative states to express inchoativity. Likewise, in the *young*$_{PS}$-*old*$_{INS}$ minimal pair, 40% of children were target-like.

In contrast, for the two minimal pairs of *similar*$_{PS}$-*alike*$_{INS}$ and *thin*$_{PS}$-*thin*$_{INS}$, the most frequently attested pattern is error pattern 1. Specifically, with the *thin*$_{PS}$-*thin*$_{INS}$ pair and the *similar*$_{PS}$-*alike*$_{INS}$ pair, respectively, 53.34% of children and 40% of children preferred the morphologically-derived form. That means that they were target-like with pure states, but non-target-like with (deadjectival) inchoative states.

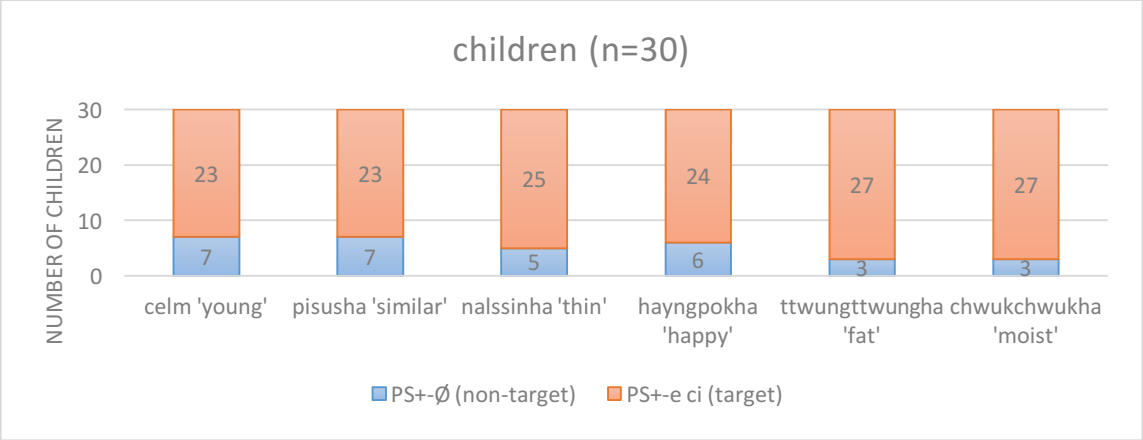
Thus, the distribution of children's error patterns across the minimal pairs of predicates reveals that children mostly have some difficulties with the minimal pairs of *similar*$_{PS}$-*alike*$_{INS}$ and *thin*$_{PS}$-*thin*$_{INS}$.

To summarize, the results broken down by minimal pairs of predicates revealed two error patterns attested across all age groups. The non-target-like preference for the lexically-specified form with pure states (i.e. PS+-*Ø*) was the main error type for 4-year-olds. In contrast, the non-target-like preference for the morphologically-derived form with (deadjectival) inchoative states (i.e. INS+-*e ci*) was the main error type for 5-year-olds and 6-year-olds. The higher rate of error pattern 1 (i.e. PS+-*e ci*/INS+-*e ci*) in the results for 5-year-olds and 6-year-olds suggests that, unlike 4-year-olds, these two age groups committed more errors with (deadjectival) inchoative states than pure states. In particular, the proportion of 5-year-olds who committed such errors (70%) is much larger than that of 5-year-olds who were target-like (10%). The question then that arises is why these 5-year-olds incorrectly preferred the morphologically-derived form for (deadjectival) inchoative states, as compared to the two other age groups. Why is error pattern 1 predominant and not the alternative one? Recall that exactly the same question arose when we looked at the overall results in Section 4.3.3.2. That is, we observed that, overall, children incorrectly accepted the morphologically-derived form 60% of the time. We will return to this question in Section 4.3.4.

4.3.3.6 Distribution of error patterns across individual predicates

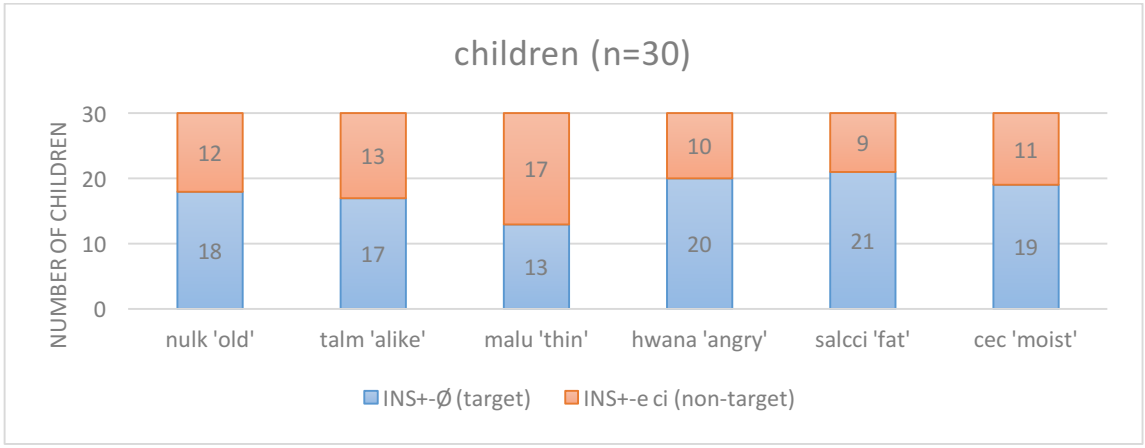
So far, we have observed that children have difficulties with (deadjectival) inchoative states more than pure states across age groups and the minimal pairs of predicates, incorrectly generalizing the morphologically-derived form to inchoative states. In this section, we consider the results broken down by individual predicates across predicate type conditions. The reason for breaking down the results item by item is to investigate the following question: Do children still prefer the morphologically-derived form over the lexically-specified/bare form, irrespective of whether the given predicate is a pure state (target-like) or a (deadjectival) inchoative states (non-target-like)? In other words, does error pattern 1 predominantly hold across individual predicates? Figures 16 and 17 below present the by-item breakdown results on the pure state and the (deadjectival) inchoative state conditions.

Figure 16. PT: Results by individual predicates for the inchoative form on the PS condition



On the pure state condition, overall, children were generally accurate in preferring the morphologically-derived form (i.e. PS+-*e ci*) over the bare form across all the six target items. In particular, there are two pure state items, *ttwungttwungha* 'fat', *chwukchwukha* 'moist', for which most of the children (27 out of 30 children) correctly preferred the morphologically-derived form, but with very few children (3 out of 30) incorrectly preferring the bare form. Most of the children also generalized the morphologically-derived form to the remaining test items: 25 out of 30 children generalized it to the *nalssinha* 'thin' item, as 24 out of 30 children did it with the *hayngpokha* 'happy' item and finally, 23 out of 30 children correctly preferred the morphologically-derived form for the *celm* 'young', the *pisusha* 'similar' items. Thus, children were mostly target-like across individual predicates on the pure state condition.

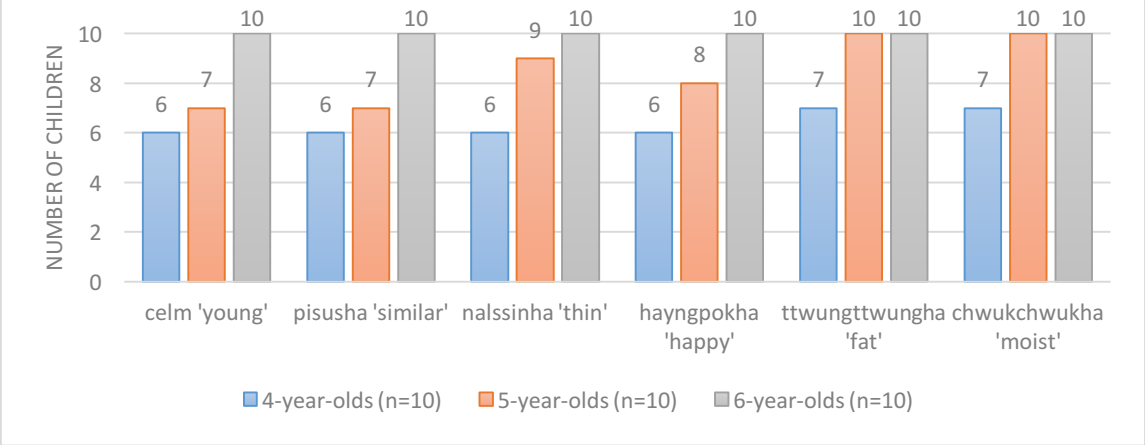
Figure 17. PT: Results by individual predicates for the inchoative form on the INS condition



On the (deadjectival) inchoative state condition, overall, children did not clearly show the adult-like preference. Most of the children correctly preferred the lexically-specified/bare form with three inchoative state items *hwana* 'angry' (preferred by 20 out of 30 children), *salcci* 'fat' (preferred by 21 out of 30 children), *cec* 'moist' (preferred by 19 out of 30 children). However, roughly, a third of them (9 children with *salcci* 'fat', 10 children with *hwana* 'angry' and 11 children with *cec* 'moist') incorrectly preferred the morphologically-derived form with these three items. Interestingly, children are divided into two groups with regard to the two inchoative state items: *nulk* 'old', *talm* 'alike'. On the one hand, one group who correctly preferred the lexically-specified form with these predicates (*nulk* 'old' preferred by 18 out of 30 children, *talm* 'alike' preferred by 17 out of 30 children), while the other group incorrectly preferred the morphologically-derived form with them (*nulk* 'old' preferred by 12 out of 30 children, *talm* 'alike' preferred by 13 out of 30 children). Finally, one notable observation is that with the inchoative state item *malu* 'thin', more than half of the children (17 out of 30) incorrectly preferred the morphologically-derived form to express inchoativity.

Let us now consider the by-item breakdown results by age groups to understand whether there is a variability across the target items and age groups in children's target-like behaviors. Figure 18 below illustrates the target-like distribution of answers for the morphologically-derived form with pure states (i.e. PS+-*e ci*) by individual predicates across age groups.

Figure 18. PT: Target-like preference for PS+-*e ci* by individual predicates across age groups

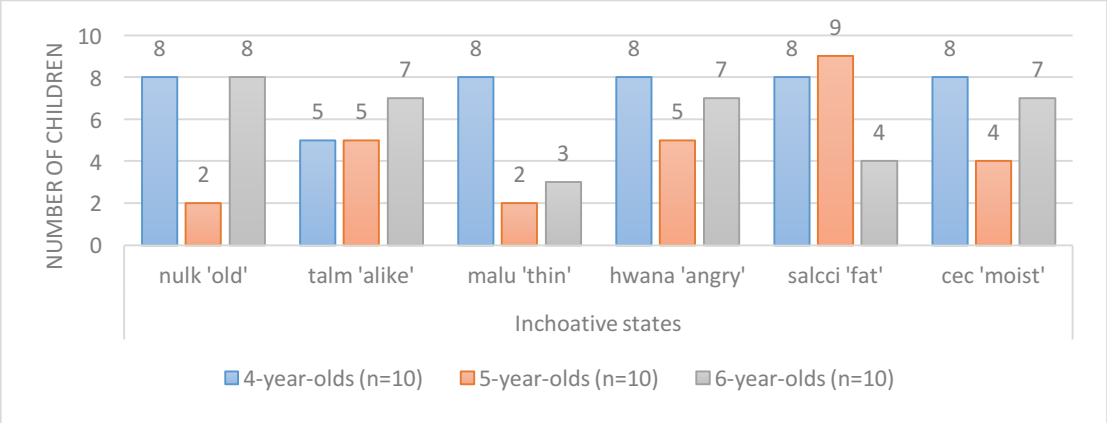


On the pure state condition, most of the children across different age groups correctly preferred the morphologically-derived form with all the test items. In particular, there were three pure state items,

i.e., *nalssinha* 'thin', *ttwungttwungha* 'fat', *chwukchwukha* 'moist' with which 5-year-olds and 6-year-olds accurately showed a strong preference for the morphologically-derived form. However, four pure state items, i.e., *celm* 'young', *pisusha* 'similar', *nalssinha* 'thin', *hayngpokha* 'happy', seem to be problematic for some 4-year-olds since only about half of them (6 out of 10) correctly preferred the morphologically-derived form with these predicates. It is also important to note that all 6-year-olds correctly showed a strong preference for the morphologically-derived form with all pure state items. We thus observe a typical development pattern with pure states.

However, with (deadjectival) inchoative states, we observe a higher variability. Consider Figure 19 below that illustrates the target-like distribution of answers for the lexically-specified/bare form with inchoative states (i.e. INS+-*Ø*) by individual predicates across age groups.

Figure 19. PT: Target-like preference for INS+-*Ø* by individual predicates across age groups



On the (deadjectival) inchoative state condition, 4-year-olds generally showed the adult-like preference for the lexically-specified form, while 5-year-olds and 6-year-olds showed, however, some surprising results. There were three inchoative state items (i.e. *nulk* 'old', *hwana* 'angry', *cec* 'moist') for which most 4-year-olds and most 6-year-olds were target-like in choosing the lexically-specified form, while more than half of 5-year-olds were non-target-like in choosing the morphologically-derived form. Interestingly, younger children (4- and 5-year-olds) were divided into two groups with respect to the inchoative state item *talm* 'alike': half of the 4-year-olds and 5-year-olds, respectively correctly preferred the lexically-specified form and the other half incorrectly chose the morphologically-derived form. In contrast, 6-year-olds, overall, performed well with this item since 7 out of 10 correctly preferred the lexically-specified form. As for the

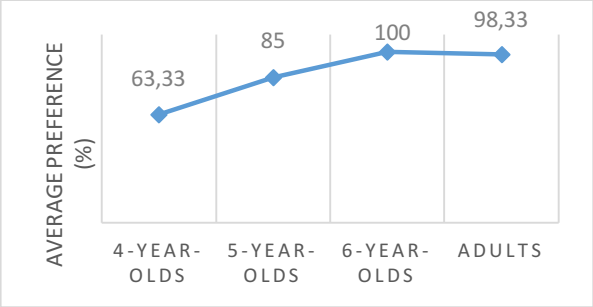
inchoative state item *malu* 'thin', most 4-year-olds (8 out of 10) showed the target-like preference for the lexically-specified form, while only a few 5-year-olds (2 out of 10) and a few 6-year-olds (3 out of 10) showed such target-like preference. Finally, with respect to the inchoative state item *salcci* 'fat', surprisingly, only some 6-year-olds (4 out of 10) were accurate in preferring the lexically-specified form, while younger children (8 out of 10 4-year-olds; 9 out of 10 5-year-olds) strongly showed the adult-like pattern for the lexically-specified form with this item.

To summarize so far, the results by individual predicates revealed that Korean children aged from 4 to 6 have higher variability with (deadjectival) inchoative states than with pure states. First, summarizing pure states, we have identified two pure state predicates (i.e. *ttwungttwungha* 'fat', *chwukchwukha* 'moist') for which all children across age groups have the adult-like meaning since they know that these predicates obligatorily combine with the overt inchoative marker *-e ci* to express inchoativity. Furthermore, there are four pure state predicates (i.e. *nulk* 'old', *talm* 'alike', *malu* 'thin', *hayngpokha* 'happy') that seem to be problematic for some 4-year-olds because they incorrectly preferred the lexically-specified/bare form with these predicates to express inchoativity. But, children's target-like performance improves with age and at the age of six, they perfectly converge on the adult-like meaning of pure states. Second, the results regarding (deadjectival) inchoative states were very surprising. With four inchoative state predicates (i.e. *nulk* 'old', *talm* 'alike', *hwana* 'angry', *cec* 'moist'), 5-year-olds performed less well than both 4-year-olds and 6-year-olds, which is unexpected. There are two further predicates (i.e. *malu* 'thin', *salcci* 'fat') with which older children performed less well than 4-year-olds. The intriguing questions arise: why did children show the variability with (deadjectival) inchoative states more than with pure states? In particular, how can we account for the observation that 4-year-olds performed better than older children with (deadjectival) inchoative states?

4.3.4 Discussion

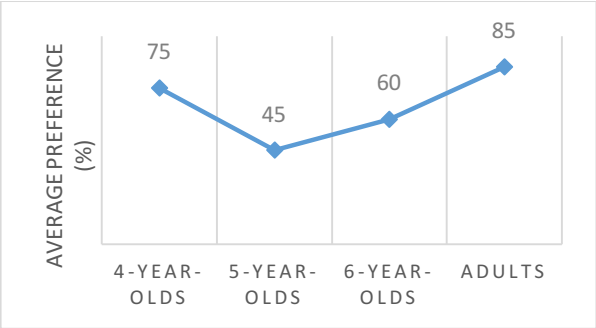
So far, we have observed that Korean children aged from 4 to 6 were generally accurate in preferring the morphologically-derived form for pure states over the bare form to express inchoativity. This suggests that they know the lexical meaning of pure states, i.e., they know that this sub-class of stative predicates is not inherently inchoative. As illustrated in Figure 20 below, the target-like preference for the morphologically-derived form with pure states improves with age and as such, we observe a typical development pattern with pure states in Korean child language.

Figure 20. PT: Target-like preference for PS (i.e. PS+-*e ci*) by age groups



In contrast, the results for (deadjectival) inchoative states across age groups revealed a discontinuous development pattern in child language. Surprisingly, it is more than half of 5-year-olds and some 6-year-olds, rather than 4-year-olds that have difficulties with (deadjectival) inchoative states, as shown in Figure 21 below.

Figure 21. PT: Target-like preference for INS (i.e. INS+-*Ø*) by age groups



While most 4-year-olds (75%) correctly preferred the lexically-specified form for (deadjectival) inchoative states over the morphologically-derived form, more than half of 5-year-olds (55%) and some 6-year-olds (40%) incorrectly preferred the morphologically-derived form. These results are surprising in that 5-year-olds and 6-year-olds do not seem to converge on the adult-like lexical meaning of (deadjectival) inchoative states, unlike 4-year-olds. Assuming that older children are presumably more grammatically advanced than younger children and children's linguistic knowledge does not regress, then we have a puzzling pattern that we need to explain. This pattern raises the question: how can we account for the discontinuity observed in the results for (deadjectival) inchoative states across age groups?

Looking at the results for the target-like pattern with inchoative states across age groups given in Figure 21 above, we can make sense of our finding if we assume that the acquisition of (deadjectival) inchoative states exhibits a so-called 'U-shaped' pattern. U-shape development curves have been reported in many studies devoted to both first and second language acquisition (cf. Bowerman 1982, Bybee & Slobin 1982, Pinker 1984, 1991, Marcus, Pinker, Ulman, Hollander and Xu 1992, Ellis 1994, Lidz & Gagliardi 2010, Gagliardi, Mease & Lidz 2011 among many others).

One of the most notorious cases of U-shaped development is the acquisition of English past tense morphology (Pinker 1984). In the past tense paradigm, there are two distinct forms: (i) a regular form (i.e. *walked, played*) morphologically derived by means of an affixation rule which consists in adding the suffix *-ed* to verb stems; (ii) an irregular form (i.e. *gave*, *went*) formed in idiosyncratic ways. Recall our discussion in Section 2 concerning the principle of morphological blocking (Aronoff 1976, Andrews 1990 and many others). According to this principle, when speakers have a simple form lexically expressing a certain meaning listed in the lexicon, they will not resort to a morphological rule combining other morphemes to generate a form which would be semantically and syntactically identical to the stored form. Take the past tense of *give* in English, which is the irregular form *gave* stored in the lexicon. Lexical specification of the irregular past form blocks the otherwise expected form *gived* derived by application of the past tense suffix *-ed* to the verb stem. In first language (L1) acquisition, it has been observed that, after a stage of using frequent irregular past tense forms (i.e. *went*, *gave*) correctly, children go through a stage in which they acquire the morphological rule of *-ed* and produce overregularized incorrect past tense forms (i.e. *goed, gived*) alongside correct irregular forms. When the overregularization period is over, children finally reach the adult-like stage in which they generate the correct past tense forms for both regular (i.e. *walked*) and irregular verbs (i.e. *went*). These three stages in the acquisition of English past tense morphology thus constitute a U-shaped development pattern.

To account for children's overregularization errors, Pinker (1984, 1989) and Marcus et al. (1992) argue that these errors are due to memory retrieval failure. Because children´s retrieval system is not fully adult-like, children often fail to retrieve the irregular forms stored in the lexicon. Hence, they allow the morphological rule to apply to irregular verbs. Once retrievability improves, children are able to access the irregular forms which, in turn, block the application of the morphological rule.

Let us now turn to our results for (deadjectival) inchoative states: 4-year-olds were mostly target-like in preferring the lexically-specified form for (deadjectival) inchoative states, 5-year-olds chose both the lexically-specified form and the morphologically-derived form, while 6-year-olds performed better than 5-year-olds. I assume that these surprising results for (deadjectival) inchoative states describe a U-shaped development pattern similar to the one found in the acquisition of the past tense morphology in English, but I implement the idea differently on our results. The U-shaped development pattern shown in Figure 21 above reflects three stages in the acquisition of the inchoativity paradigm in Korean as follows:

In the first stage (at the age of 4), children are not sensitive to the overt inchoative marker *-e ci* adding a BECOME operator to the lexical meaning of a predicate. The lack of the *-e ci* rule in children's grammar leads them to be adult-like with inchoative states, but to commit errors with pure states. That is, it results in a relatively high rate of generating *correct* bare/lexically-specified forms INS+-*Ø*, but also in a relatively high rate of generating *incorrect* bare/lexically-specified forms PS+-*Ø*. Recall the main type of errors of 4-year-olds (cf. Section 4.3.3.4.3): half of 4-year-olds (5 out of 10) showed error pattern 2 in that they correctly preferred the lexically-specified form for (deadjectival) inchoative states (INS+-*Ø*), but incorrectly preferred the same form for pure states (PS+-*Ø*).

In the second stage (at the age of 5), children's knowledge state changes into one which includes the rule of *-e ci* for inchoative morphology. That is, to express inchoativity, children actively apply the inchoative morphological rule of *-e ci* to a predicate. Crucially, however, they are not yet aware of the morphological blocking effect that occurs in the case of (deadjectival) inchoative states since these predicates are lexically specified to yield an inchoative meaning. The acquisition of the inchoative morpheme *-e ci* without being governed by the morphological blocking effect leads them to commit the overregularization errors of *-e ci* with (deadjectival) inchoative states. However, the active use of the inchoative morpheme *-e ci* leads them to be adult-like with pure states. In particular, their insensitivity to the principle of morphological blocking does not affect their adult-like performance with pure states since the morphological blocking effect does not occur in the case of pure states which are lexically statives. This results in an increase of generating *incorrect* morphologically-derived INS+-*e ci*, due to overregularization of *-e ci*, but also in an increase of generating *correct* morphologically-derived forms PS+-*e ci*. Recall the main type of errors of 5-year-olds (cf. Section 4.3.3.4.2): most 5-year-olds (7 out of 10) showed

error pattern 1 in that they correctly preferred the morphologically-derived form for pure states (PS+-*e ci*), but incorrectly overused the morphologically-derived form for (deadjectival) inchoative states (INS+-*e ci*).

In the final stage (at the age of 6), children have adult-like knowledge of the distribution of the inchoative morpheme -*e ci* in accordance with the morphological blocking principle. That is, they are able to associate each of the two distinct forms (-*Ø* vs. -*e ci*) in the inchoative paradigm with the right type of state ((deadjectival) inchoative vs. pure) since, at this age, the morphological blocking principle has settled together with the morphological rule of -*e ci* in their grammar. Children thus know that the morphological blocking principle forbids the application of the inchoative morphological rule of -*e ci* to (deadjectival) inchoative states, since these are lexically specified for inchoativity. They also know that pure states are not inherently inchoative, and thus need the inchoative marker -*e ci* to express an inchoative meaning. This results in an increase of *correct* lexically-specified forms INS+-*Ø*, and an increase of generating *correct* morphologically-derived forms PS+-*e ci*. Recall that the majority of 6-year-olds (7 out of 10) showed adult-like pattern in that they correctly preferred lexically-specified form for (deadjectival) inchoative states (INS+-*Ø*) and the morphologically-derived form for pure states (PS+-*e ci*) (cf. Section 4.3.3.4.1).

Summarizing so far, our results across ages revealed a continuous development pattern with pure states, but a U-shaped development pattern with (deadjectival) inchoative states. To account for these patterns, I argued that at the age of 4, children have not acquired the inchoative morpheme -*e ci* adding a BECOME operator to the lexical meaning of a predicate. The lack of the inchoative morpheme -*e ci* leads them to be adult-like with (deadjectival) inchoative states, but to be non-adult-like with pure states. At the age of 5, children have acquired the new morphological rule of -*e ci* and they actively apply this rule to express inchoativity of a predicate. The acquisition of the inchoative morpheme -*e ci* leads them to be adult-like with pure states. However, these children are not sensitive to the morphological blocking effect which is crucial for correctly generating the lexically-specified form for (deadjectival) inchoative states. Hence, they commit the overregularization errors of -*e ci* with (deadjectival) inchoative states. At the age of 6, children know the morphological rule of -*e ci* as well as the morphological blocking effect that occurs in the case of (deadjectival) inchoative states. As such, they have the adult-like knowledge allowing them to associate each of the two distinct forms in the inchoative paradigm with the correct type of state: they are able to generate the lexically-specified form for (deadjectival) inchoative states

and the morphologically-derived form for pure states. Children's overregularization errors of *-e ci* with (deadjectival) inchoative states diminish at this age.

Going back to our research question: do children distinguish (deadjectival) inchoative states from pure states with respect to the presence of the intrinsic BECOME event in their lexical meaning? The results of the preference task reported in this chapter do not allow us to tell whether younger children (especially 4-year-olds) preferred the lexically-specified/bare form for (deadjectival) inchoative states because they have adult-like knowledge of the lexical meaning of (deadjectival) inchoative states. What these results do allow us to conclude instead is that, by about 6 years of age, Korean children (i) know that (deadjectival) inchoative states and pure states do not have the same lexical meaning. That is, they know that a pure state lacks the intrinsic BECOME event in its meaning, while a (deadjectival) inchoative state contains the intrinsic BECOME event in its meaning; (ii) know the morphological rule of *-e ci* deriving an inchoative meaning of a predicate and as such, can generate the morphologically-derived form for pure states which are lexically stative; (iii) know the morphological blocking principle and as such, can generate the lexically-specified form for (deadjectival) inchoative states which are lexically inchoative. To investigate further whether Korean children are able to draw a clear distinction between (deadjectival) inchoative states and pure states, we designed another experiment which I will discuss in the next chapter.

4.4 Summary

In this chapter, we have examined Korean children's knowledge of the inherent inchoativity of (deadjectival) inchoative states. In Chapter 2, I argued that the two classes of states do not have the same lexical meaning and as a result, they do not pattern alike with respect to the distribution of the overt inchoative marker *-e ci* adding a BECOME operator to the meaning of a predicate: (i) a pure state describes a property without referring to the transition into the described property and as such, obligatorily combines with *-e ci* to express inchoativity (PS+-*e ci*); (ii) a (deadjectival) inchoative state describes a property with the change (i.e. BECOME event) into the described property and as such, is lexically specified to express inchoativity (INS+-*Ø*). The morphologically-derived form for inchoative states (INS+-*e ci*) cannot be generated due to morphological blocking.

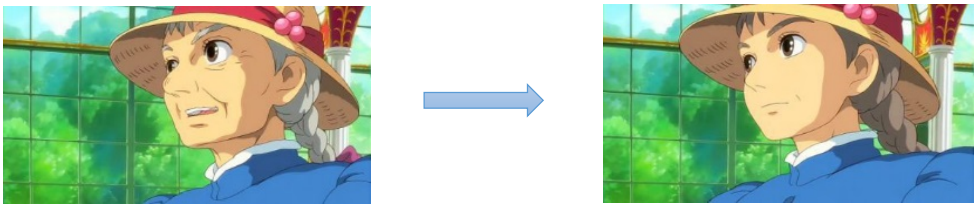
I have provided novel experimental evidence from Korean child language for the inherent inchoativity of (deadjectival) inchoative states. Our results of the preference task revealed a typical development pattern for pure states and interestingly a U-shaped development pattern for

(deadjectival) inchoative states. To account for the observed asymmetric development pattern of pure states and inchoative states, I argued that, by about 5 years of age, children have acquired the morphological rule of *-e ci* deriving an inchoative meaning. The acquisition of this new morphological rule makes children at this age to be adult-like with pure states, but to overregularize the rule of *-e ci* to (deadjectival) inchoative states, violating the principle of morphological blocking. I also argued that children are aware of the morphological blocking principle only at age 6 and as such, are able to correctly generate the lexically-specified form for (deadjectival) inchoative states.

4.5 Appendix 1

Condition 1: Pure states (PS) +-*Ø* vs. *-e ci* → Expected answer: PS+-*e ci*

PS1: Picture 1 Picture 2



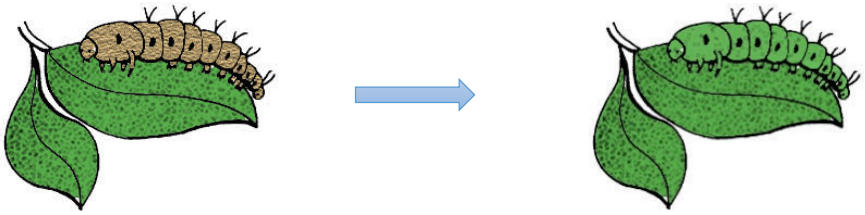
Target sentence: Halmeni-ka _____.
old.woman-NOM
'An/The old woman _____.'

Puppet 1: celm-***Ø***-ss-eyo.
young-Ø-PFCT-DEC
'***was young***.'
(*non-target pattern*)

vs.

Puppet 2: celm-***e ci***-ess-eyo.
young-INCHO-PFCT-DEC
'***became young***.'
(*target pattern*)

PS2: Picture 1 Picture 2



Target sentence: 'Aypelley-uy saykkal-i namwusiph-kwa _____'
larva-POSS color-NOM leaf-with
'The color of the larva _____ to that of the leaves.'

Puppet 1: pisusha-***e ci***-ess-eyo.
similar-INCHO-PFCT-DEC
'***became similar***.'
(*target pattern*)

vs.

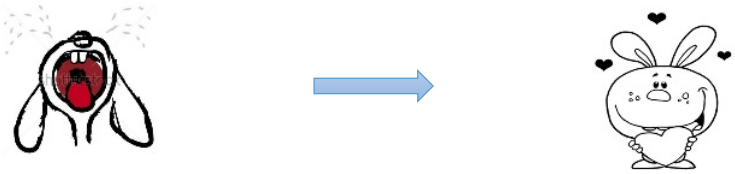
Puppet 2: pisusha-***Ø***-ss-eyo.
similar-Ø-PFCT-DEC
'***was similar***.'
(*non-target pattern*)

PS3: Picture 1 Picture 2

Target sentence: Yeca-ka _____.
woman-NOM
'A/The woman _____.'

Puppet 1: nalssinha-***Ø***-ss-eyo. vs. Puppet 2: nalssinha-***e ci***-ess-eyo.
thin-Ø-PFCT-DEC thin-INCHO-PFCT-DEC
'***was thin***.' '***became thin***.'
(*non-target pattern*) (*target pattern*)

PS4: Picture 1 Picture 2



Target sentence: 'Thokki-ka _____'
rabbit-NOM
'A/The rabbit _____.'

Puppet 1: hayngbokha-***e ci***-ess-eyo. vs. Puppet 2: hayngbokha-***Ø***-ss-eyo.
happy-INCHO-PFCT-DEC happy-Ø-PFCT-DEC
'***became happy***.' '***was happy***.'
(*target pattern*) (*non-target pattern*)

PS5: Picture 1 Picture 2

Target sentence: Pyel-i _____.
star-NOM
'A/The star _____.'

Puppet 1: twuntwunha-***Ø***-ss-eyo.
fat-Ø-PFCT-DEC
'***was fat***.'
(*non-target pattern*)

vs.

Puppet 2: twungtwungha-***e ci***-ess-eyo.
fat-INCHO-PFCT-DEC
'***became fat***.'
(*target pattern*)

PS6: Picture 1 Picture 2

Target sentence: 'Thokki-uy thel-i pi-ttaymwuney _____'
rabbit-POSS hair-NOM rain-because
'The hair of a/the rabbit _____.'

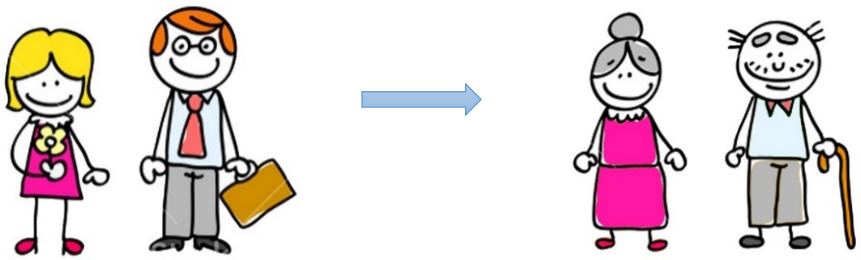
Puppet 1: chwukchwukha-***e ci***-ess-eyo.
wet-INCHO-PFCT-DEC
'***became wet***.'
(*target pattern*)

vs.

Puppet 2: chwukchwukha-***Ø***-ss-eyo.
wet-Ø-PFCT-DEC
'***was wet***.'
(*non-target pattern*)

Condition 2: Inchoative states (INS) +-*Ø* vs. -*e ci* → Expected answer: INS+-*Ø*

INS1: Picture 1 Picture 2

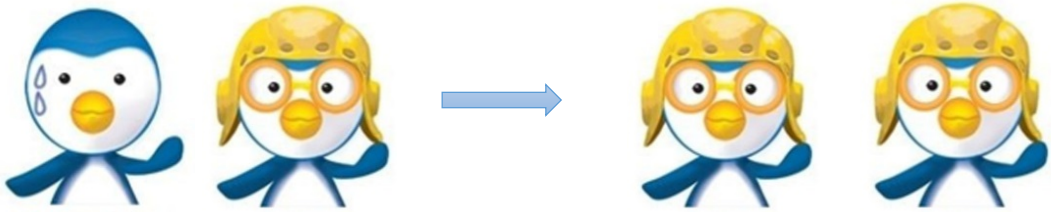


Target sentence: Yeca-wa namca-ka _____.
woman-and man-NOM
'An/The woman and a/the man _____.'

Puppet 1: nulk-***Ø***-ss-eyo.
old-Ø-PFCT-DEC
'***became old***.'
(*target pattern*)

vs. Puppet 2: nulk-***e ci***-ess-eyo.
old-INCHO-PFCT-DEC
'***became became old***.'
(*non-target pattern*)

INS2: Picture 1 Picture 2

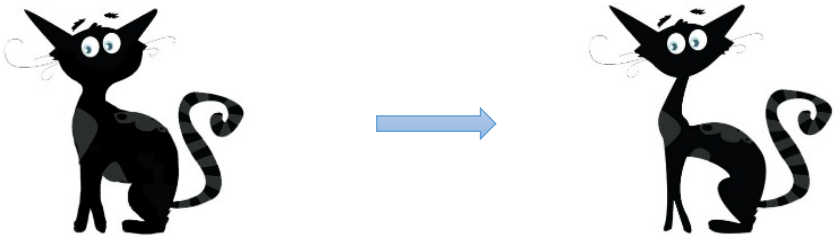


Target sentence: 'Pheynkwuyn-i Ppororo-lul _____'
penguin-NOM Ppororo-ACC
'A/the penguin _____ Ppororo.'

Puppet 1: talm-***e ci***-ess-eyo.
alike-INCHO-PFCT-DEC
'***became became alike***.'
(*non-target pattern*)

vs. Puppet 2: talm-***Ø***-ss-eyo.
alike-Ø-PFCT-DEC
'***became alike***.'
(*target pattern*)

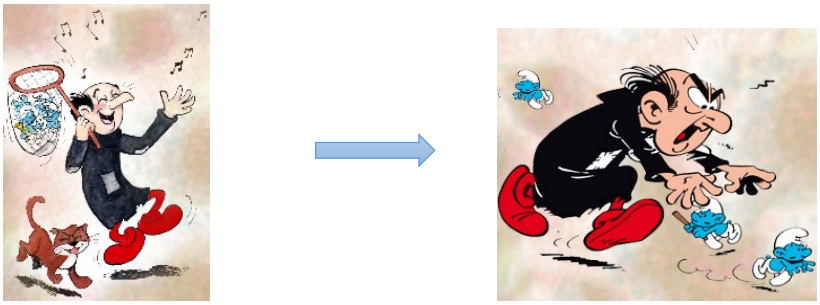
INS3: Picture 1 Picture 2



Target sentence: Koyangi-ka _____.
cat-NOM
'An/The cat _____.'

Puppet 1: malu-***Ø***-ss-eyo. vs. Puppet 2: malu-***e ci***-ess-eyo.
thin-Ø-PFCT-DEC thin-INCHO-PFCT-DEC
'***became thin***.' '***became became thin***.'
(*target pattern*) (*non-target pattern*)

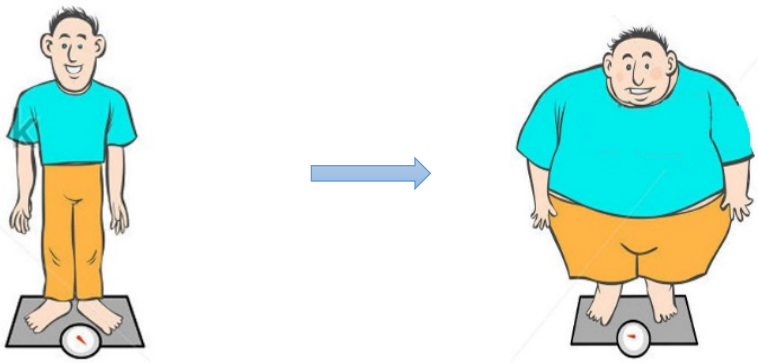
INS4: Picture 1 Picture 2



Target sentence: 'Kakameyl-i _____'
Gargamel-NOM
'Gargamel _____.'

Puppet 1: hwana-***e ci***-ess-eyo. vs. Puppet 2: hwana-***Ø***-ss-eyo.
angry-INCHO-PFCT-DEC angry-Ø-PFCT-DEC
'***became became angry***.' '***became angry***.'
(*non-target pattern*) (*target pattern*)

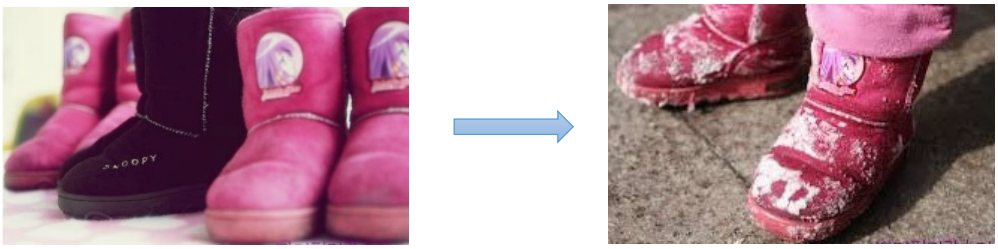
INS5: Picture 1 Picture 2



Target sentence: Namca-ka _____.
man-NOM
'A/The man _____.'

Puppet 1: saljji-***Ø***-ss-eyo. vs. Puppet 2: saljji-***e ci***-ess-eyo.
fat-Ø-PFCT-DEC fat-INCHO-PFCT-DEC
'***became fat***.' '***became became fat***.'
(*target pattern*) (*non-target pattern*)

INS6: Picture 1 Picture 2



Target sentence: 'Sinpal-i nwun-ey _____'
shoes-NOM snow-in
'The shoes _____ in the snow.'

Puppet 1: cec-***e ci***-ess-eyo. vs. Puppet 2: cec-***Ø***-ss-eyo.
wet-INCHO-PFCT-DEC wet-Ø-PFCT-DEC
'***became became wet***.' '***became wet***.'
(*non-target pattern*) (*target pattern*)

Chapter 5 Children's Knowledge of Two Types of States in Temporal Contexts

5.1 Introduction

In the previous chapter, we discussed a preference task designed to investigate whether (deadjectival) inchoative states can be distinguished from pure states in Korean child language with respect to the presence of the BECOME event in their meaning. The results of the task revealed that, by about 6 years of age, Korean children (i) know that (deadjectival) inchoative states and pure states do not have the same meaning. That is, they know that a pure state lacks the BECOME event in its semantics, while a (deadjectival) inchoative state contains the BECOME event in its representation; (ii) know the morphological rule of *-e ci* deriving an inchoative meaning of a predicate and as such, can generate the morphologically-derived form for pure states which are lexically stative; (iii) are aware of the morphological blocking principle and as such, can generate the lexically-specified form for (deadjectival) inchoative states which are lexically inchoative (see Section 4.3.3, Chapter 4). However, the results did not allow us to conclude whether younger children have the adult-like meaning of (deadjectival) inchoative states since the target form for (degree) inchoative states in the inchoativity paradigm was the bare form, itself, in the task at hand.

To investigate further whether Korean children can make a clear distinction between (deadjectival) inchoative states and pure states, we designed another experiment which I will discuss in this chapter. Recall that a (deadjectival) inchoative state describes a durative eventuality together with the transition into the described property, while a pure state describes a durative eventuality without such inherent transition or change. In this chapter, we seek to answer to this question of whether Korean children aged from 4 to 6 can distinguish (deadjectival) inchoative states from pure states with a comprehension task and a follow-up production task. Specifically, the issue is whether Korean children can assign different temporal readings to these two classes of states combined with the perfect marker *-ess*. The comprehension results and the production data provide further empirical evidence for the existence of (deadjectival) inchoative states in Korean as a class distinct from stative predicates.

This chapter is organized as follows. Section 5.2 briefly reviews the different behavior of the two classes of states with respect to the perfect marker *-ess*, as the key property under investigation to understand children's relevant knowledge. Section 5.3 presents a pilot study that will serve as the basis of the main experiment. Then, Section 5.4 reports the main experiment, that is, the comprehension task and the follow-up production task as well as the results. Finally, Section 5.5 concludes this chapter.

5.2 Target property of experiment: perfect marker *-ess*

In Chapter 2, we identified a set of diagnostics that allow us to distinguish pure states from (deadjectival) inchoative states in Korean. In this section, I deal with one of these diagnostics in more detail, namely combination with the perfect marker *-ess*. After setting the stage for the experimental design by presenting the target property, I then discuss the pilot study and the main experiment testing Korean children's knowledge of *-ess* with pure states and (deadjectival) inchoative states in the following sections.

5.2.1 Different temporal readings of *-ess*

As briefly discussed earlier (cf. Section 2.2.4 in Chapter 2), the perfect marker *-ess* gives rise to either an anterior or a simultaneous readings relative to the utterance time. Assuming that the distribution of the temporal readings of *-ess* is determined by the event structure of predicates with which it occurs, I demonstrated that (i) the perfect marker *-ess* on an activity (i.e. a predicate describing an eventuality without an inherent endpoint) can yield an anterior interpretation where the eventuality described by the predicate occurs prior to the utterance time, as in (1a); (ii) the perfect marker *-ess* on an achievement (i.e. a predicate describing an eventuality with an inherent endpoint) can yield a simultaneous interpretation where the result state of the eventuality described by the predicate obtains at the utterance time, as in (1b).

(1) a. Sue-ka ecey/*cikum Juno-wa wuntongcang-eyse nol-**ass**-ta.
Sue-NOM yesterday/now Juno-with playground-LOC play-PFCT-DEC
'Sue played with Juno on the playground yesterday.'
*'Sue is playing with Juno on the playground now.' [activity]

b. Sue-ka ecey/cikum khep-ul kkway-**ess**-ta.
Sue-NOM yesterday/now cup-ACC break-PFCT-DEC
'Sue broke/has broken a/the cup yesterday/now.'
(entailment: *The cup is broken now*.) [achievement]

When we examined the temporal readings of stative predicates combined with the perfect marker *-ess*, we noticed an interesting pattern depending on the type of state to which *-ess* is affixed: First, with a pure state, it yields an anterior reading where the described eventuality occurs prior to the utterance time, but does not persist until the utterance time. To illustrate, consider the following examples.

(2) a. Sue-ka **caknyeney/*cikum**-(un) nalssinha-**ess**-ta.
Sue-NOM last.year/now-TOP thin-PFCT-DEC
'Sue was thin last year.'
*'Sue is thin now.' [pure state: anterior reading]

b. Sue-ka **cikum/*caknyeney**-(un) nalssinha-**Ø**-ta.
Sue-NOM now/last.year-(TOP) thin-NON.PAST-DEC
'Sue is thin now.'
*'Sue was thin last year.' [pure state: simultaneous reading]

As shown in (2a), the perfect marker *-ess* affixed to the pure state predicate *nalssinha* 'thin' yields an anterior interpretation where the described eventuality of Sue's being thin is construed as having occurred prior to the utterance time, and no longer holds at the utterance time[25]. As such, it can be modified by past time adverbials such as *caknyeney* 'last year', but not by present time adverbials such as *cikum* 'now'. Note that the simultaneous reading of pure states is expressed by the null

[25] Note that the double form *-essess* affixed to pure states patterns with the perfect marker *-ess* in that it yields an anterior reading of pure states, as shown in (i).

(i) Sue-ka **caknyeney/*cikum**-(un) nalssinha-**essess**-ta.
Sue-NOM last.year/now-TOP thin-PAST-DEC
'Sue was thin last year.'
*'Sue is thin now.'

non-past form -*Ø*, as shown in (2b). In (2b), the bare form of the pure state predicate *nalssinha* 'thin' describes that the eventuality of Sue's being thin holds at utterance time (see Section 2.2.2.1, Chapter 2 for related discussion). As such, it allows modification by present time adverbials, but not by past time adverbials.

In contrast, with a (deadjectival) inchoative state, it yields a simultaneous reading where the described eventuality obtains at the utterance time, as shown in (3a).

(3) a. Sue-ka **cikum/*caknyeney**-(un) malu-**ess**-ta.
Sue-NOM now/last.year-TOP thin-PFCT-DEC
'Sue is thin now.'
*'Sue was thin last year.' [inchoative state: simultaneous reading]

b. Sue-ka **caknyeney/*cikum**-(un) malu-**essess**-ta.
Sue-NOM last.year/now-TOP thin-PAST.PFCT-DEC
'Sue was thin last year.'
*'Sue is thin now.' [inchoative state: anterior reading]

In (3a), -*ess* affixed to the inchoative state predicate *malu* 'thin' describes that the eventuality of Sue's being thin holds at the utterance time and thus, allows modification by present time adverbials, but not by past time adverbials. Note that the anterior reading of (deadjectival) inchoative states is expressed by the double form -*essess*[26] as illustrated in (3b). In (3b), -*essess* affixed to the inchoative state predicate *malu* 'thin' tells us that the eventuality of Sue's being thin held prior to the utterance time, but no longer holds at the utterance time. As such, it allows modification by past time adverbials, but not by present time adverbials.

This striking contrast given in (2-3) provides crucial support for the claim that (deadjectival) inchoative states do not belong to the class of pure states but rather, constitute a class distinct of predicates, as I argued previously (cf. Section 2.2.3, Chapter 2 for more details). Given this key

[26] There is no consensus among Korean linguists concerning the double form -*essess*. In the literature, it is analyzed as (i) a pluperfect with the meaning of 'perfect-in-the-past' (H.-B. Choi 1983, S.-O. Sohn 1995, Han 1996, Lee 2011, among many others), (ii) a simple past tense (Chung 1995, 2005) or (iii) a past tense of discontinuity (Nam 1978, 1996, C. Lee 1985). Here, I will not discuss the different analyses of -*essess*, since this is beyond the purpose of this thesis. To capture the contrast that we are interested in (i.e. the contrast between pure states and inchoative states), I will simply assume, following Choi (1983) and others, that -*essess* is a past perfect marker.

property, let us now turn to the issue of Korean children's knowledge of the correlation between the two classes of states and the meaning of the perfect marker -*ess*. In what follows, I first present a pilot study investigating whether Korean children know that -*ess* yields the different temporal readings according to the aspectual properties of the predicates to which it is affixed. Then, I discuss our main experiment examining Korean children's ability to assign the different temporal interpretations of -*ess* when combining with pure states vs. (deadjectival) inchoative states.

5.3 Pilot study: comprehension task

In 2009, I ran a pilot study to investigate whether Korean children are aware of the different temporal readings of the perfect marker -*ess* according to the aspectual properties of the predicates with which it occurs.

5.3.1 Participants

In the pilot study, 11 children (ages ranging from 6;3 to 7;10 with a mean of 6;7) and 10 adults (ages ranging from 24 to 45 with a mean of 34;5) as the control group were tested.

5.3.2 Procedure

A Truth Value Judgment Task (henceforth TVJT; Crain and Thornton 1998 among many others) was carried out to investigate whether or not Korean children know that the meaning of the perfect marker -*ess* is related to the aspectual properties of the predicates to which it is affixed. Participants watched short videos with animated characters on a laptop computer. After each story, a puppet named *Simba* uttered the test sentence with the perfect marker -*ess* and then, participants were asked to judge whether or not *Simba*'s statement was a *good* or *bad* description of what happened in the story.

5.3.3 Materials

Participants were given two experimental contexts as illustrated in (4).

(4) a. context where the eventuality described by the predicate happened prior to the utterance time, making the *anterior* reading true (henceforth ANT)

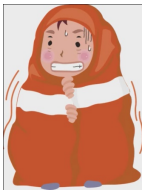
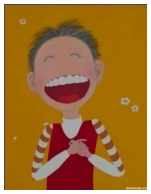
b. context where the eventuality described by the predicate or its result state holds at utterance time, making the *simultaneous* reading true (henceforth SIM)

In each context, two types of predicates were tested: atelic predicates (*activities, pure states*) vs. telic predicates[27] (*achievements, inchoative states*). In the pilot study, I considered inchoative states as a kind of telic predicates since when they are combined with the perfect marker *-ess*, they behave like achievements, i.e., they yield a simultaneous reading. However, as we saw in Section 3.2, Chapter 3, inchoative states do not accurately pattern with achievements with respect to other diagnostics. Recall some main differences. Unlike achievements, inchoative states describe durative eventualities, thus allowing modification by *for x time* adverbials. Furthermore, unlike achievements, (deadjectival) inchoative states describe eventualities that exhibit gradability, thus allowing degree modification such as *very*. Therefore, (deadjectival) inchoative states are distinguishable from typical telic predicates. The issue of gradability which, by hypothesis, is the relevant property distinguishing (deadjectival) inchoative states from achievements was experimentally investigated with a grammaticality judgment task to which Chapter 6 will be entirely devoted.

Each participant received sixteen target items (four items per predicate type). Figure 22 gives examples of these two experimental contexts translated in English.

[27] To simplify the experimental protocol, I did not include accomplishments because the prediction for this class is the same as for the other telic predicates under consideration, namely achievements.

Figure 22. Pilot Study: Experimental Contexts

ANT context with atelic predicates   Smurf is brushing his teeth. He finished brushing his teeth. And now, he is playing his trumpet.	Experimenter: *What happened in the story?* Test sentence: "Smurf brush-*ess* his teeth." ('Smurf brushed his teeth.') Expected answer: Yes
ANT context with telic predicates   Sami caught a cold because she was outside under the snow. Mom gave her medicine. And now, she got over her cold.	Experimenter: *What happened in the story?* Test sentence: "Sami catch-*ess* a cold." ('Sami caught a cold and is sick now.') Expected answer: No
SIM context with atelic predicates   Snoopy is hungry. He is searching in the basket for something to eat. But he does not find anything inside. He goes to sleep because he is so hungry.	Experimenter: *What happened in the story?* Test sentence: "Snoopy be-*ess* hungry." ('Snoopy was hungry.') Expected answer: No
SIM context with telic predicates   Sami planted seeds in the flowerpot. They began to sprout. She gave them plenty of water and the flowers have grown well.	Experimenter: *What happened in the story?* Test sentence: "Flowers grow-*ess* well." ('Flowers have grown well.') Expected answer: Yes

Recall that the perfect marker -*ess* yields an anterior reading with atelic predicates and a simultaneous reading with telic predicates. Assuming that children know the correlation between the perfect marker -*ess* and the aspectual properties of the predicates to which it is affixed, we make

the following predictions: (i) In the *anterior reading* context, they will accept *-ess* with atelic predicates, but reject it with telic predicates; (ii) In the *simultaneous reading* context, they will accept *-ess* with telic predicates, but reject it with atelic predicates. The predictions and the experimental conditions are summarized in Table 11.

Table 11. Pilot study: Predictions and Experimental Conditions

Telicity	Aspectual classes	*ANT reading context*		*SIM reading context*	
		# of items	expected answer	# of items	expected answer
Atelic	Activities	2	yes	2	no
	Pure states	2	yes	2	no
Telic	Inchoative states	2	no	2	yes
	Achievements	2	no	2	yes

5.3.4 Results & Discussion

The results of the pilot study are given in Table 12.

Table 12. Pilot study: Results (% of *yes*-answers)

Age	Predicate type	*ANT* reading	*SIM* reading
6-year-olds (n=5)	Activities	100%	0%
	Pure states	100%	0%
	Inchoative states	40%	100%
	Achievements	0%	100%
7-year-olds (n=6)	Activities	100%	0%
	Pure states	100%	0%
	Inchoative states	0%	100%
	Achievements	0%	100%
Adults (n=10)	Activities	100%	10%
	Pure states	100%	10%
	Inchoative states	0%	100%
	Achievements	0%	100%

As we can see in Table 12 above, in the context making the anterior reading true, children accepted atelic predicates (activities and pure states) and rejected telic predicates (inchoative states and achievements), as expected. Moreover, in the context making the simultaneous reading true, they accepted only telic predicates and rejected atelic predicates, as predicted. Thus, our predictions are confirmed by the results, i.e., children know the correlation between the perfect marker *-ess* and the aspectual properties of the predicates to which it is affixed.

In addition, our study revealed an interesting pattern. Some 6-year-olds (2 out of 5 children) assigned an anterior reading to inchoative states (40% of *yes-answers*), which was not expected. This suggests that these children have some difficulties with inchoative states. While they understand that the perfect maker *-ess* on inchoative states yields a simultaneous reading, they still allow an anterior reading with these predicates. The question that arises is as follows: Is this pattern purely accidental or does it reveal a real problem with inchoative states? We addressed this question in the main experiment which focuses precisely on the distinction between pure states and inchoative states.

5.4 Experiment: Comprehension task & Follow-up production task

On the basis of the pilot study presented in the previous section, we designed a new experiment which investigates children's knowledge of the distinction between pure states and (deadjectival) inchoative states in the anterior and the simultaneous temporal contexts. The main experiment includes a comprehension task and a follow-up production task.

5.4.1 Research questions and predictions

Recall that the perfect marker *-ess* with a pure state yields an anterior reading (ANT) where the described eventuality occurs prior to the utterance time but no longer holds at the utterance time, whereas *-ess* with a (deadjectival) inchoative state yields a simultaneous reading (SIM) where the described eventuality holds at the utterance time.

The aim of this experiment was to examine whether Korean children distinguish pure states from (deadjectival) inchoative states in the relevant temporal contexts, that is, whether children know that the combination between the perfect marker *-ess* and these two types of states yields different temporal readings. The research questions are summarized in (5).

(5) **Research questions:**

a. Do Korean children make a distinction between pure states (PS) and (deadjectival) inchoative states (INS) in terms of the respective temporal interpretation?

b. Do they know the meaning of the perfect marker -*ess*, or at least the fact that -*ess* yields different temporal readings?

We expect that if children know the difference between the two classes of states (PS vs. INS) and the meaning of the perfect marker -*ess*, then they will distinguish the different temporal readings assigned to each of the two classes of states. Specifically, in comprehension, they will accept an anterior reading, but reject a simultaneous reading with pure states combined with -*ess*. In contrast, they will accept a simultaneous reading, but reject an anterior reading with (deadjectival) inchoative states combined with -*ess*. If children do not know the difference between pure states and (deadjectival) inchoative states and the meaning of -*ess*, they will fail to assign the correct respective temporal readings to pure states vs. (deadjectival) inchoative states. These predictions for comprehension are summarized in Table 13.

Table 13. TVJT: Predictions for comprehension

	PS+-*ess*	INS+-*ess*
Anterior reading	Yes	No
Simultaneous reading	No	Yes

In production, to describe an anterior temporal context, children are expected to volunteer pure states combined with the perfect marker -*ess* (or alternatively the double form -*essess*), but (deadjectival) inchoative states combined with only the double form -*essess*. To describe a simultaneous temporal context, children are expected to volunteer pure states combined with the null non-past form -*Ø* (i.e. the bare form of pure states), but (deadjectival) inchoative states combined with the perfect marker -*ess*. These predictions for production are summarized in Table 14 (cf. (2-3)).

Table 14. TVJT: Predictions for production

	PS	INS
Anterior context	*-ess* (or *-essess*)	*-essess*
Simultaneous context	*-Ø*	*-ess*

If children do not know the aspectual differences between pure states and (deadjectival) inchoative states and the meaning of *-ess*, they will fail to volunteer the relevant temporal markers in production.

5.4.2 Method

5.4.2.1 Participants

The study involved thirty (n=30) Korean children in total: ten 4-year-olds (from 4;3 to 4;8 with a mean of 4;7), ten 5-year-olds (from 5;0 to 5;7 with a mean of 5;3) and ten 6-year-olds (from 6;0 to 6;11 with a mean of 6;4) and twenty (n=20) Korean adults (from 24 to 38 with a mean of 30;7) as the control group. All children and adults who participated in this task were native Korean speakers. The experiment was run in the Seoul area kindergarten[28].

5.4.2.2 Procedure

To address the research questions given in (5), we used a TVJT. As is well-known, the TVJT methodology is the most appropriate method to examine whether or not children allow certain interpretations. The task was conducted by a single experimenter using a laptop computer. At the beginning of the experiment, children were presented a puppet named *Sandy* and were told that the puppet did not speak Korean very well and he sometimes made mistakes. In the main experiment, a puppet was used to utter the test statement instead of an adult experimenter in order to limit the potential effect of the Principle of Charity, that is, children's tendency to answer *yes*, especially they can also be reluctant to contradict an adult, particularly an unfamiliar experimenter.

Children were tested individually in a separate room. They were first given two warm-up items to familiarize them with the task followed by the experimental items. Children watched stories acted out by means of an animated PowerPoint slide show on a laptop screen. At the end of

[28] I am very grateful to the *Hanul* kindergarten in Seoul for granting me permission to conduct this experiment.

each story, the puppet made a statement in answer to the lead-in question asked by the experimenter (see Figure 2-5). The participants' task was to judge whether the puppet's statement was true or false in the given context. They were also asked to volunteer a target sentence to describe the given context. This follow-up elicited production task was done to ascertain whether the comprehension results correspond with the production data.

The experimental session lasted approximately twenty five minutes, but the children were reminded that they could go back to their classroom whenever they wanted to. The responses were written on an answer sheet as well as audio-taped.

5.4.2.3 Materials

Four experimental conditions were constructed in a 2x2 design with predicate type (*pure states* vs. *(deadjectival) inchoative states*) and context type (*anterior* vs. *simultaneous*) as factors. In the anterior context where the target eventuality occurs prior to the utterance time which is generally the reference time in a simple clause, and is no longer true at the utterance time, both pure states and (deadjectival) inchoative states were proposed. Likewise, in the simultaneous context where the target eventuality holds at the utterance time, the same two types of states were proposed. The experimental conditions are summarized in Table 15.

Table 15. TVJT: Experimental Conditions

Condition 1:	Anterior context + Pure states
Condition 2:	Anterior context + Inchoative states
Condition 3:	Simultaneous context + Pure states
Condition 4:	Simultaneous context + Inchoative states

Recall our predictions. If children know the aspectual differences between the two types of states (PS vs. INS) and the meaning of the perfect marker *-ess*, then they will assign an anterior reading to pure states and a simultaneous reading to (deadjectival) inchoative states.

We based the stories designed for the sixteen target items on eight different pure state predicates and eight different inchoative state predicates listed in Table 16. As was done for the preference task discussed in Chapter 4, we created test materials by making use of computer animation in Microsoft PowerPoint, instead of using two-dimensional images or videos. Note that

one of the strengths of animated pictures is that we can easily draw children's attention to the experiment. For each scenario, pictures were created and incorporated into PowerPoint slides and arranged in layers for the animation. Thus, each story was composed of a narrated text and depicted eventualities including a target eventuality which either has already taken place prior to the utterance time or holds at utterance time. The test sentences were pre-recorded and the resulting sound files were synchronized with animated pictures of the puppet.

Table 16. TVJT: Experimental Items

Pure states	**Inchoative states**
noph 'high'	*hwana* 'angry'
ccalp 'short'	*talm* 'alike'
aphu 'sick'	*malu* 'thin'
cak 'small'	*cec* 'moist/wet'
pikonha 'tired'	*ssek* 'rotten'
kkaykkusha 'clean'	*nulk* 'old'
(bayka) kophu 'hungry'	*cala* 'grown'
coh 'good'	*saljji* 'fat'

Each participant was presented with sixteen target items (four items per condition) interspersed with sixteen distractors and control items, for a total of thirty two items. The role of the control items was to check whether children understood the task and were able to correctly judge the truth-value of a sentence in the given context by volunteering *yes* or *no* responses. Participants who failed more than two control items were excluded from the experiment. Test items, distractors and control items were presented in a random order, which was kept constant across participants. The number of correct/incorrect answers given by the puppet was balanced across items. Figure 23-26 give examples of our experimental stimuli translated into English. The full list of the original items used in the experiment is included in Appendix 2.

Let us first consider two conditions under the anterior context. In conditions 1 and 2, both pure states and (deadjectival) inchoative states respectively were proposed in the anterior temporal context where the target eventuality described by the given predicate occurs prior to the utterance time, but no longer holds at the utterance time.

Figure 23. **Condition 1 of TVJT**: Pure state+-*ess* / anterior context

Scenario: Sue caught a cold. Sue is very sick with fever and her mother worries about Sue. So, she takes Sue to hospital to see the doctor. In the hospital, Sue got an injection and took medicine. The next morning, Sue got over her cold and she is feeling well.

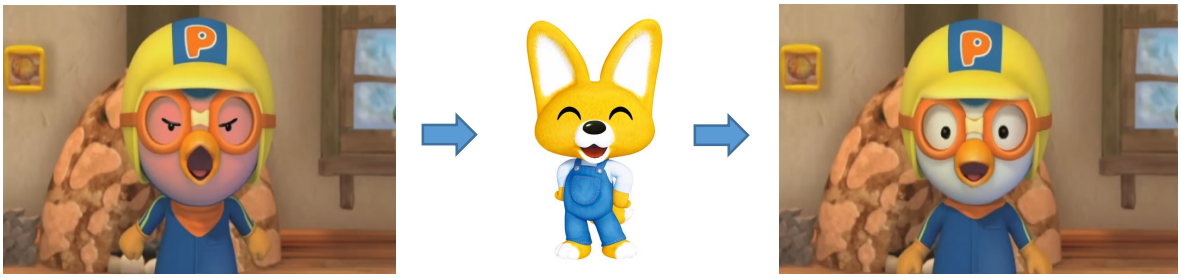
Lead-in question: How was Sue just before?

Test sentence: Sue-ka ***aphu-ess***-eyo.
S-NOM sick-PFCT-DECL
'Sue was sick.'

Expected answer: **Yes**

The story given in Figure 23 illustrates the anterior context where the target state of *Sue's being sick* happened and is over prior to the reference time where the puppet makes a statement. The puppet's statement with the pure state predicate *aphu* 'sick' combined with *-ess* yields an anterior reading, which is true in this context. If children have acquired the perfect marker *-ess* and the meaning of pure states, they will accept the test sentence.

Figure 24. **Condition 2 of TVJT**: Inchoative state+-*ess* / anterior context



Scenario: Pororo is very angry. What could we do to calm down Pororo? Look! Eddy who is Pororo's best friend came to play with Pororo. Eddy says: "Hey, Pororo! Why are you so angry? Calm down and let's play a game." Now, Pororo is fine. And this is thanks to Eddy!

Lead-in question: How was Pororo just before?

Test sentence: Pororo-ka ***hwana-ss***-eyo.
P-NOM angry-PFCT-DECL
'Pororo is angry.'

Expected answer: **No**

Figure 24 provides the anterior context where the target state of *Pororo's being angry* described by the inchoative state predicate *hwana* 'angry' happened prior to the utterance time, but no longer holds at utterance time. However, the puppet's statement with the inchoative state predicate *hwana* 'angry' combined with the perfect marker *-ess* gives rise to a result state reading where the 'angriness' obtains at the utterance time. If children know the perfect marker *-ess* and the meaning of (deadjectival) inchoative states, they will reject the test sentence in this context.

Let us now turn to two conditions under the simultaneous context. In conditions 3 and 4, both pure states and (deadjectival) inchoative states respectively were proposed in the simultaneous temporal context where the target eventuality described by the given predicate is on-going at the utterance time.

Figure 25. **Condition 3 of TVJT**: Pure state+-*ess* / simultaneous context

Scenario: Juno likes to play with his friends, painting with his hands. Juno has paint on his hands and makes handprint on a paper. Juno wants to show the handprint paper to his mom. But, look! His hands are too dirty. Juno goes to the bathroom and washes his hands with soap and water. Now, his hands are clean.

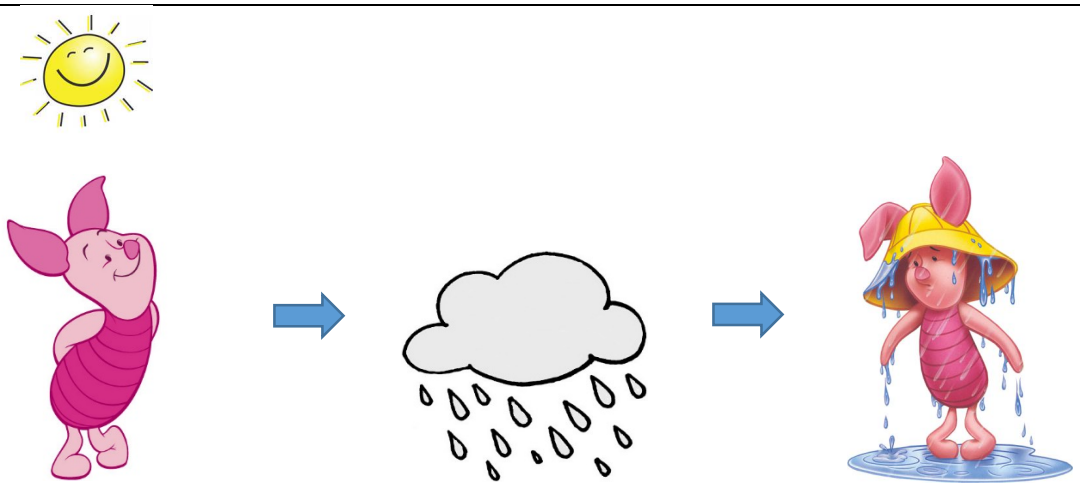
Lead-in question: How are Juno's hands now?

Test sentence: Juno-uy son-i ***kkaykkuha-ess***-eyo.
J-GEN hand-NOM clean-PFCT-DECL
'Juno's hands were clean.'

Expected answer: **No**

Figure 25 illustrates the simultaneous context where the target state of *Juno's hands being clean* obtains at the utterance time. However, the puppet's statement including the pure state predicate *kkaykkusha* 'clean' combined with the perfect marker *-ess* only yields an anterior reading where the target state held prior to the utterance time, which is false in a result state context. If children know the meaning of *-ess* and the aspectual properties of pure states, they will reject the test sentence in this context.

Figure 26. **Condition 4 of TVJT**: Inchoative state+-*ess* / simultaneous context



Scenario: The weather is very nice today. Piglet who likes sunlight goes out and takes a walk. Suddenly, the sky is filled with rain clouds. It is raining! Piglet didn't bring his umbrella. So, he gets all wet in the rain.

Lead-in question: How is Piglet now?

Test sentence: Akitoeci-ka phi-ey ***cec-ess***-eyo.
Piglet-NOM rain-in wet-PFCT-DECL
'Piglet is wet in the rain.'

Expected answer: **Yes**

Figure 26 illustrates the simultaneous context where the target state of *Piglet's being wet in the rain* is on-going at the utterance time. The puppet's statement including the inchoative state predicate *cec* 'wet' combined with the perfect marker *-ess* is true in this context. Thus, children should accept the test sentence, if they know the meaning of *-ess* and the aspectual properties of (deadjectival) inchoative states.

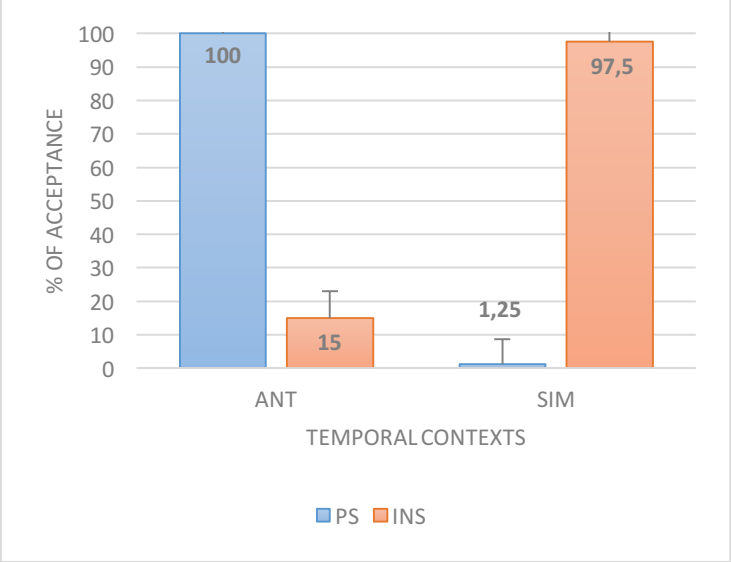
5.4.3 Comprehension results

This section presents the results of the comprehension task. The dependent variable in the following analyses was the percentage of acceptance of the puppet's statements. All participants performed well on the control items; no participants were excluded from our analysis.

5.4.3.1 Results for the adult control group

Let us first consider the results for the adult control group provided in Figure 27 below.

Figure 27. TVJT: Average acceptance by Korean adults (n=20)



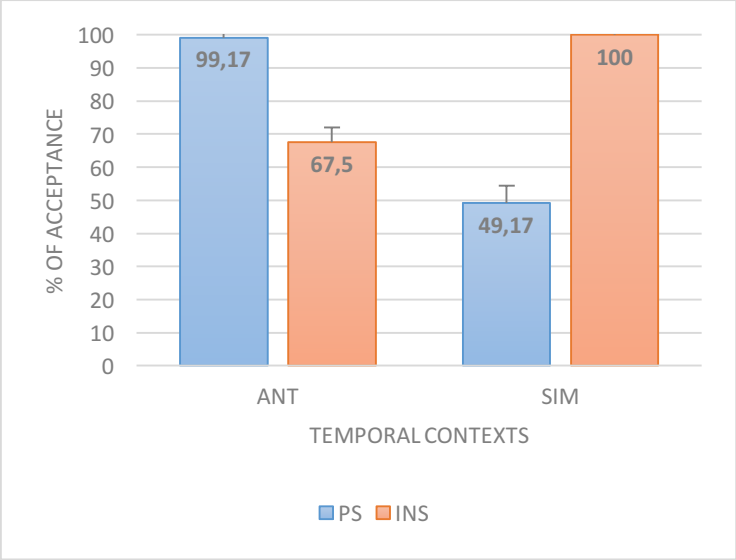
Korean adults assigned the anterior reading to pure states and the simultaneous reading to (deadjectival) inchoative states, as expected. That is, they correctly accepted the anterior context with pure states (100% of acceptance) and rejected it with (deadjectival) inchoative states (15% of acceptance). Likewise, they accepted the simultaneous context with (deadjectival) inchoative states (97.5% of acceptance) and rejected it with pure states (1.25% of acceptance), as predicted. The paired-samples t-test revealed that Korean adults significantly distinguished pure states from (deadjectival) inchoative states in both the anterior context ($t(19) = 12.350$, $p < .001$) and the simultaneous context ($t(19) = -35.184$, $p < .001$).

With the expected behavior of the control group in hand, let us now consider the Korean children's results.

5.4.3.2 Overall results

Recall our predictions. If children know the aspectual difference between the two types of states (PS vs. (deadjectival) INS) together with the meaning of the perfect marker *-ess*, then they will accept pure states in the anterior context and (deadjectival) inchoative states in the simultaneous context. If that is the case, they will also reject pure states in the simultaneous context and (deadjectival) inchoative states in the anterior context. Figure 28 below presents the results for the Korean children.

Figure 28. TVJT: Average acceptance by Korean children (n=30)



Overall, children, just like adults, accepted the anterior context with pure states (99.17% of acceptance) and the simultaneous context with (deadjectival) inchoative states (100% of acceptance). However, unlike adults, nearly half of the children also accepted the simultaneous context with pure states (49.17% of acceptance) and the anterior context with (deadjectival) inchoative states (67.50% of acceptance). Nevertheless, paired-samples t-tests revealed that children made a significant difference between pure states and (deadjectival) inchoative states in both the anterior context ($t(29) = 4.032$, $p < .001$) and the simultaneous context ($t(29) = -6.220$, $p < .001$).

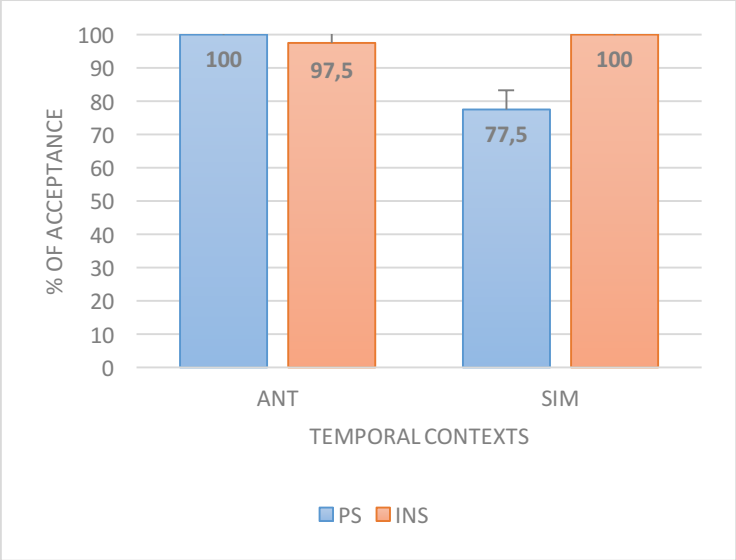
Then the question that arises is: why did children unexpectedly accept pure states in the simultaneous context and (deadjectival) inchoative states in the anterior context? In fact, the

binomial analyses results showed that children's unexpected acceptance of pure states in the simultaneous context (49.17% of acceptance) was not different from chance (p = .927), while that of (deadjectival) inchoative states in the anterior context (67.50% of acceptance) was significantly different from chance (p < .001). These unexpected findings could be either because children have a problem with the meaning of the perfect marker *-ess*, or because they have a problem with the distinction between pure states and (deadjectival) inchoative states, or both. We will come back to this issue in Section 5.4.5 where I provide an explanation for the unexpected performance. In the next section, we break down the results by age groups to investigate whether there is an effect of age in children's adult-like and non-adult-like behaviors.

5.4.3.3 Results by age groups

The results by age groups are provided in Figure 29-31 below.

Figure 29. TVJT: Average acceptance by 4-year-olds (n=10)



First, as shown in Figure 29, 4-year-olds did not show a similar pattern to the adult control group, in that they generally accepted the puppet's statements regardless of predicate type (*pure states* vs. *(deadjectival) inchoative states*) and context type (*anterior* vs. *simultaneous* contexts). Specifically, they accepted the anterior context with both pure states (100% of acceptance) and (deadjectival) inchoative states (97.5% of acceptance), which was unexpected. Likewise, they

accepted the simultaneous context with (deadjectival) inchoative states (100% of acceptance), but also with pure states (82.5% of acceptance), which was not expected, either. These high acceptance rates suggest that 4-year-olds are not sensitive to the different temporal readings of *-ess* on pure states and (deadjectival) inchoative states. The statistical analyses revealed that 4-year-olds did not make a significant distinction between pure states and (deadjectival) inchoative states in both the anterior context ($t(9) = 1.000$, $p = .343$) and the simultaneous context ($t(9) = -2.077$, $p = .068$).

Figure 30. TVJT: Average acceptance by 5-year-olds (n=10)

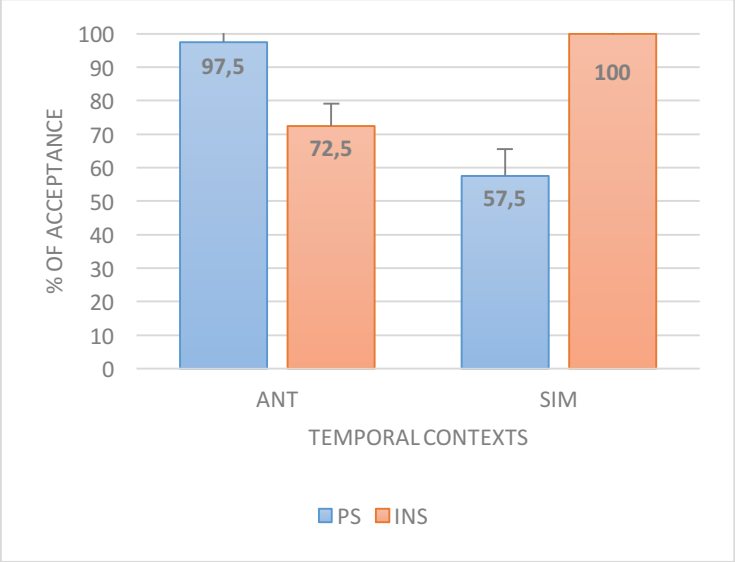


Figure 30 illustrates that 5-year-olds performed better than 4-year-olds, but still did not show the expected target performance. Like adults, 5-year-olds accepted pure states in the anterior context (97.5% of acceptance) and (deadjectival) inchoative states in the simultaneous context (100% of acceptance). However, unlike adults, they also accepted pure states in the simultaneous context (57.5% of acceptance) and (deadjectival) inchoative states in the anterior context (72.5% of acceptance).

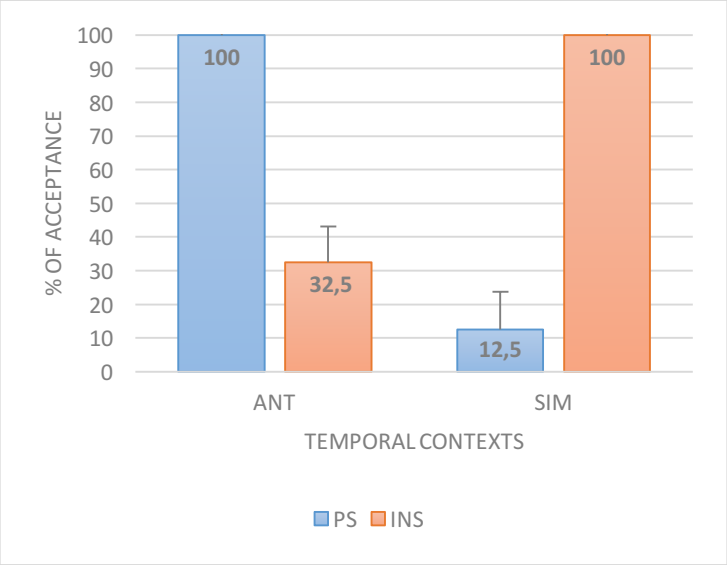
Note that their unexpected acceptance rate of pure states in the simultaneous context (57.5% of acceptance) is lower than that of 4-year-olds (77.5% of acceptance). This relatively lower acceptance indicates that 5-year-olds seem to distinguish pure states from (deadjectival) inchoative states in the simultaneous context. The paired-samples t-test revealed that this is indeed the case:

unlike 4-year-olds, 5-year-olds made a significant distinction between the two types of states in the simultaneous context ($t(9) = -3.157$, $p = .012$).

Likewise, 5-year-olds' unexpected acceptance rate of (deadjectival) inchoative states in the anterior context (72.5% of acceptance) is lower than that of 4-year-olds (97.5% of acceptance), but this acceptance rate per se is still high. In other words, 5-year-olds accepted both pure states and (deadjectival) inchoative states in the anterior context, suggesting that they did not make a significant difference between these two classes of states in this context ($t(9) = 2.236$, $p = .052$).

5-year-olds' behavior can be summarized as follows. They seem to distinguish the two types of states in the simultaneous context, in that they accept pure states and reject (deadjectival) inchoative states in this context. On the other hand, they do not seem to distinguish the two types of states in the anterior context, in that they accept both pure states and (deadjectival) inchoative states in this context.

Figure 31. TVJT: Average acceptance by 6-year-olds (n=10)

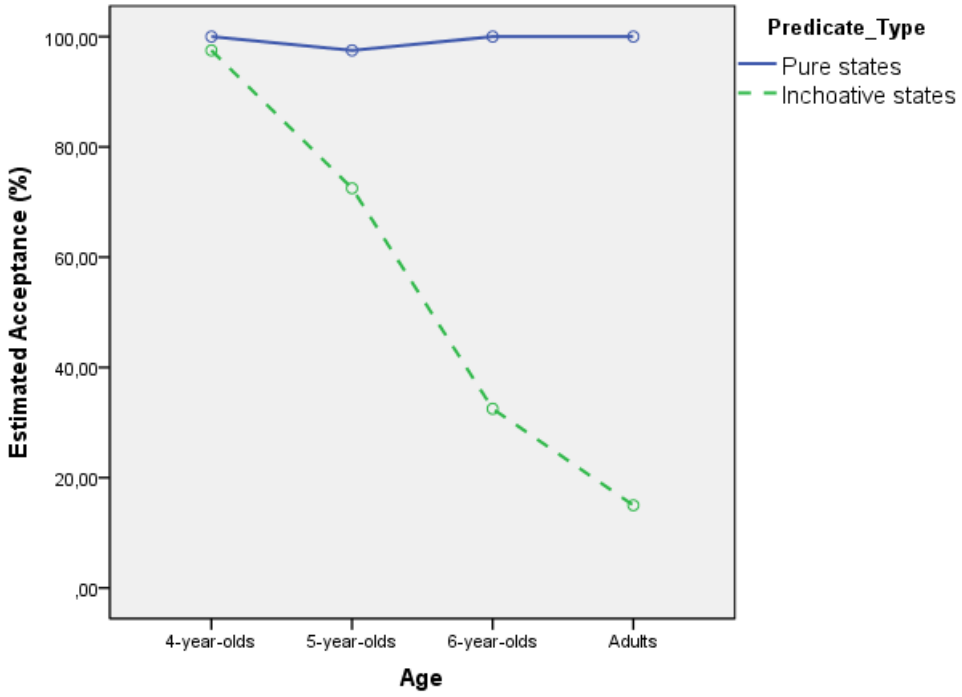


Let us now turn to 6-year-olds, who, as shown in Figure 31, patterned with the adult control group. They correctly accepted pure states (100% of acceptance) in the anterior context and (deadjectival) inchoative states in the simultaneous context (100% of acceptance). On the other hand, they mostly rejected (deadjectival) inchoative states in the anterior context (32.5% of acceptance) and pure states in the simultaneous context (12.5 % of acceptance), as expected. 6-

year-olds significantly distinguished pure states and (deadjectival) inchoative states in both the anterior context ($t(9) = 4.521$, $p = .001$) and the simultaneous context ($t(9) = -8.720$, $p < .001$), like adults.

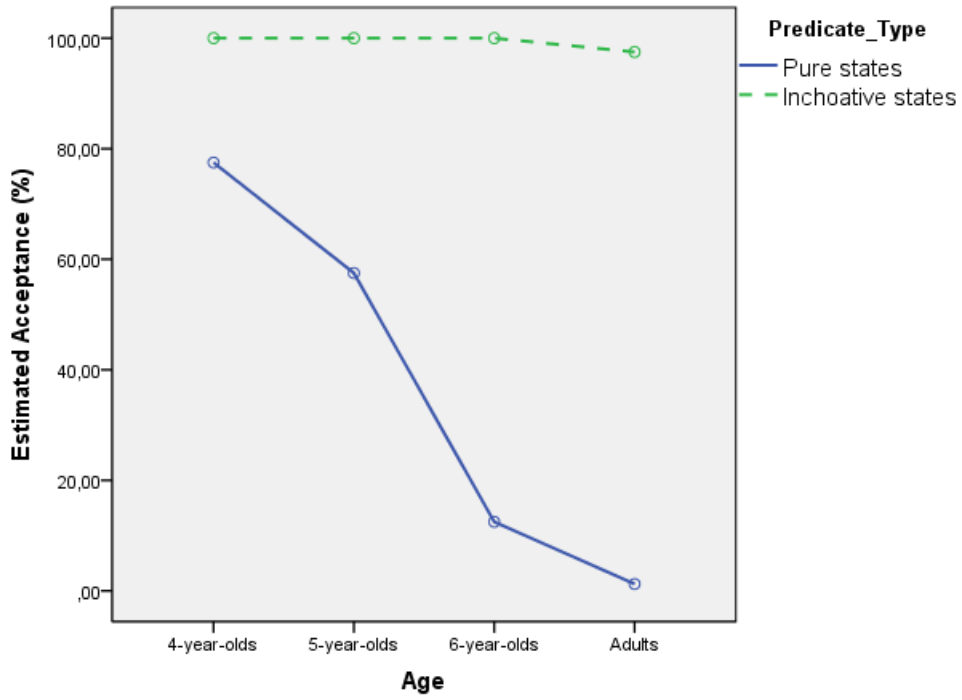
Let us now compare children's performance across age groups to that of the adult control group. A mixed ANOVA was conducted to determine whether there was especially an interaction between context type, predicate type, and age factors on the acceptance rate. The statistical analysis was done with age (4-year-olds vs. 5-year-olds vs. 6-year-olds vs. adult control group) as a between-subjects variable and, context type (anterior vs. simultaneous contexts) and predicate type (pure states vs. (deadjectival) inchoative states) as within-subjects variables. The dependent variable was the percentage of *yes* answers. The ANOVA revealed that there was a statistically significant three-way interaction between context type, predicate type, and age factors ($F(3, 184) = 34.944$, $p < .001$). Figures 32 and 33 below illustrate the interaction between the effects of predicate and age factor on the acceptance rate in each temporal context condition.

Figure 32. TVJT: Estimated Acceptance of PS vs. INS
in the ANT context by age groups



As can be seen in Figure 32 above, in the anterior context condition, pure states lead to higher acceptance rates than (deadjectival) inchoative states.

Figure 33. TVJT: Estimated Acceptance of PS vs. INS
in the SIM context by age groups



On the contrary, in the simultaneous context condition, (deadjectival) inchoative states lead to higher acceptance rates than pure states, as shown in Figure 33 above.

Tukey HSD post-hoc tests showed that while 6-year-olds were significantly adult-like in accepting pure states in the anterior context condition ($p = .561$) and (deadjectival) inchoative states in the simultaneous context condition ($p = .593$), 4-year-olds and 5-year-olds were not significantly adult-like in their performance in both the anterior context ($p < .001$ for 4-year-olds and $p = .001$ for 5-year-olds) and the simultaneous context ($p < .001$ for both 4-year-olds and 5-year-olds) conditions.

Summarizing so far, the overall results showed that Korean children have some difficulties in assigning the relevant temporal readings of the perfect marker *-ess* to pure states vs. (deadjectival) inchoative states. This seems to be the case for 4-year-olds who did not make a significant

distinction between the two types of states in both the anterior context and the simultaneous context, and for 5-year-olds who made a significant difference between the two types of states in the simultaneous context, but not in the anterior context. 6-year-olds, however, behaved like adults. The question now is: how can we explain the unexpected results for 4-year-olds and 5-year-olds? This question can be precisely summarized as in (6).

(6) ***Question 1***: Why did 5-year-olds distinguish the two classes of states in the simultaneous context, but not in the anterior context? Why couldn't they have shown the reverse pattern?

Question 2: Why did 4-year-olds fail to distinguish the two classes of states in both the anterior context and the simultaneous context? Is this unexpected behavior related to a problem of the meaning of *-ess*, or to a problem of the distinction between the two classes of states?

In what follows, I discuss children's production data to investigate whether there is a correlation between the comprehension results and the production data.

5.4.4 Children's production results. 3 patterns of responses: target-like, partially target-like and non-target-like

Following their *yes*/*no* answers to the puppet's statements, children were asked to describe *What happened in the story?*. The purpose of this follow-up question was to determine whether children accepted or rejected the test sentences for the expected reasons. In this section, I particularly present children's production data in relation to the comprehension data discussed in the previous section, in order to achieve a better understanding of Korean children's knowledge of the distinction between the two types of states in the relevant temporal contexts. Figure 34 below summarizes the target-like pattern in comprehension and production.

Figure 34. TVJT: Target-like pattern in comprehension and production

Context:	ANT		SIM	
	PS	INS	PS	INS
Experimental item:	PS+-*ess*	INS+-*ess*	PS+-*ess*	INS+-*ess*
Comprehension:	*yes*	*no*	*no*	*yes*
Production:	-*ess*(-*essess*)	-*essess*	-*Ø*	-*ess*

Recall the predictions for production. If children know the aspectual difference between the two classes of states and the relevant correlation with the perfect marker -*ess*, then they are expected to volunteer different temporal markers with the two classes of states to describe the anterior and the simultaneous contexts. Specifically, to describe an anterior context, they are expected to volunteer pure states combined with the perfect marker -*ess* (the double form -*essess* is also possible) and (deadjectival) inchoative states combined with the double form -*essess* (the simple form -*ess* is not acceptable). To describe a simultaneous context, they are expected to volunteer pure states combined with the null non-past form -*Ø* (i.e. the bare form of pure states), and (deadjectival) inchoative states combined with the perfect marker -*ess*.

In order to see if there is a correlation between children's production data and the comprehension results, I divided the children into three groups according to their behavior. The first group includes children who were target-like in both the comprehension task and the production task, as given in (7).

(7) **Group 1: target-like children**

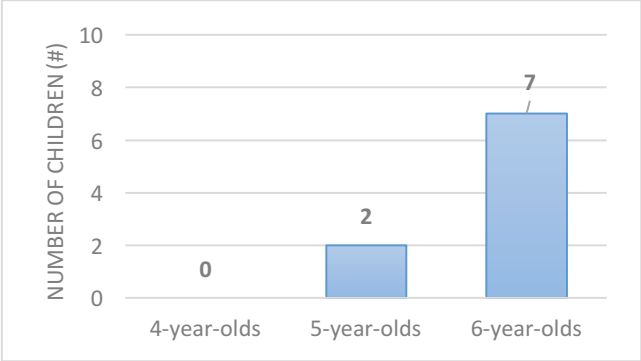
Context:	ANT		SIM	
	PS	INS	PS	INS
Experimental item:	PS+-*ess*	INS+-*ess*	PS+-*ess*	INS+-*ess*
Comprehension:	*yes*	*no*	*no*	*yes*
Production:	-*ess*	-*essess*	-*Ø*	-*ess*
	✓	✓	✓	✓

In the anterior context, these children accepted pure states combined with the perfect marker *-ess*, and rejected (deadjectival) inchoative states combined with the perfect marker *-ess*; they systematically volunteered the perfect marker *-ess* with pure states and the double form *-essess* with (deadjectival) inchoative states. In the simultaneous context, these children rejected pure states combined with the perfect marker *-ess* and accepted (deadjectival) inchoative states combined with *-ess*; they systematically volunteered the bare form (*-Ø*) with pure states and the perfect marker *-ess* with (deadjectival) inchoative states.

In sum, these children are adult-like in the following way: (i) the temporal interpretation of both pure states and (deadjectival) inchoative states is perfectly acquired. They have plausibly acquired the semantics of the relevant tense/aspect markers in Korean (*-ess* vs. *-essess* vs. *Ø*); (ii) they distinguish the two types of states in both the anterior and the simultaneous contexts.

Figure 35 below presents the results for the target-like children across age groups. The majority of 6-year-olds (7 out of 10) and some 5-year-olds (2 out of 10) were target-like in both comprehension and production. However, no 4-year-olds showed this target-like pattern. It indicates that children's knowledge of the temporal readings of pure states vs. inchoative states increases with age.

Figure 35. TVJT: Results for Group 1 (target-like) across age groups



The second group, illustrated in (8), includes children who were non-target-like in both comprehension and production.

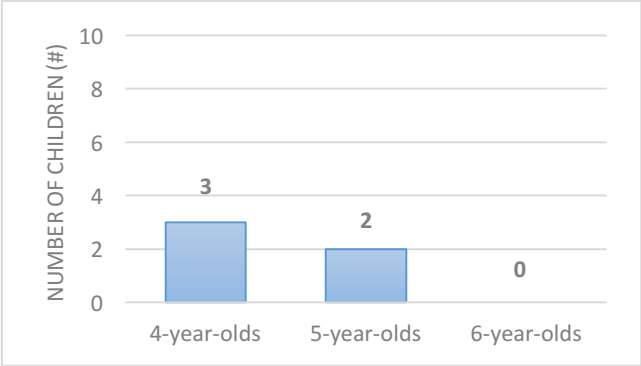
(8) **Group 2: non-target-like children**

Context:	ANT		SIM	
	PS	INS	PS	INS
Experimental item:	PS+-*ess*	INS+-*ess*	PS+-*ess*	INS+-*ess*
Comprehension:	*yes*	*yes*	*yes*	*yes*
Production:	-*ess*	-*ess*	-*ess*	-*ess*
	✓	⇩	⇩	✓
		error	**error**	

Children in this group accepted the puppet's statements regardless of the type of stative predicate and temporal context. Likewise, they volunteered only the perfect marker -*ess* and no other tense/aspect markers in production. This pattern suggests that these children are unable to distinguish the two types of states in the given contexts (i.e. anterior context and the simultaneous context) and crucially, their knowledge of -*ess* is not adult-like because it seems to be specified as having either an anterior or a simultaneous interpretations regardless of predicate type.

Figure 36 below illustrates the results for the non-target-like children across age groups. As the graph shows, the proportion of non-target-like behavior seems to decrease with age. That is, while some 4-year-olds (3 out of 10) and some 5-year-olds (2 out of 10) were completely non-target-like, no 6-year-olds showed this behavior.

Figure 36. TVJT: Results for Group 2 (non-target-like) across age groups



The third case is more interesting. The third group, illustrated in (9), includes children who were target-like in the simultaneous context, and non-target-like in the anterior context. I refer to this group as the "partially target-like" group. These children was partially target-like in both comprehension and production.

(9) **Group 3: partially target-like children**

Context:	ANT		SIM	
	PS	INS	PS	INS
Experimental item:	PS+-*ess*	INS+-*ess*	PS+-*ess*	INS+-*ess*
Comprehension:	*yes*	*yes*	*no*	*yes*
Production:	-*ess*	-*ess*	-*Ø*	-*ess*
	✓	⇓	✓	✓
		error		

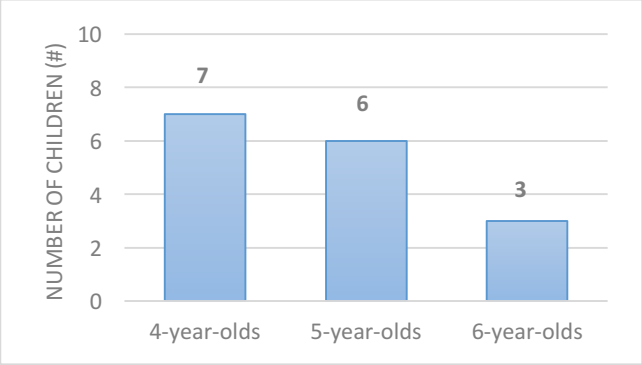
As (9) shows, in the simultaneous context, these children rejected pure states combined with the perfect marker -*ess* and accepted (deadjectival) inchoative states combined with the perfect marker -*ess*; they systematically volunteered the bare form (-*Ø*) with pure states and the perfect marker -*ess* with (deadjectival) inchoative states. However, in the anterior context, these children accepted and volunteered both pure states and (deadjectival) inchoative states combined with the perfect marker -*ess*.

This pattern leads to the following conclusions concerning these children's knowledge: (i) they distinguish the two types of states at least in the simultaneous context, but not in the anterior context; (ii) they know that with pure states, -*ess* yields an anterior reading, while with (deadjectival) inchoative states, it yields a simultaneous reading; (iii) for pure states, they correctly use -*ess* yielding an anterior reading and -*Ø* yielding a simultaneous reading; (iv) for (deadjectival) inchoative states, they incorrectly use -*ess* allowing both an anterior or a simultaneous interpretations. It could be because they have not acquired the double form -*essess* which is the only expected form in the anterior context.

Figure 37 below shows the results of children showing partially target-like pattern across age groups. The majority of 4-year-olds (7 out of 10) and more than half of 5-year-olds (6 out of 10)

were partially target-like in that they are able to distinguish the two types of states at least in one temporal context, i.e. the simultaneous context. In other words, 4-year-olds, just like 5-year-olds, have perfectly acquired temporal interpretation of pure states, but have some problems with temporal interpretation of (deadjectival) inchoative states for a reason to which we will come back later. Partially target-like pattern is observed even within the 6-year-old age group (3 out of 10). However, as we can see in Figure 37, the percentage of this pattern decreases with age.

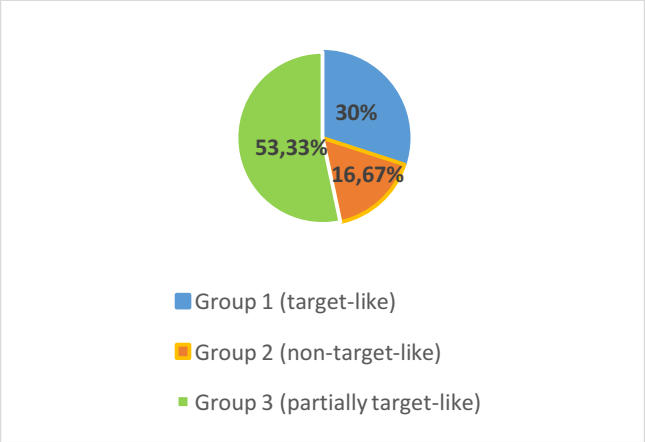
Figure 37. TVJT: Results for Group 3 (partially target-like) across age groups



The difference between 4-year-olds and 5-year-olds can be stated as follows: while within 4-year-olds, we only found partially target-like (7 out of 10 children) or non-target-like (3 out of 10) profiles, within 5-year-olds, we found some target-like profiles (2 out of 10), in addition to partially target-like (6 out of 10) and non-target-like (2 out of 10) profiles.

As regards the overall distribution of children's patterns, 30% of the child participants showed target-like pattern (group 1), 16.67% of the children non-target-like pattern (group 2), and 53.33% of the children partially target-like pattern (group 3), as shown in Figure 38.

Figure 38. TVJT: Overall distribution of children's patterns



In sum, on the basis of children's responses in comprehension and follow-up production, we have divided children into three groups: (i) target-like pattern group; (ii) non-target-like pattern group; (iii) partially target-like pattern group. The results revealed that children were mainly either partially target-like or totally target-like. More specifically, more than a half of the 4-year-olds and 5-year-olds were partially target-like, and 6-year-olds were quite target-like in their ability to interpret pure states and inchoative states in the anterior and the simultaneous contexts.

5.4.5 Discussion

So far, we have examined children's patterns identified in light of the comprehension results and the follow-up production data. In this section, we focus on children's unexpected responses in order to understand their knowledge of the temporal interpretation of the two types of states. Table 17 below summarizes the three patterns and their main generalizations.

Table 17. Children's patterns of temporal interpretation for pure states and inchoative states

Group 1 (target-like)	- These children distinguish the two types of states (PS vs. INS) in both the ANT and the SIM contexts. - They have perfectly acquired the temporal readings of both PS and INS. - They have plausibly acquired the target-like semantics of tense/aspect markers (-*ess* vs. -*essess* vs. -*Ø*) − at least as far as PS and (deadejctival) INS are concerned.
Group 2 (partially target-like)	- These children distinguish the two types of states (PS vs. INS) **at least in the SIM context**, but not in the ANT context. - They have perfectly acquired the temporal readings of PS: -*ess* correctly allows an ANT interpretation, and -*Ø* yields a SIM interpretation. - They have not perfectly acquired the temporal readings of INS: -*ess* incorrectly allows both an ANT and a SIM interpretation. It could be a problem of the acquisition of the double form -*essess* (reduplicated -*ess*) which is the only acceptable form in the ANT context.
Group 3 (non-target-like)	- These children do not distinguish the two types of states (PS vs. INS) in either the ANT or the SIM contexts. - They have not perfectly acquired the temporal readings of PS and INS.

As shown in the previous section, most of the child participants were either partially target-like (53.33%) or fully target-like (30%) in their comprehension and production results. Specifically, younger children (4-year-olds and 5-year-olds) were partially target-like, while 6-year-olds were quite target-like in their ability to interpret pure states and (deadjectival) inchoative states across temporal contexts. Moreover, some younger children (16.67%) were non-target-like. Two observations are in order here.

5.4.5.1 Partially target-like children's error

First, both the target-like children and the partially target-like children have knowledge of the temporal readings of pure states. This means that, at age 4, Korean children know that, with pure states, the perfect marker -*ess* yields an anterior reading and the non-past -*Ø* yields a simultaneous reading. However, unlike the target-like children, the partially target-like children do not fully have adult-like knowledge of the temporal readings of inchoative states. That is, they correctly accepted

and volunteered inchoative states combined with the perfect marker *-ess* in the simultaneous context, but they incorrectly accepted and volunteered the very same form in the anterior context. This non-adult behavior with inchoative states has already been observed in our pilot study. Recall that 40% of 6-year-olds (2 out of 5 children) in the pilot study assigned both the anterior and the simultaneous readings to inchoative states (see Section 5.3.4 in this chapter). The generalization that emerges then is that the partially target-like children distinguish the two classes of states at least in the simultaneous context, though not in the anterior context. The obvious question is then why (not the reverse), as stated in (10):

(10) **Question 1**: Why were the partially target-like children accurate in interpreting/describing the two classes of states in the simultaneous context, but not in the anterior context? Why couldn't they have shown the reverse pattern of behavior?

Simple perfect *-ess* vs. reduplicated past perfect *-essess*

I contend that the partially target-like children's unexpected behavior with inchoative states is related to the acquisition of the past perfect marker *-essess* which is the only target form for an anterior interpretation of inchoative states. The fully target-like children have both *-ess* and *-essess* in their grammar and consequently, they can correctly combine (deajdectival) inchoative states with the perfect marker *-ess* yielding a simultaneous reading and with the past perfect marker *-essess* yielding an anterior reading. However, I claim that the partially target-like children have not yet acquired the complex reduplicated *-essss* as a temporal suffix distinct from simplex *-ess*, which is the target form for an anterior interpretation of (deadjectival) inchoative states in the adult grammar. The claim is that *-essess* is absent from the grammar of these children because it is morpho-phonologically just a reduplication of the simplex perfect morpheme *-ess*. In other words, the partially target-like children are not sensitive to the distinction between *-ess* and *-essess*. Given that these children lack *-essess* and have only *-ess* available, their [inchoative states+*-ess*] forms can have either an anterior or a simultaneous interpretations.

The strong evidence for this claim comes from the production data. On the one hand, the fully target-like children *systematically* volunteered [inchoative states+*-essess*] forms, in rejecting inchoative states+*-ess* forms in the anterior context and on the other hand, these children

volunteered inchoative states+-*ess* forms in accepting [inchoative states+-*ess*] forms in the simultaneous context, as shown in (11-12).

(11) *Anterior context*: Pororo is very angry. What could we do to calm down Pororo? Look! Eddy who is Pororo's best friend came to play with Pororo. Eddy says: "Hey, Pororo! Why are you so angry? Calm down and let's play a game." Now, Pororo is fine. And this is thanks to Eddy! (cf. Figure 24)

a. Comprehension: **rejected** test sentence

Test-sentence: Pororo-ka hwana-**ss**-eyo.
Pororo-NOM angry-PFCT-DEC
'Pororo got angry.'

b. Production:

Question: What happened in the story?

Volunteered sentence:

Pororo-ka akka-nun hwana-**essess**-nundae
Pororo-NOM before-TOP angry-PAST.PFCT-but
cikum-un kipwun-i coha-yo.
now-TOP feelings-NOM good-DEC
'Pororo was angry, but he feels good now.'

(12) *Simultaneous context*: The weather is very nice today. Piglet who likes sunlight goes out and takes a walk. Suddenly, the sky is filled with rain clouds. It is raining! Piglet didn't bring his umbrella. So, he gets all wet in the rain. (cf. Figure 26)

a. Comprehension: **accepted** test sentence

Test sentence: Akitoeci-ka phi-ey cec-**ess**-eyo.
Piglet-NOM rain-in wet-PFCT-DEC
'Piglet got wet in the rain.'

b. Production:

Question: What happened in the story?

Volunteered sentence:

Akitoeci-ka	akka-nun	kwaynchan-ass-nundae
Piglet-NOM	before-TOP	fine-PFCT-but
cikum-un	phi-ey	cec-**ess**-eyo.
now-TOP	rain-in	wet-PFCT-DEC

'Piglet was fine before, but he is wet in the rain now.'

In contrast, the partially target-like children not only accepted but also volunteered [inchoative states+-*ess*] forms in both the anterior and the simultaneous contexts, as shown in (13-14).

(13) *Anterior context* (see (11))

a. Comprehension: **accepted** test sentence

Test-sentence: Pororo-ka		hwana-**ss**-eyo.
	Pororo-NOM	angry-PFCT-DEC

'Pororo got angry.'

b. Production:

Question: What happened in the story?

Volunteered sentence:

Pororo-ka	akka-nun	hwana-**ess**-nundae
Pororo-NOM	before-TOP	angry-PFCT-but
cikum-un	kipwun-i	coha-yo.
now-TOP	feelings-NOM	good-DEC

'Pororo was angry, but he feels good now.'

(14) *Simultaneous context* (see (12))

a. Comprehension: **accepted** test sentence

Test sentence: Akitoeci-ka phi-ey cec-**ess**-eyo.
Piglet-NOM rain-in wet-PFCT-DEC
'Piglet got wet in the rain.'

b. Production:

Question: What happened in the story?

Volunteered sentence:

Akitoeci-ka akka-nun kwaynchan-ass-nundae
Piglet-NOM before-TOP fine-PFCT-but
cikum-un phi-ey cec-**ess**-eyo.
now-TOP rain-in wet-PFCT-DEC
'Piglet was fine before, but he is wet in the rain now.'

As can be seen in (13-14), the partially target-like children never volunteered the complex reduplicated -*essess* in their production.

We thus conclude that the partially target-like children's unexpected responses with (deadjectival) inchoative states in the anterior context is related to the absence of the complex reduplicated -*essess* as a distinct temporal suffix in the grammar of these children. On the one hand, we could suppose that the partially target-like children have acquired the semantic distinction between -*ess* (the simple perfect) from -*essess* (the past of past which is the reduplicant of -*ess*), but they have not acquired the morpho-phonological distinction between -*ess* and -*essess*. Another alternative is that they have not acquired either the morphological form -*essess* or the semantic distinction between the perfect and the past of past. We have no evidence to bear two alternatives. It should be pointed out that some adults (2 out of 20) also made a similar confusion. That is, accepted and volunteered [inchoative states+-*ess*] forms across the temporal contexts, like the partially target-like children. Moreover, -*essess* has been analyzed as a discontinuous past (cf. Nam 1978, 1996, C. Lee 1985, Chung 2005, Cable 2015, Chung 2005) that triggers "cessation implicatures", that is no state of the kind described currently holds (Altshuler & Schwarzschild

2013, 2014), suggesting a line of inquiry to which we will come back after having discussed non-target-like children's error.

5.4.5.2 Non-target-like children's error

The second observation that we can make on the basis of our experimental results concerns the non-target-like children. As summarized in Table 17, these children do not have adult-like knowledge of the temporal readings of both pure states and (deadjectival) inchoative states. That is, they accepted and volunteered both pure states and (deadjectival) inchoative states combined with *-ess* − in both the anterior and the simultaneous contexts. On the basis of this observation, the following question arises:

(15) **Question 2**: Why did the non-target-like children generalize the perfect marker-*ess* with the two types of states across both the anterior and the simultaneous contexts? Why didn't they show the reverse pattern (i.e. generalize the bare from *-Ø* with the two types of states across the two temporal contexts)? Is their unexpected behavior related to problems with the meaning of *-ess*, or problems with the distinction between the two classes of states?

I conjecture that the non-target-like children did not distinguish the two classes of states in the relevant temporal contexts. Assuming that these children treat the two classes of states as typical stative predicates, we can characterize their pattern of behavior as follows: they correctly accepted and volunteered target sentences containing *-ess* in the anterior context where the use of *-ess* is felicitous. However, they infelicitously accepted and volunteered target sentences containing *-ess* in the simultaneous context where the bare form (*-Ø*) is more felicitous than *-ess*. Recall that a stative predicate combined with *-ess* yields an anterior (i.e. a past) reading, while its bare form yields a simultaneous (i.e. a present) reading. The question then is how to account for these children's infelicitous acceptance/use of *-ess* in the simultaneous context? Note that their infelicitous *yes*-answers were not the effect of the Principle of Charity since they correctly gave *no*-answers on the control items. This is the focus of the next sub-section. I first present Altshuler & Schwarschild (2013, 2014)'s account of scalar inferences arising in past tensed stative clause.

Then, I extent Altshuler & Schwarschild' analysis to the non-taget-like children's unexpected responses.

5.4.5.2.1 Cessation implicatures: Altshuler & Schwarzschild (2013, 2014)

In order to provide an explanation for non-target-like children's patterns of errors, I adopt Altshuler & Schwarzschild (2013, 2014; henceforth A & S)'s account of certain inferences arising in past tensed stative clauses. Let me briefly present their account, starting with the following example.

(16) a. How is Scotty doing?
b. He was anxious. (Implicature: Scotty is no longer anxious at utterance time)
(A & S 2013: 48)

From the utterance (16b) containing a stative predicate *be anxious* in the past tense, the listener learns of Scotty's state of anxiety. The listener further infers that Scotty is no longer anxious at the utterance time. A & S call this inference a "cessation implicature", as defined in (17).

(17) *Cessation implicature* (A & S 2013: 45)
When the utterance of a past tensed sentence implicates that no state of the kind described currently holds.

In (16b), the past tense sentence containing a stative predicate triggers a cessation implicature, that is, the state of Scotty's being anxious held at some time in the past, but this state does not currently hold. To account for the cessation inference in (16b), A & S first make a hypothesis about the truth of a stative clause at a given moment explicit. Crucially, A & S assume that time is dense, indicating that between any two moments (m, m') of time, there is always a third moment m''. While tensed clauses are true at moments, tenseless clauses can be true at intervals. If a tenseless stative clause is true at an interval I, it is true at any subinterval of I and at any moment m within I. With this idea, A & S formulate the following hypothesis.

(18) **The Temporal Profile of Statives** (A & S 2013: 45)

For any tenseless stative clause φ, if φ is true at moment *m*, then there is a moment *m′* preceding *m* at which φ is true and there is a moment *m″* following *m* at which φ is true.

According to the hypothesis of the Temporal Profile of Statives (henceforth TPS) in (18), it is difficult to perceive a first moment at which a tenseless stative clause (e.g. *Scotty be anxious*) is true, but before which it is false. This is because if the tenseless stative clause *Scotty be anxious* is true at a moment *m*, then it is also true at a moment *m′* preceding *m*. Consequently, an eventuality described by a stative predicate holds within an open interval (see also Cable 2015).

With the TPS hypothesis in (18), A & S account for the cessation implicatures in the scenario in (16) (repeated in (19) below) as follows.

(19) a. How is Scotty doing?

b. He <u>was anxious</u>.

In (19), the reference time[29] (REF-T) of the context is the utterance time. If the eventuality of *Scotty be anxious* is true at the utterance time (*m*), then, by the TPS hypothesis in (18), *Scotty be anxious* is also true at some moment *m′* prior to the utterance time (UT-T). The truth of *Scotty be anxious* at utterance time (*m*) verifies the present tense sentence *Scotty is anxious*, and the truth of *Scotty be anxious* at the moment (*m′*) preceding the utterance time verifies the past tense sentence *Scotty was anxious*. This is illustrated in (20).

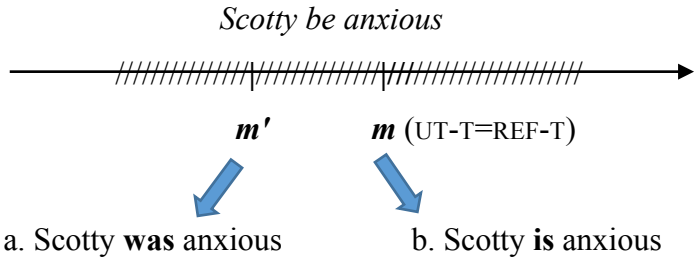
[29] Here, for the sake of simplicity, I present their analysis using Reichenbach (1947)'s notion of reference time, instead of A & S's notion 'reference time concepts' (following in this respect Cable 2015). Their notion of "reference time concept" is similar to the *time concepts* proposed by Heim (1994: 155). Specifically, assuming that a tense is a domain restriction variable C_n, they take tense domain restrictions to be intensional: properties of times, not times themselves. They call these restrictions **reference time concepts**. Consider the following example they give.

(i) Everyone <u>was</u> unusually friendly at the 6th Annual Rowers Meeting. Jack thought that the punch <u>was</u> spiked. Jill thought that the brownies <u>were</u> loaded. In fact, the air <u>was</u> artificially oxygenated.

In the discourse given in (i), the reference time concept is the *6th Annual Rower's Meeting*. This domain restriction, which is given in (ii), applies to each past time in this discourse.

(ii) $\lambda w \lambda t.t$ is during the 6th Annual Rower's Meeting in *w*. (A & S 2014: 45)

(20)



Assuming (18) holds, the present tense sentence (PRES-φ) in (20b) entails the past tense sentence (PAST-φ) in (20a) because if PRES-φ is true, then PAST-φ is also true. Crucially, this entailment is asymmetric: if PAST-φ is true, the PRES-φ is not necessarily true. Due to the asymmetric entailment from PRES-φ to PAST-φ, A & S argue that PRES-φ and PAST-φ forms are scalar alternatives. The cessation inference then arises as a standard Gricean quantity implicature[30]. More precisely, the speaker chose to utter the past tense sentence *Scotty was anxious* in (19b) instead of the stronger statement, i.e. the present tense sentence *Scotty is anxious*. Assuming that the speaker possesses all the relevant information about Scotty's state, (s)he must have avoided the stronger statement because it is not true. Therefore, the past tense sentence (19b) triggers a cessation implicature: no state of the kind described currently holds (i.e. *Scotty is no longer anxious*).

Importantly, when the reference time is some past time (*m*) excluding the utterance time, the past tense sentence does not trigger a cessation implicature. To illustrate, consider the following case.

(21) a. How was Scotty, **when you saw him**?

b. He <u>was anxious</u>. (Does not imply that Scotty is no longer anxious at utterance time)

Like in (19b), from the utterance (21b) containing a stative predicate *be anxious* in the past tense, the listener learns of Scotty's state of anxiety that held prior to the utterance time. However, unlike in (19b), the listener cannot infer that Scotty is no longer anxious at the utterance time because the reference time is fixed to a past time ("when you saw him") that does not include the utterance time. Since the reference time makes PRES-φ false, the listener cannot use Gricean reasoning to

[30] Maxim of Quantity (Grice 1975: 45)

i. Make your contribution as informative as is required.
ii. Do not make your contribution more informative than is required.

conclude anything about Scotty's current state of anxiety. In other words, the listener does not draw an inference that the past state fails to extend to the utterance time. Therefore, the past tense sentence in (21b) does not trigger a cessation implicature (i.e. *Scotty is no longer anxious at the utterance time*).

Summing up, A & S claim that, for a stative clause φ, the utterance of PAST-φ triggers a cessation implicature (i.e. no state of the kind described currently holds), when it pragmatically competes with its alternative PRES-φ sharing a common reference time span.

5.4.5.2.2 Accounting for the non-target use of *-ess* in the simultaneous context

Let us now turn to the issue of the non-target-like children's patterns of errors. These children did not distinguish the two types of states, accepting and volunteering *-ess* in both the anterior and simultaneous contexts. In particular, assuming that they treat the two types of states as typical stative predicates, the non-target-like children unexpectedly accepted (and produced) *-ess* in the simultaneous context. An example of the simultaneous context proposed to children is given in (22).

(22) *Simultaneous context*: Juno likes to play with his friends, painting with his hands. Juno has paint on his hands and makes handprint on a paper. Juno wants to show the handprint paper to his mom. But, look! His hands are too dirty. Juno goes to the bathroom and washes his hands with soap and water. Now, his hands are clean.

a. How are Juno's hands now?

b. Juno-uy son-i kkaykkuha-**ess**-eyo.
Juno-GEN hand-NOM clean-PFCT-DEC
'Juno's hands were clean.'

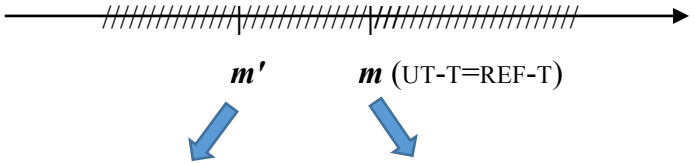
In the light of A & S's analysis, we can account for the truth of the sentence containing a stative predicate combined with *-ess* in (22b) as follows. The reference time in the context proposed is the utterance time (*m*), specified by the present adverbial 'now'. Now, if the eventuality of *Juno's hands be clean* is true at utterance time (*m*), then, by the TPS hypothesis given in (18), it is also

true at a moment *m'* preceding the utterance time. In other words, the sentence in (22b) (in the given context) leads to the activation of the stronger alternative in (23):

(23) Juno-uy son-i kkaykkuha-**Ø**-eyo.
Juno-GEN hand-NOM clean-NON.PAST-DEC
'Juno's hands are clean.'

The relation between the two statements is illustrated in (24).

(24) *Juno's hands be clean*



a. Juno's hands clean+-*ess* b. Juno's hands clean+-*Ø*
(Juno's hands **were** clean) (Juno's hands **are** clean)

Accordingly, the sentence with -*Ø* (yielding PRES-φ) in (24b) asymmetrically entails the sentence with -*ess* (yielding PAST-φ) in (24a). That is, for the stative clause *Juno's hands be clean*, if the sentence with 'clean+-*Ø*' (i.e. Juno's hands are clean) is true, then the sentence with 'clean+-*ess*' (i.e. Juno's hands were clean) is also true. The pair of sentences 'clean+-*Ø*' and 'clean+-*ess*' thus competes pragmatically.

Gricean reasoning further applies yielding the conclusion that the eventuality of *Juno's hands be clean* does not currently hold. That is, the speaker is expected to have made a contribution as informative as is required for the exchange. In the given context ((22)), children (and the puppet, that is the speaker) know that the described eventuality of *Juno's hands be clean* extends to the present. Consequently, they should choose to utter the sentence containing 'clean+-*Ø*' (i.e. Juno's hands are clean), which is the stronger statement and thus more felicitous than the weaker statement (PAST-φ) in the simultaneous context. Assuming that the speaker possesses the relevant information, (s)he must have avoided the stronger statement because it is not true. Therfore, the past tensed sentence (i.e. 'clean+-*ess*') trigegers a cessation implicature, i.e. no state of Juno's hands be cleans currently holds.

The fully target-like and the partially target-like children showed the expected pattern of responses: they judged the sentence containing 'clean+-*ess*' (i.e. Juno's hands were clean) which is the weaker statement as infelicitous, and volunteered the stronger statement, i.e. the sentence containing 'clean+-*Ø*' (i.e. Juno's hands are clean) in the simultaneous context. However, the non-target-like children committed errors: they judged the sentence containing 'clean+-*ess*' (i.e. Juno's hands were clean) which is the weaker statement as felicitous, and moreover volunteered the very same form in the simultaneous context. Recall that the use of the weaker statement in this context triggers a cessation implicature: Juno's hands are no longer clean at the utterance time, which is false description in the given context. Accordingly, we conjecture that the non-target-like children know the truth condition of the past tensed sentence, but they fail to calculate the cessation implicature associated with the past (i.e. the described state does not currently holds). The proposal that these children have difficulty with the cessation implicatures is totally plausible given children's problems of scalar implicatures observed in the literature.

Several experimental studies on children's interpretation of scalar terms such as <*all, some*> have shown that children tend to accept the weaker statement as true in a given context where the stronger statement would be more felicitous (Smith 1980, Chierchia et al. 2001, Noveck 2001, Musolino & Lidz 2002, Papafragou & Musolino 2003, Musolino 2004, Noveck et al. 2007a, Noveck & Sperber 2007b among many others). For instance, Noveck (2001) examined children's interpretation of sentences like (25a) compared to (25b).

(25) a. *Some* cats have ears.
b. *Some* flowers are yellow. (Miller et al. 2005)

In (25a-b), the weaker scalar term *some* is associated with the scalar implicature of *not all*. Then, the sentence (25a) should be judged as infelicitous since it is generally true that *all* cats have ears. By contrast, the sentence (25b) should be judged as felicitous in a situation where there are yellow flowers, red flowers and white flowers. Noveck found that children aged from 7 to 11 accept sentences like (25a) as felicitous description more often than adults, suggesting that they calculate scalar implicatures less often than adults. In other words, children are able to access the meaning of a sentence, but not necessarily able to access the inferred meaning. Thus, Noveck concludes that "younger, albeit competent reasoners, initially treat a relatively weak term logically before

becoming aware of its pragmatic potential", and that, "children are more logical than adults" (Noveck 2001: 165).

With this background in mind, let us go back to the non-target-like children's error. Adopting A & S' proposal of cessation implicatures associated with a past tensed stative clause, I hypothesize that the non-target-like children understand the meaning of *-ess* affixed to a stative predicate, but they have difficulty with the cessation implicatures associated with *-ess* affixed to a stative predicate. Hence, they interpreted the weaker statement (with *-ess*) as felicitous and produced it in the simultaneous context where the stronger statement (with *-Ø*) is more felicitous. It goes without saying that this proposal deserves to be further investigated with a new experiment designed to examine children's ability to draw cessation implicatures of the past.

Before concluding, let us go back to the partially target-like children's error discussed in the previous sub-section (cf. Setion 5.4.5.1). Recall that the partially target-like children unexpectedly accepted and produced the perfect marker *-ess* affixed to (deadjectival) inchoative states, instead of the complex reduplicant *-essess* in the anterior context. Even some adults (2 out of 20) showed a similar pattern. I now sketch a plausible explanation of their infelicitous use of *-ess* affixed to (deadjectival) inchoative states in the anterior context.

Building on A & S's analysis, Cable (2015) addresses the issue of how to explain cessation implicatures that arise with the discontinuous past in languages like Tlingit, as opposed to simple past tense in English. As we have just seen, a cessation implicature associated with simple past tense in English is a result of Gricean reasoning. Crucially, however, Cable argues that a cessation implicature associated with the discontinuous past (e.g. in Tlingit) is enforced directly by a pragmatic principle that demandes the utterance time to be contained within the reference time whenever the utterance time is 'sufficiently topical' (i.e. maximize the reference time[31]). Importantly, in languages that have the discontinuous past entailing an interval of past time t', there is also the non-future tense entailing an interval that contains both past time t' and the utterance time t. Both can be used to describe a past eventuality.

[31] Cable states that this principle is just like certain other pragmatic principles − e.g. 'Maximize Presupposition' (Heim 1991, Percus 2006, Singh 2011, Schlenker 2012).

(i) When the utterance time is contained within the reference time (by applying a pragmatic principle of maximizing the reference time), the discontinuous past -*essess* triggers cessation implicatures, i.e., the past eventuality in question does not extent into the present.

(ii) When the utterance time is not contained within the reference time, the discontinuous past -*essess* does not trigger cessation imlicatures and is identical to the non-future -*ess* (i.e. both of them describe a past eventuality).

(see Cable 2015 for the details)

The Korean suffix -*essess* has been analyzed as a discontinuous past (cf. Nam 1978, 1996, C. Lee 1985). The suffix -*ess* can be considered as a non-future marker since it allows both a past and a present interpretations (cf. Section 5.2.1). There would be a competition between -*ess* and -*essess* only when the reference time includes both the utterance time *t* and past time *t′*. So in this case, the use of -*essess* triggers cessation implicatures, i.e., the past eventuality in question does not extend into the present. On this proposal, some adults (2 out of 20) allowed -*ess* affixed to inchoative states in the anterior context where the the described eventuality held prior to the utterance time because they did not maximize the reference time, i.e., the latter does not include the utterance time. In this case, the discontinuous past -*essess* does not trigger cessation implicatures. That is, both the non-future -*ess* and the discontinuous past -*essess* are identical in that they are used to describe the past eventuality in question. It could be the case that these adults accepted and produced -*ess* just because it is the morpho-phonologically simple form, instead of the complex reduplicant -*essess*.

For the partially target-like children's responses, there are three possibilities: (i) these children would understand the meaning of -*ess* and -*essess*, but just they have the reference time containing only past time. So, it could be that they made the same kind of mistakes as adults; (ii) these children do not distinguish the non-future -*ess* from the discontinuous past -*essess* or (iii) these children know the distinction between -*ess* and -*essess*, but they do not spell out the discontinuous past -*essess* by reduplicating the non-future -*ess*. At this stage, further theoretical and experimental investigations of the meaning of the suffixes -*ess* and -*essess* are needed.

5.5 Summary

In this chapter, we have examined Korean children's knowledge of pure states vs. (deadjectival) inchoative states in combination with the perfect marker *-ess*. Pure states and (deadjectival) inchoative states can be distinguished with respect to the different temporal readings that the perfect marker *-ess* yields when it combines with these two types of states. That is, with pure states, *-ess* yields an anterior reading, while with (deadjectival) inchoative states, it yields a simultaneous reading.

I have also provided experimental evidence from Korean child language for the distinction between pure states and (deadjectival) inchoative states. Our comprehension results by age groups revealed that, unlike 6-year-olds, younger children (4-year-olds and 5-year-olds) totally or partially failed to distinguish the two classes of states (PS vs. (deadjectival) INS) combined with the perfect marker *-ess* across the given temporal contexts (anterior vs. simultaneous contexts).

When we looked at children's patterns in light of the follow-up production data and the breakdown comprehension results, the following generalizations emerged as regard to Korean children's relevant knowledge: (i) by about 4 years of age, Korean children have adult-like knowledge of the temporal interpretation of pure states; (ii) At this age, they can distinguish the two types of states combined with *-ess* at least in the simultaneous context, just like adults.

Two patterns of errors were identified: First, most of the children (53.33%) unexpectedly accepted and produced *-ess* affixed to inchoative states in the anterior context. The complex reduplicant *-essess* which is the target form for an anterior interpretation of (deadjectival) inchoative states is absent from these children's grammar. I have suggested a number of possible explanations for their non-target-like use of *-ess* affixed to (deadjectival) inchoative states in the anterior context: (a) these children have acquired the semantic distinction between *-ess* from *-essess* (the reduplicant of *-ess*), but they have not acquired the morpho-phonological distinction between *-ess* and *-essess*; (b) these children have not acquired either the morphological form *-essess* or the semantic distinction between *-ess* and *-essess*; (c) these children would understand the meaning of *-ess* and *-essess*, but just they have a problem of maximizing the reference time (adopting Cable (2015)'s analysis of generating cessation inferences of the discontinuous past).

Second, some younger children (three 4-year-olds and two 5-year-olds) accepted and volunteered *-ess* affixed to pure states and (deadjectival) inchoative states across the anterior and the simultaneous contexts. The generalization is that these children do not distinguish the two

classes of states and treat the two classes of states as typical stative predicates. I accounted for their infelicitous use of -*ess* in the simultaneous context as follows: Adopting A & S's proposal of cessation implicatures of a past tensed stative clause, I hypothesized that these children interpreted the weaker statement (with -*ess*) as felicitous and volunteered it in the simultaneous context where the stronger statement (with -*Ø*) is more felicitous. I thus suggested that they understand the meaning of -*ess* affixed to a stative predicate, but they have difficulty with the cessation implicatures associated with -*ess* affixed to a stative predicate.

5.6 Appendix 2

Condition 1: Anterior context + Pure states (PS) → *Expected answer: Yes*

PS1:

Scenario: There is a high fence in the grass. Suddenly, a mischief-maker goblin appears from nowhere. The goblin hits the fence with his magic club and then, he disappears. Look! Now, the fence which was high became low.

Test sentence: Wultali-ka noph-ass-eyo.
Fence-NOM high-PFCT-DEC
'A/the fence wans high.'

PS2:

Scenario: Sue caught a cold. Sue is very sick with fever and her mother worries about Sue. So, she takes Sue hospital to see the doctor. In the hospital, Sue got an injection and took medicine. The next morning, Sue got over her cold and she feels good.

Test sentence: Yunmi-ka aphu-ess-eyo.
Y-NOM sick-PFCT-DEC
'Yunmi was sick.'

PS3:

Scenario: In the evening, after finishing his work, Smurf feels tired. He worked too much, today. Smurf goes to bed and sleeps soundly. The next morning, after sleeping, Smurf feels refreshed. Smurf is going to work.

Test sentence: Sumephu-ka pikonha-ss-eyo.
Smurf-NOM tired-PFCT-DEC
'Smurf was tired.'

PS4:

Scenario: One afternoon, Snoopy is prone upon the ground because he is very hungry. It's time to eat! Charlie approaches Snoopy with a food dish. He feeds Snoopy. Snoopy eats very well. Now, he is full and he is very happy. So, he is dancing!

Test sentence: Sunwuphi-nun pay-ka kophu-ess-eyo.
Snoopy-TOP stomach-NOM hungry-PFCT-DEC
'Snoopy was hungry.'

Condition 2: Anterior context + Inchoative states (INS) → *Expected answer: No*

INS1:

Scenario: Pororo is very angry. What could we do to calm down Pororo? Look! Eddy who is Pororo's best friend came to play with Pororo. Eddy says: "Hey, Pororo! Why are you so angry? Calm down and let's play a game with me." Now, Pororo is fine. And this is thanks to Eddy!

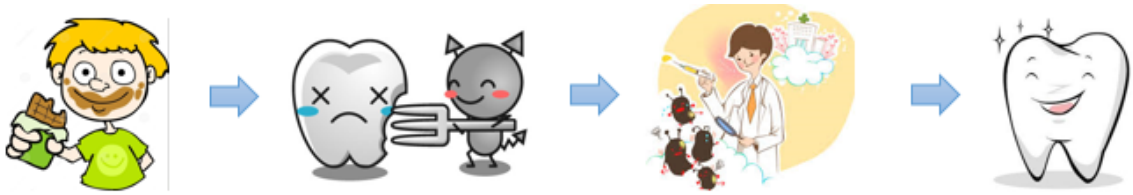
Test sentence: Ppororo-ka hwana-ss-eyo.
P-NOM angry-PFCT-DEC
'Ppororo is angry.'

INS2:

Scenario: There is a black cat. Oh, but this cat is too skinny! Let's feed the cat up. We feed him every day. A few months have passed. Look! Now, the black cat who was skinny became fat. It's a good thing the black cat looks like healthy.

Test sentence: Koyangi-ka malu-ess-eyo.
Cat-NOM thin-PFCT-DEC
'A/the cat is thin.'

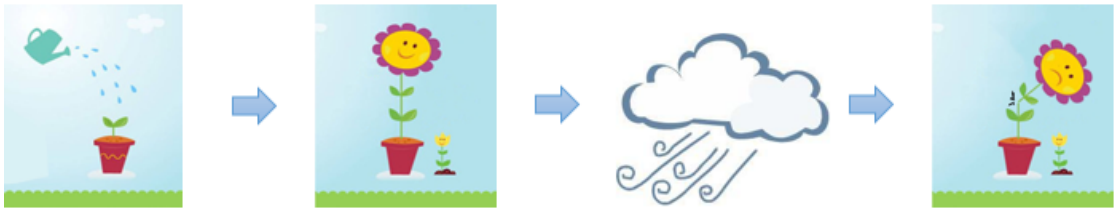
INS3:



Scenario: Juno likes chocolates very much! He eats chocolates every day. Oh! His teeth is rotten and he has a toothache. He goes to see his dentist. His dentist treats Juno's cavity. After treatment, Juno has his teeth cleaned now.

Test sentence: Twuli-uy i-ka ssek-ess-eyo.
T-GÉN teeth-NOM rotten-PFCT-DEC
'Twuli's teeth are rotten.'

INS4:



Scenario: Sue planted seeds in a flowerpot. Sue waters the pot every day. Several days after, a flower has grown in the pot. Sue waters the flower every day, and the flower is grown well. Sue is happy with her flower. One day, a windstorm raged all night. Sue worries about her flower. Sue hopes that her flower is okay. The next morning, Sue found that the flower is broken.

Test sentence: Kkoch-i cala-ss-eyo.
Flower-NOM grown-PFCT-DEC
'A/the flower is grown.'

Condition 3: Simultaneous context + Pure states (PS) → *Expected answer: No*

PS5:

Scenario: Juno wants to tie his toy box up with a string. But, the string is too much long to tie his small box up. Juno cuts the string with scissors. The string which was long became short. Now, he can tie his box up with the short string.

Test sentence: Cwul-i ccalp-ass-eyo.
rope-NOM short-PFCT-DEC
'A/the rope was short.'

PS6:

There are two birds. The violet bird is small and the blue bird is tall. For the violet bird, it's not very comfortable to talk to the blue bird because the blue bird is too tall. Suddenly, a wizard appears and makes magic on the blue bird. The blue bird who was tall became as small as the violet bird. Now, the violet bird is happy because he doesn't need to look up at the blue bird.

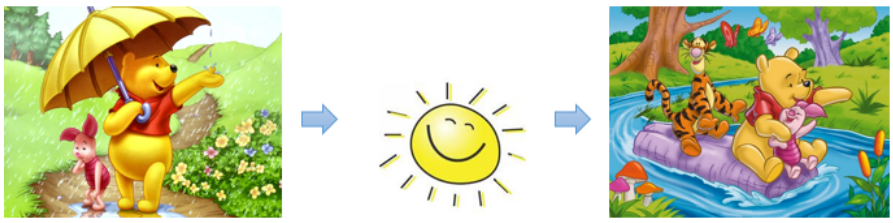
Test sentence: Pala-n-say-ka cak-ass-eyo.
blue-REL-bird-NOM small-PFCT-DEC
'A/the blue bird was small.'

PS7:

Scenario: Juno likes to play with his friends, making drawings with his hands. Juno has paint on his hands and makes handprint on a paper. Juno want to show the handprint paper to his mom. But, look! His hands are too dirty. Juno goes to the bathroom and washes his hands with soap and water. Now, his hands are clean.

Test sentence: Son-i kkaykkusha-ess-eyo.
hand-NOM clean-PFCT-DEC
'Hands were clean.'

PS8:



Scenario: It is a rainy day. Pooh takes a walk with Piglet because Pooh likes rain. But, Piglet does not like rain, so he looks like depressed. Suddenly, the rain has stopped and the sun's out! In the sun, Pooh, Piglet and Tigger have fun, rafting down the river. Now, Piglet feels good!

Test sentence: Aki-twayci-uy kipwun-i coh-ass-eyo.
baby-pig-GÉN mood-NOM good-PFCT-DEC
'Piglet felt good.'

Condition 4: Simultaneous context + Inchoative states (INS) *→ Expected answer: Yes*

INS5:

Scenario: There is a penguin. This penguin likes very much Pororo and he wants to be like Pororo because he thinks that Pororo is handsome. A wizard appears from nowhere and makes magic on the penguin. Now, the penguin looks like Pororo! This is thanks to the wizard.

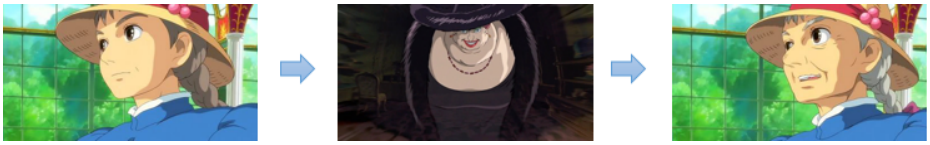
Test sentence: Pheyngkwuyn-i Ppororo-lul talm-ass-eyo.
Penguin-NOM P-ACC alike-PFCT-DEC
'The penguin looks like Ppororo.'

INS6:

Scenario: The weather is very nice today. Piglet who likes sunlight goes out and takes a walk. Suddenly, the sky is filled with rain clouds. It is raining! Piglet didn't bring his umbrella. So, he gets all wet in the rain.

Test sentence: Aki-twayci-ka phi-ey cec-ess-eyo.
baby-pig-NOM rain-in wet-PFCT-DEC
'A/the piglet is wet in the rain.'

INS7:



Scenario: Sandy is a good girl. She is so beautiful. Look! There is a witch who hates Sandy because she is jealous of Sandy's beauty. So, the witch casts a spell on her. Oh my god! Sandy who felt under the spell became old.

Test sentence: Yeca-ka nulk-ess-eyo.
Woman-NOM old-PFCT-DECL
'A/the woman is old.'

INS8:

Scenario: Pooh is a lovely teddy bear. Pooh is friendly and stylish, too. But, there is a big problem for Pooh. That is, Pooh is mad about hamburgers and Coke, so he eats hamburgers and drinks Coke at every meal. Several years later, Pooh became too fat as a pig. Look at his big belly!

Test sentence: Pwuwu-ka saljji-ess-eyo.
Pooh-NOM fat-PFCT-DEC
'Pooh is fat.'

Chapter 6 Distinction between Degree Inchoative States and Achievements in Child Language

6.1 Introduction

Following up the two experiments discussed in Chapters 4 and 5, this chapter aims to provide further experimental evidence from child language for the underlying meaning of degree inchoative states.

In Chapters 2 and 3, we characterized a deadjectival inchoative state as predicate describing a durative eventuality (i.e. simple P-event which is normal state) together with the change (i.e. BECOME event) into the described eventuality. Specifically, I claimed that the BECOME event modeling a change of state itself represents the *onset* of the described durative eventuality. As such, a deadjectival inchoative state is inherently inchoative, unlike a stative predicate. Then, the question arises as to whether deadjectival inchoative states belong to the class of achievements since they make reference to a change of state (i.e. BECOME event), i.e. the transition from *not having the target property* to *having the target property*, like achievements. In this regard, based on the results of several diagnostics, I argued that deajdectival inchoative states can be distinguished from achievements, as follows (cf. Section 3.2.2 in Chapter 3):

(1) An achievement describes punctual eventualities − eventualities lacking temporal duration − that cannot be partially realized. An achievement associates the eventualities it describes with an endpoint bringing about a result state.

(2) All inchoative states make reference to an onset of the eventualities they describe, not to an endpoint. Inchoative state eventualities can extend over time: thy may have temporal duration. (Deadjectival) inchoative states describe gradable eventualities that can be partially realized, and in a way that can implicate degrees.

Since deadjectival inchoative states give rise to gradability effects, I argued that they are in fact degree inchoative states. This chapter takes up the question of whether children can distinguish degree inchoative states from achievements. Specifically, among the diagnostics discussed in Chapter 3, we take the different behavior of degree inchoative states and achievements with respect to degree adverbial modification, as the target property of the experiment which will be discussed in this chapter. A grammaticality judgment task was designed to examine whether Korean children know that degree inchoative states felicitously allow modification by degree modifiers, while achievements do not allow it.

This chapter is structured as follows. Section 6.2 reviews the claim related to the distinction between degree inchoative states and achievements, which was provided in Section 3.2.2, Chapter3. In particular, I discuss again the contrast between degree inchoative states and achievements with respect to modification by degree adverbials such as *cokum* 'slightly', *maywu* 'very'. Section 6.3 reports a grammaticality judgment task conducted with 4-, 5- and 6-year old Korean speaking children. I present the results of the task showing that children in these age groups were generally target-like on the relevant distinction between degree inchoative states and achievements. Finally, Section 6.4 summarizes the findings of the experiment.

6.2 Target property of experiment: gradability

In this section, I first set the stage for the experimental design by presenting the target property, i.e. the co-occurrence with degree adverbials which, as we saw earlier (cf. Section 3.2.2.3, Chapter 3), is compatible with degree inchoative states but incompatible with achievements. I then discuss the experiment examining Korean children's knowledge of degree inchoative states as a separate class from achievements in Section 6.3.

At first glance, it seems that degree inchoative states pattern with achievements in that both of them contain a BECOME event that contributes a change of state in their predicate meaning. As such, they give rise to a telic interpretation allowing modification by *in x time* adverbials that assign an interval at the end of which the change of state eventuality described by the predicate comes to end, as illustrated in (3).

(3) a. Sue-ka **twu-tal-maney** malu-ess-ta.
Sue-NOM two-month-in thin-PFCT-DEC
'Sue got thin in two months.' [degree inchoative state]
→ change from NOT THIN to THIN

b. Juno-ka **il-nyen-maney** cwuk-ess-ta.
Juno-NOM one-year-in die-PFCT-DEC
'Juno died in a year.' [achievement]
→ change from NOT DEAD to DEAD

In (3a), the degree inchoative state predicate *malu* 'thin' makes reference to the change from *Sue's not being thin* to *Sue's being thin* and as such, can be felicitously modified by the adverbial *twu-tal-maney* 'in two months'. Similarly, in (3b), the achievement predicate *cwuk* 'die' refers to the change from *Juno's not being dead* to *Juno's being dead* and thus, allows modification by the adverbial *il-nyen-maney* 'in a year'. On this observation, one may consider degree inchoative states as achievements since they describe the transition from one state (¬STATE) to another state (STATE) like achievements.

However, I argued that degree inchoative states do not belong to the class of achievements. I provided a set of diagnostics allowing to distinguish degree inchoative states from achievements in Chapter 3 (cf. Sections 3.2.1 and 3.2.2). Among these, we take the different behavior of degree inchoative states and achievements with respect to two diagnostics, as the target property of the grammaticality judgment task: (i) modification by adverbials such as *very* for a degree of parameter; (ii) modification by adverbials such as *slightly* for association with lower-bound scale.

Achievements describe eventualities which are not associated with the property of gradability and as such, they disallow modification by degree adverbials such as *maywu* 'very' intensifying the described eventuality. Moreover, achievements describe punctual eventualities that cannot be partially realized and as a result, they are incompatible with degree adverbials such as *cokum* 'a little/slightly'. The relevant examples discussed in Chapter 3 are repeated in (4a-b) below.

(4) a. Juno-ka il-nyen-maney ***cokum/*maywu** cwuk-ess-ta.
Juno-NOM one-year-in slightly/very die-PFCT-DEC
*'Juno slightly/very died in a year.'

b. Pwungsen-i il-pwun-maney ***cokum/*maywu** theci-ess-ta.
balloon-NOM one-minute-in slightly/very burst-PFCT-DEC
*'A/the balloon burst slightly/very in a minute.'

In contrast, degree inchoative states are compatible with degree adverbials, as illustrated in (5).

(5) a. Sue-ka il-nyen-maney **cokum/maywu** malu-ess-ta.
Sue-NOM one-year-in slightly/very thin-PFCT-DEC
'Sue became slightly/very thin in a year.'

b. Juno-ka il-nyen-maney **cokum/maywu** nulk-ess-ta.
Juno-NOM one-year-in slightly/very old-PFCT-DEC
'Juno got slightly/very old in a year.'

As shown in (5a-b), unlike achievements, degree inchoative states can be felicitously modified by degree adverbials such as *maywu* 'very', showing that they are associated with the property of gradability. That is, the eventualities that they describe can be intensified by the adverbials of this kind. Degree inchoative states also allow modification by degree adverbials such as *cokum* 'a little/slightly' specifying a certain degree to which the described eventuality holds of the subject. In particular, recall that the *cokum* 'a little/slightly' adverbial is oriented toward the lower-bound of a scale. So, the compatibility of degree inchoative states with the *cokum* 'a little/slightly' adverbial (as in (5a-b)) leads us to conclude that degree inchoative states are associated with a lower-bound scale − that is, a minimal value of the relevant property.

Furthermore, degree inchoative states appear in comparative or superlative constructions like gradable adjectives as shown in (6).

(6) Sue-ka il-nyen-maney Mina-**bota** (**te**) malu/nulk-ess-ta.
Sue-NOM one-year-in Mina-than more thin/old-PFCT-DEC
'Sue got thinner/older than Mina in a year.'

The use of the degree inchoative state predicates *malu* 'thin' or *nulk* 'old' in the comparative construction in (6) shows once again that degree inchoative states describe eventualities involving the property of gradability. Recall the proposal given in Section 3.4.5, Chapter 3. I argued that a degree inchoative state is derived from a gradable adjectival root which is associated with the property scale of degrees[32]. Hence, degree inchoative states are associated with gradability.

However, achievements, unlike degree inchoative states, cannot appear in comparative constructions as illustrated in (7).

(7) a. *i pwungsen-i ce pwungsen-**bota** (**te**) theci-ess-ta.
this balloon-NOM that balloon-than more burst-PFCT-DECL
*'This balloon burst more than that balloon.'

b. *Juno-ka Minsu-**bota** (**te**) cwuk-ess-ta.
Juno-NOM Minsu-than more die-PFCT-DECL
*'Juno died more than Minsu.'

Unlike degree inchoative states in (6), achievements in comparative constructions give rise to the oddness of the sentences in (7a-b), showing that achievements describe punctual or instantaneous eventualities that are not associated with the property of gradability.

[32] Recall that gradability distinguishes deadjectival/degree inchoative states from verbal/non-gradable inchoative states (e.g. *al* 'know'). In Chapter 3 (cf. Section 3.4.1), I showed that, unlike degree inchoative states, verbal inchoative states are not associated with gradability. As such, these predicates do not allow modification by degree modifiers and cannot appear in the comparative/superlative construction. The relevant examples discussed in Chapter 3 are repeated in (i-ii) below.

(i) Sue-nun ku sasil-ul ***maywu/*cokum** al-ass-ta.
Sue-TOP that fact-ACC very/slightly know-PFCT-DEC
Intended: *'Sue slightly got aware of the fact.' / *'Sue is very aware of the fact.'

(ii) Sue-nun Yuna-**bota** ku sasil-ul (**te**) al-ass-ta.
Sue-TOP Yuna-than that fact-ACC more know-PFCT-DEC
Intended: *'Sue got aware of the fact more than Yuna did.'

Consequently, the examples (3-7) lead us to conclude that, unlike an achievement, a degree inchoative state in Korean does not describe punctual eventualites; rather it describes eventualities involving change on a scale consisting of different degrees of the described property. As such, degree inchoative states license modification by degree adverbials, while achievements do not.

This obvious contrast between degree inchoative states and achievements with respect to degree adverbial modification provides critical support for the claim that degree inchoative states can be distinguished from achievements, and constitute a distinct class of predicates. Taking this contrast in terms of gradability as the target property, we now ask the question of whether Korean children are able to distinguish degree inchoative states from achievements with respect to degree adverbial modification. This question was experimentally investigated with a grammaticality judgment task which will be discussed in the following section.

6.3 Experiment: Grammaticality judgment task

We designed an experiment examining whether degree inchoative states are considered as a separate class of predicates from achievements in Korean child language.

6.3.1 Research questions and predictions

As have shown in the previous section, degree inchoative states differ from achievements in terms of gradability. Concretely, while an achievement typically describes punctual eventualities that cannot be partially realized and that cannot be intensified, a degree inchoative state describes eventualities that involve the property of gradability. As a result, achievements cannot co-occur with degree modifiers such as *maywu* 'very' or *cokum* 'a little/slightly', while degree inchoative states can be felicitously modified by these adverbials.

With this theoretical claim in mind, we explore whether Korean children are able to infer gradability that characterizes degree inchoative states and consequently, to distinguish them from achievements. The research questions are summarized in (8).

(8) **Research questions:**

a. Are Korean children able to infer gradability involved in degree inchoative states?

b. Do they distinguish degree inchoative states from achievements in terms of gradability?

We expect that if children know that a degree inchoative state describes eventualities involving gradability, then they will accept the co-occurrence of degree modifiers with degree inchoative states. Also, if they know that an achievement describes punctual or instantaneous eventualities, then they will reject the co-occurrence of degree adverbials with achievements. However, if they do not know that degree inchoative states are associated with the gradability, while achievements are not associated with this property, then they will fail to correctly accept degree modification with degree inchoative states and reject it with achievements. These predictions are summarized in Table 18 below.

Table 18. GJT: Predictions

	Inchoative states	Achievements
Degree modification	Yes	No

6.3.2 Methods

6.3.2.1 Participants

The study included thirty (n=30) Korean children in total: ten 4-year-olds (from 4;4 to 4;11 with a mean of 4;6), ten 5-year-olds (from 5;1 to 5;11 with a mean of 5;5) and ten 6-year-olds (from 6;0 to 6;11 with a mean of 6;5). Twenty (n=20) Korean adults (from 24 to 38 with a mean of 30;7) were also tested as the control group. All children and adults were native speakers of Korean. The experiment was conducted in the Kyunggido area kindergarten[33].

6.3.2.2 Procedure

To address the research questions given in (8), we used a Grammaticality Judgment Task (henceforth GJT; cf. Gleitman & Gleitman 1979, Ellis 1990, Goss et al. 1994, Sorace 1996, Han 2000, Theakston 2004 among many others). We chose to adopt this task in this study because it represents an efficient tool to collect grammaticality judgments, allowing us to ascertain children's knowledge of the theoretical questions under investigation, in our case, the distinction between

[33] I'm very grateful to the *Saessak* kindergarten in Ansan, Kyunggido for granting me permission to conduct this experiment.

degree inchoative states and achievements with respect to degree adverbial modification (see e.g. Tribushinina 2011, 2014 for discussion related to degree modifiers in child language).

The issue was how to introduce a grammaticality judgment task to younger children. Children were introduced to a puppet named *Ppukka* who was learning Korean. They were told that they were going to play a card game where the puppet made sentences with the word cards she picked up. Children's task was to judge whether the sentence made by the puppet sounded okay or bad. When they thought the sentence sounded odd, children were also encouraged to correct the puppet. These follow-up corrections enabled us to understand whether they rejected the test sentences for expected reasons. The experimental items were preceded by two practice items whose role was to familiarize children with the task.

Children were tested individually in a separate room by a single experimenter using a laptop computer. The experiment took twenty minutes. Children were reminded that they could go back to their classroom whenever they wanted to. The responses were written on an answer sheet as well as audio-taped.

6.3.2.3 Materials

Two experimental conditions were constructed with predicate type (inchoative states vs. achievements) as a factor. Two degree adverbials *maywu* 'very and *cokum* 'a little/slightly' were used in each predicate type condition. The experimental conditions are summarized in Table 19.

Table 19. GJT: Experimental Conditions

Condition 1:	Inchoative state + degree modifiers
Condition 2:	Achievements + degree modifiers

Recall our predictions. If children know that degree inchoative statse describe eventualities involving gradability, then they will accept the co-occurrence of degree modifiers with degree inchoative states. Also, if they know that achievements describe punctual or instantaneous eventualities, then they will reject the co-occurrence of degree adverbials with achievements. However, if they do not know that degree inchoative states are associated with gradability, while achievements are not associated with this property, then they will fail to correctly accept degree modification with degree inchoative states and reject it with achievements.

Each participant was presented with twelve test sentences interspersed with twelve distractors and control items, for a total of twenty four items. The twelve test materials including six different degree inchoative states and six different achievements are listed in Table 20.

Table 20. GJT: Experimental Items

Degree Inchoative states	**Achievements**
talm 'alike'	*iki* 'win'
sangha 'sour'	*tochakha* 'arrive'
cichi 'tired'	*ttena* 'leave'
kincangha 'nervous'	*theci* 'burst'
cec 'moist'	*tteleci* 'fall (down)'
ppichi 'sullen'	*cwuk* 'die'

We were as careful as possible when designing our stimuli since the degree element *cokum* 'a little/slightly' can sometimes give rise to an ambiguity. To illustrate, consider the following sentence.

(9) Mwulkoki-ka ***cokum*** cwuk-ess-eyo.
fish-NOM a.little die-PFCT-DEC
'A few fish died.' vs. *'A/the fish died a little.'

In (9), the degree element *cokum* 'a little' can modify either the VP *cwuk* 'die' or the NP *mwulkoki* 'fish'. When it combines with the achievement predicate *cwuk* 'die', the sentence is ungrammatical since achievements do not admit degree modification, which is our target structure. On the other hand, it is also possible that the degree element *cokum* 'a little' combines with the NP subject *mwulkoki* 'fish'. In that case, the degree element *cokum* 'a little' measures a certain quantity of the nominal argument *mwulkoki* 'fish' and as such, the NP modified by the degree element *cokum* 'a little' is interpreted as 'a few fish' (see Hackl 2000, Heim 2000, 2006, Kennedy & McNally 2005, Rett 2008, Solt 2009 for related discussion). Under this interpretation, the sentence (9) can be understood as grammatical, contrary to what we want. Thus, in order to block the second interpretation (i.e. the NP modifier interpretation), we used either classifier/determiner

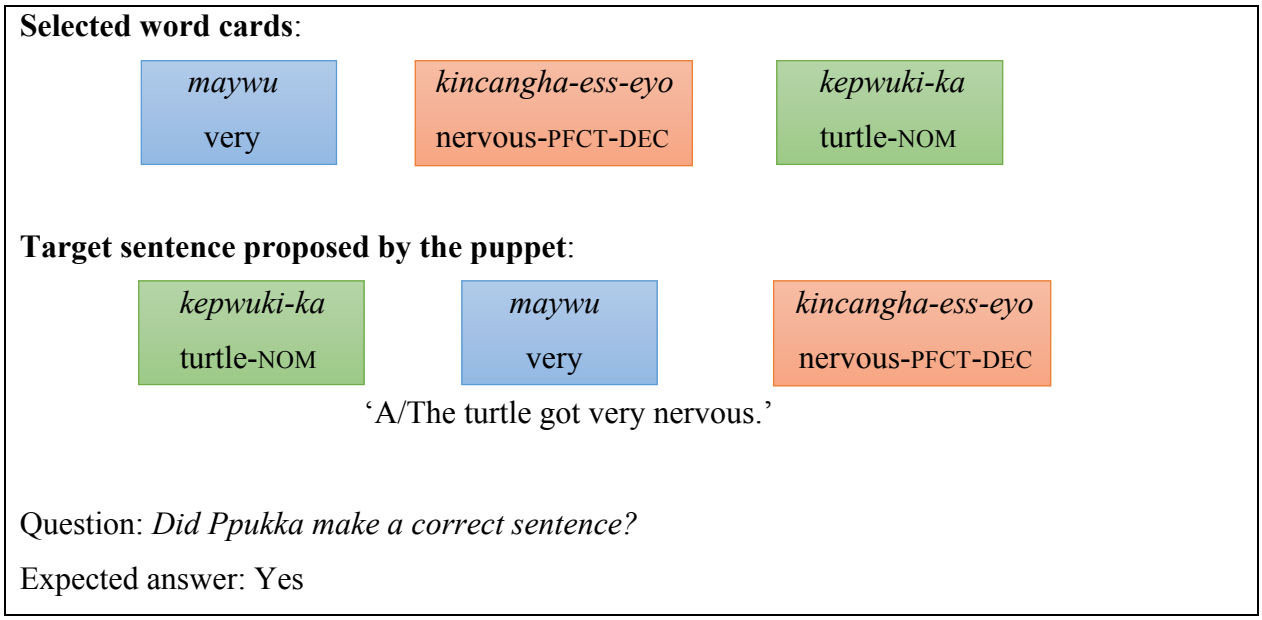
constructions or a referential NP (e.g. *Phangi* a character's name) in test sentences with the degree adverbial *cokum* 'a little', as shown in (10), thereby preventing degree modification of the NP subject as is not the goal of our experimental study.

(10) Phangi-ka / Mwulkoki-han-mali-ka / ku-mwulkoki-ka ***cokum*** cwuk-ess-eyo.
Phangi-NOM / fish-one-CL-NOM / that-fish-NOM a.little die-PFCT-DEC
*'A/The fish is died a little.'

As we did in the previous experiments, we prepared the test items, control items as well as the distractors by making use of computer animations in Microsoft PowerPoint. Each lexical item and the test sentences were presented visually and acoustically so that even younger children who would not be able to read words could participate in the experiment. Moreover, each test sentence did not exceed more than four lexical items to make the task easier for younger children.

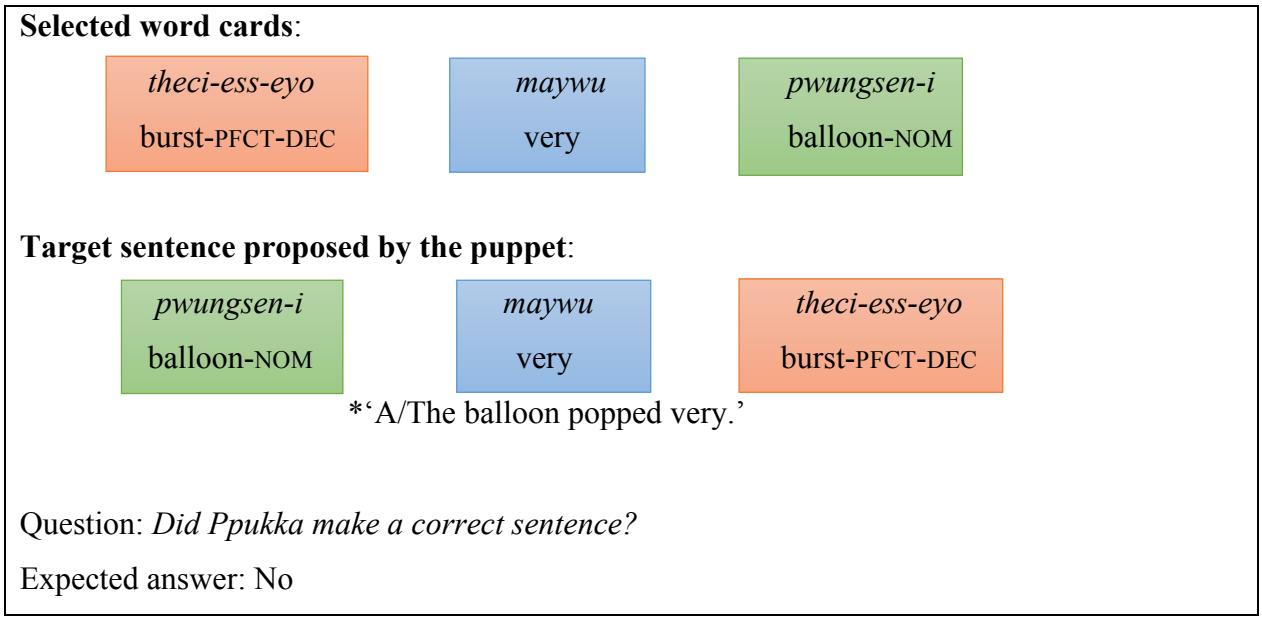
The role of the control items was to check whether children were able to evaluate unambiguously grammatical or ungrammatical sentences with degree modification. Participants who failed more than two control items were discarded from the experiment. We made sure that there was an equal split between control items where the target answer is acceptable/*yes* and those where it is unacceptable/*no*. Test items, distractors and control items were presented in a random order, which was kept constant across children. Figures 39-40 give examples of our experimental stimuli translated into English. The full list of the original items used in the experiment is provided in Appendix 3.

Figure 39. **Condition 1 of GJT**: Degree inchoative state + degree adverbial



As can be seen Figure 39, on the degree inchoative state condition, the puppet picked out three word cards containing the degree modifier *maywu* 'very', the degree inchoative state predicate *kincangha* 'nervous' and the nominal argument *kepwuki* 'turtle'. With these selected cards, the puppet made a test sentence where the degree inchoative state predicate *kincangha* 'nervous' occurring with the degree modifier *maywu* 'very'. Then, children were asked to judge whether the sentence proposed by the puppet sounded good or bad. Since the degree inchoative state predicate describes an eventuality of being nervous which can be associated with the property of gradability, it can felicitously co-occur with the degree modifier. If children infer gradability involved in degree inchoative states, then they will accept the test sentence.

Figure 40. **Condition 2 of GJT**: Achievement + degree adverbial



As illustrated in Figure 40, on the achievement condition, the puppet picked out three word cards containing the degree modifier *maywu* 'very', the achievement predicate *theci* 'burst' and the nominal argument *pwungsen* 'balloon'. With these selected cards, the puppet made a test sentence where the achievement predicate *theci* 'burst' co-occurring with the degree modifier *maywu* 'very'. Then, children were asked to judge whether the sentence proposed by the puppet sounded good or bad. Unlike the degree inchoative state one in Figure 39, the achievement predicate describes a punctual eventuality, that is, a change from *not having burst* to *having burst*, and as a result, it cannot felicitously appear with the degree modifier. If children that achievements are not associated with gradability, they will reject the test sentence. Especially, we expect them to single out the degree modifier *maywu* 'very' as an inappropriate word in the test sentence, in their follow-up correction.

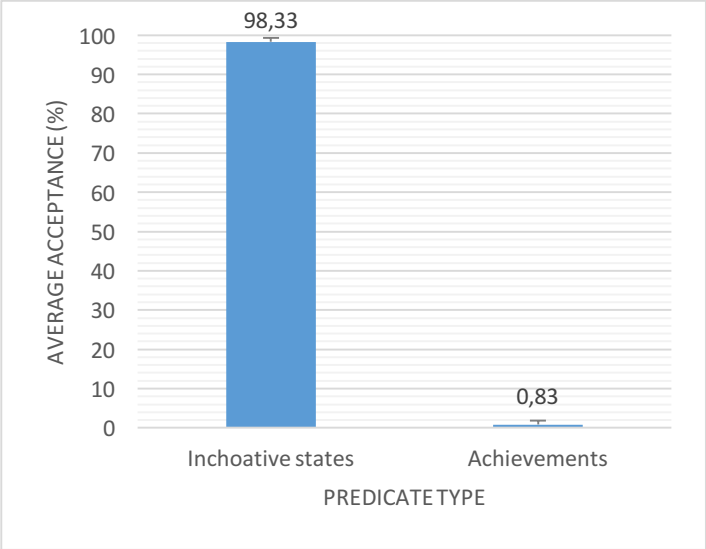
6.3.3 Results

The dependent variable in the following analyses was the percentage of acceptance of degree modifiers (i.e. *maywu* 'very' and *cokum* 'a little/slightly'). All participants performed well on the control items; no participant was thus excluded from the analysis.

6.3.3.1 Results for the adult control group

Let us first consider the results of the adults control group given in Figure 41 below.

Figure 41. GJT: Average acceptance of degree modification by Korean adults (n=20)



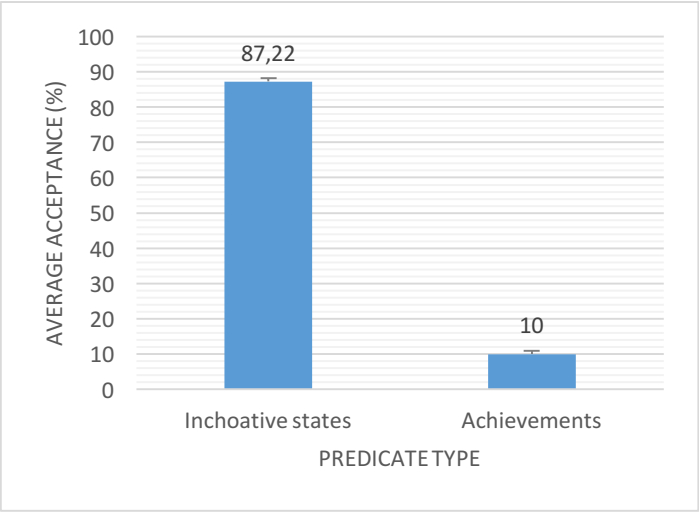
Korean adults showed the expected target performance. That is, they accepted degree adverbial modification with degree inchoative states (98.33% of acceptance), while rejected it with achievements (0.83% of acceptance). The paired-sample t-test revealed that the control group made a significant difference between degree inchoative states and achievements with respect to degree adverbial modification ($t(19) = 71.398$, $p < .001$).

With the expected behavior of the adult control group in hand, let us now turn to the Korean children's results.

6.3.3.2 Overall results

Recall our predictions. If children know that an inchoative state refers to a gradable change on a scale of the described property, while an achievement refers to a punctual (or instantaneous) change, then they will accept the occurrence of degree modifiers with inchoative states and reject it with achievements. Figure 42 below presents the children's results of the grammaticality judgment task.

Figure 42. GJT: Average acceptance of degree modification by children (n=30)



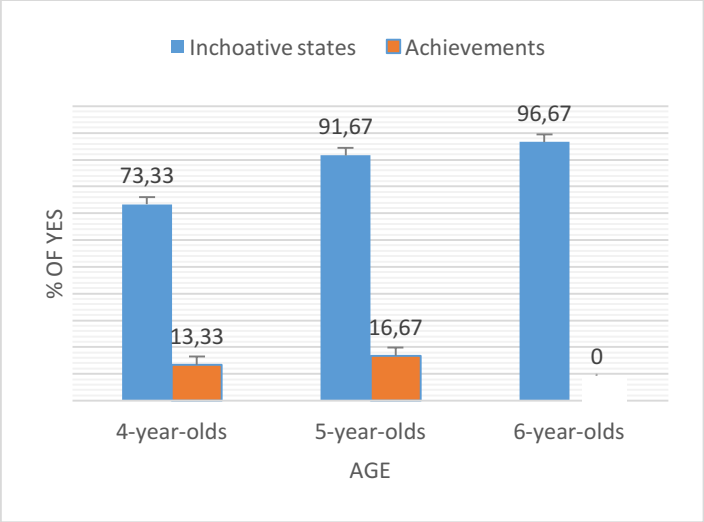
As illustrated in Figure 42 above, overall, Korean children showed the expected performance with the two different types of predicates. Specifically, they accepted the co-occurrence of degree modifiers with inchoative states (87.22% of acceptance) and rejected it with achievements (10% of acceptance), like the adult control group. The statistical analysis revealed that there was a statistically significant difference between inchoative states and achievements in children's acceptance of degree modification ($t(29) = 17.796$, $p < .001$), meaning that children were accepting degree modifiers significantly more with inchoative states than with achievements. The relatively higher acceptance rate with inchoative states and the higher rejection rate with achievements suggest that children clearly distinguished inchoative states from achievements in terms of the gradability of the described eventuality.

In the following section, we consider the results by age groups to examine whether there is an effect of age in children's behavior.

6.3.3.3 Results by age groups

The results by age groups are provided in Figure 43 below.

Figure 43. GJT: Average acceptance of degree modifiers by age groups



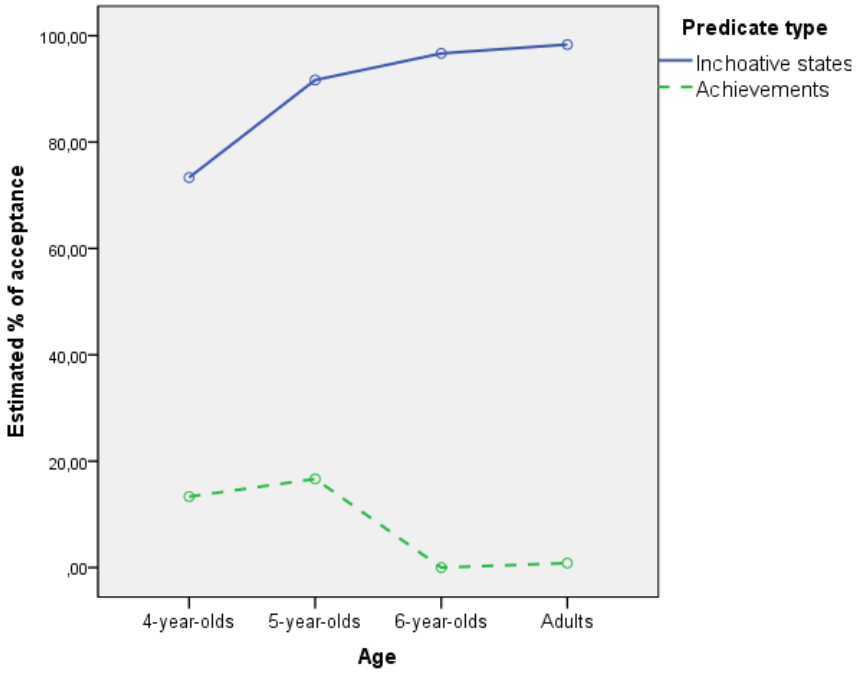
In the degree inchoative state condition, most 4-year-olds correctly accepted degree modification (73.33% of acceptance) and even more so, 5-year-olds and 6-year-olds showed a high acceptance rate on the co-occurrence of degree modifiers (91.67% of acceptance by 5-year-olds, and 96.67% of acceptance by 6-year-olds).

In the achievement condition, 4-year-olds and 5-year-olds mainly rejected the co-occurrence of degree modifiers (13.33% of acceptance by 4-year-olds, and 16.67% of acceptance by 5-year-olds), as expected. And no 6-year-olds accepted achievements co-occurring with degree modifiers (0% of acceptance).

A two-way mixed ANOVA was conducted on the results to examine whether there was a significant interaction between predicate type factor and age factor in children's acceptance rate of degree modification. The statistical analysis was run with age (4-year-olds vs. 5-year-olds vs. 6-year-olds vs. adults) as a between-subjects variable and predicate type (inchoative states vs. achievements) as a within-subjects variable. The dependent variable was the percentage of acceptance of degree modification. The ANOVA revealed a significant effect of predicate type ($F(1,46) = 1383.48$, $p < .001$, partial $\eta^2 = .968$), a significant effect of age ($F(3, 46) = 2.96$, $p = .042$, partial $\eta^2 = .162$), and a significant two-way interaction between predicate type and age factors ($F(3, 46) = 17.48$, $p < .001$, partial $\eta^2 = .533$). Tukey HSD post-hoc tests revealed that children across age were adult-like ($p = .055$ for 4-year-olds, $p = .481$ for 5-year-olds, $p = .979$ for 6-year-olds) in

both accepting degree inchoative states and rejecting achievements with regard to the degree modification. Figure 44 below illustrates the interaction between predicate type and age factors.

Figure 44. GJT: Estimated acceptance of degree modification
by predicate type by age groups



As shown in Figure 44 above, the acceptance rate of degree modification with degree inchoative states increases from 4-year-olds to 6-year-olds, while conversely decreasing from 4-year-olds to 6-year-olds in the case of achievements. In both predicate type conditions, we observe an improvement towards the adult-like performance. Thus, the results of the grammaticality judgment task show that children's performance improves with age, from an almost adult-like performance at age four to an adult-like performance by age five and six.

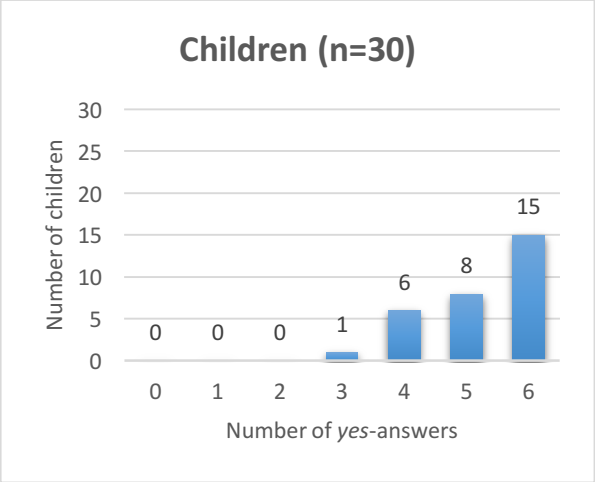
In sum, these results show that, by about 4 years of age, Korean children can infer gradability characterizing degree inchoative states, but not achievements. That is, they distinguish degree inchoative states from achievements in that they accept the co-occurrence of degree modifiers with degree inchoative states, and reject it with achievements.

6.3.3.4 Results by individual responses

In this section, we attempt to break down the results for children by individual responses within each condition. Recall that the overall results for children showed 87.22% of acceptance rate of degree modification with degree inchoative states and 10% with achievements. The main reason for considering the by-subject breakdown results is to examine whether these acceptance rates in each condition reflect consistent[34] responses to all the target items or they rather reflect variability across subjects.

In the degree inchoative state condition, children were generally consistent in their responses. There were 29 out of 30 children who consistently accepted degree modification with degree inchoative states. One child provided an equal number of *yes*- and *no*-answers. Figure 45 gives the distribution of children as a function of the number of times they accepted degree modification in the degree inchoative state (DegINS) condition.

Figure 45. GJT: Distribution of children in DegINS condition across the number of times they accepted degree modification



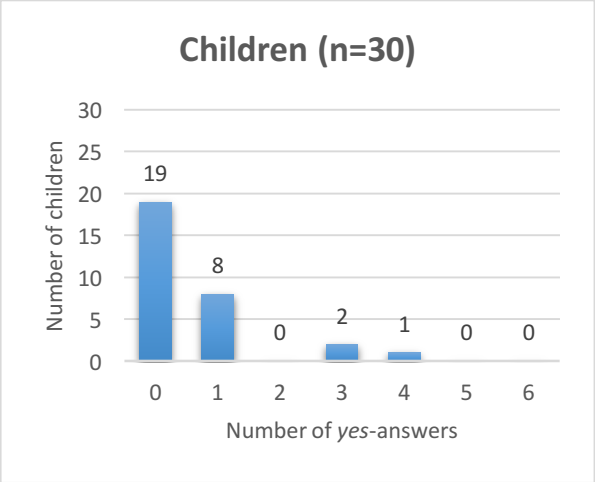
As we can see in Figure 45 above, 15 out of 30 children always accepted degree modification with degree inchoative states.

Likewise, in the achievement condition, children were also consistent in their responses. There were 27 out of 30 children who consistently rejected achievements co-occurring with degree

[34] We mean, by 'consistent', that children gave the same answer (*yes* or *no*) to *x* out of *y* items per condition.

modifiers. Two children provided an equal number of *yes*- and *no*-answers and one child incorrectly accepted 4 out of 6 trials. A graph presenting the distribution of children in the achievement (ACH) condition across the number of times they accepted degree modification is given in Figure 46 below.

Figure 46. GJT: Distribution of children in ACH condition
across the number of times they accepted degree modification



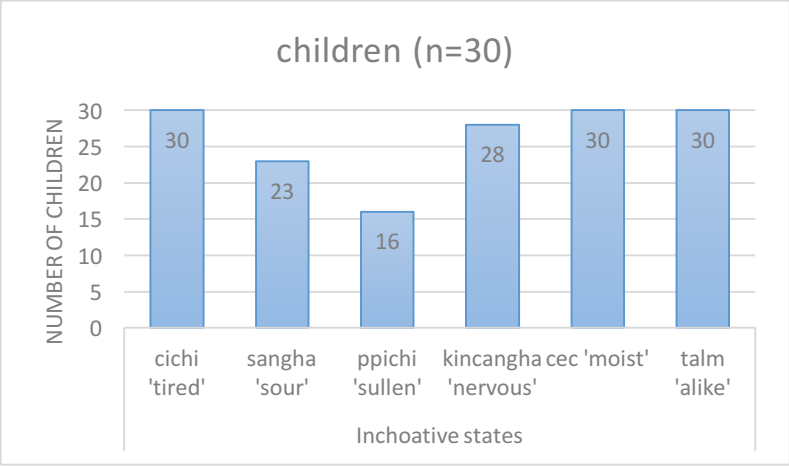
As illustrated in Figure 46, 19 out of 30 children systematically rejected degree modification with achievements. Most importantly, when we looked at the results by individual subjects, children who consistently rejected degree modification with achievements also consistently accepted degree modification with inchoative states. That is, 27 out of 30 children who rejected degree modification with achievements shown in Figure 46 are among those (29 out of 30) who accepted degree modification with inchoative states shown in Figure 45.

Thus, the results broken down by individual responses reveal that children were mainly consistent in accepting degree modifiers with degree inchoative states and rejecting them with achievements. These results show that children understood the distinction between degree inchoative states and achievements in terms of gradability of the described eventuality.

6.3.3.5 Results by individual predicates

Let us now examine the results broken down by individual predicates. The main purpose of considering the by-item breakdown of results is to investigate whether children accepted degree modification with degree inchoative states and rejected it with achievements in all the target predicates or they showed variability across predicates. This by-item breakdown of results will allow us to understand whether there is the particular predicate with which Korean children have had difficulties in identifying the relevant aspectual properties. First, Figure 47 presents the by-item breakdown in the degree inchoative state (DegINS) condition.

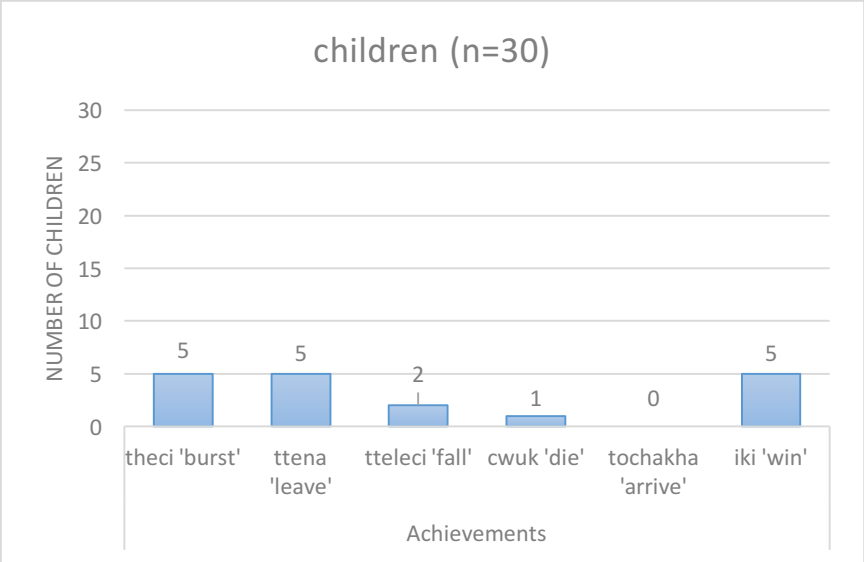
Figure 47. GJT: Number of *yes*-answers in DegINS condition



In the degree inchoative state condition, children were accurate in accepting degree modification with four degree inchoative state predicates (i.e. *cichi* 'tired', *kincangha* 'nervous', *cec* 'moist', *talm* 'alike'). For these four degree inchoative state predicates, children correctly inferred the gradability licensing the modification by degree adverbials. With the degree inchoative state predicate *sangha* 'sour', most of children (23 out of 30 children) correctly accepted degree modification, but some of them (7 out of 30 children) who were young children incorrectly rejected it. Interestingly, children were divided into two groups with respect to the degree inchoative state predicate *ppichi* 'sullen'. That is, half of them (16 out of 30 children) correctly accepted degree modification with this predicate, while the others (14 out of 30 children) incorrectly rejected degree modification.

Second, Figure 48 presents the results by individual predicates in the achievement (ACH) condition.

Figure 48. GJT: Number of *yes*-answers in ACH condition



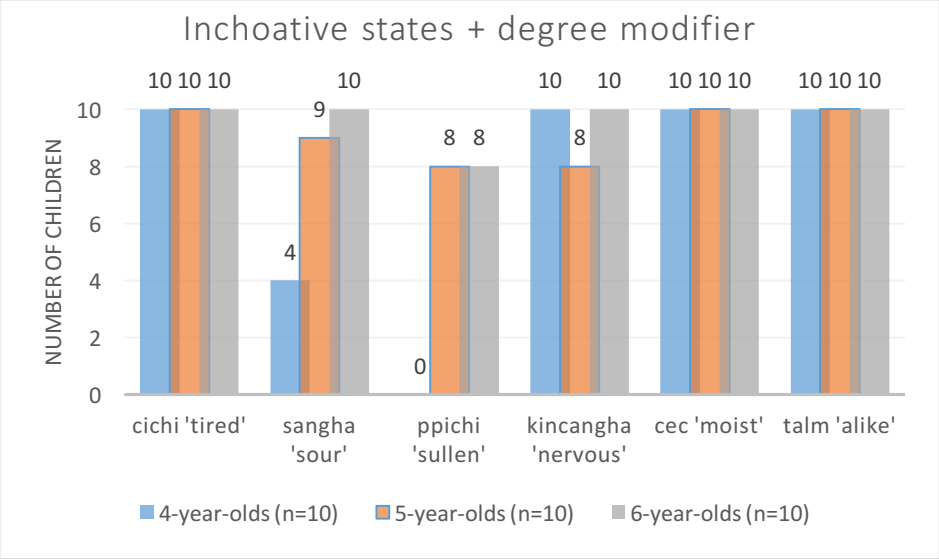
In the achievement condition, children were generally accurate in rejecting degree modification with all the achievement predicates. One notable observation is that there was one achievement predicate *tochakha* 'arrive', which all of the children correctly treated as an achievement predicate allowing it to combine with degree modifiers. Some children (5 out of 30 children) incorrectly accepted degree modification with three out of six achievement predicates (i.e. *theci* 'burst', *ttena* 'leave', *iki* 'win'). Two other children failed to consider the predicate *tteleci* 'fall' as an achievement predicate and yet, one 5-year-old failed to treat the predicate *cwuk* 'die' as an achievement predicate.

Thus, the by-item results show that, overall, children were able to make a contrast between degree inchoative states and achievements with respect to the modification by degree adverbials, but there are some predicates with which some children seem to have difficulties in identifying their relevant aspectual properties.

Let us now consider the results by individual predicates by age groups to examine whether there is a variability across age groups in children's behavior observed above. Figure 49 below

presents children's results for individual predicates by age groups in the degree inchoative state condition.

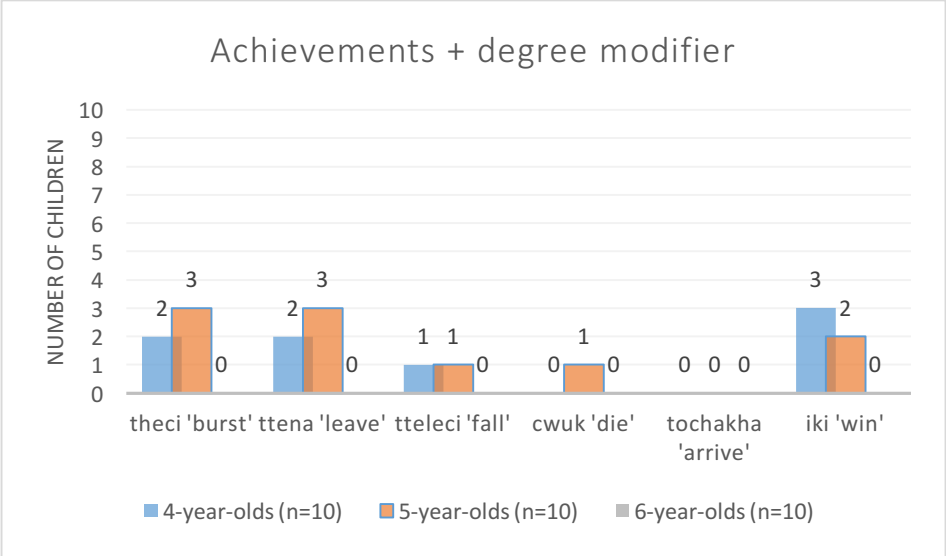
Figure 49. GJT: Results for individual predicates on the acceptance of degree modification in the DegINS condition by age groups



In the degree inchoative state condition, there are three degree inchoative state predicates (i.e. *cichi* 'tired', *cec* 'moist', *talm* 'alike') with which all the children across age groups correctly accepted degree modification. Next, children generally accepted the predicate *kincangha* 'nervous', as expected, even though there were 2 out of 10 5-year-olds who incorrectly rejected its combination with the degree modifier. Interestingly, with two other degree inchoative state predicates (i.e. *sangha* 'sour', *ppichi* 'sullen'), 5-year-olds and 6-year-olds correctly accepted degree modification, while most 4-year-olds incorrectly rejected it. This is especially the case of the predicate *ppichi* 'sullen', for which, as we can see in Figure 10, all 4-year-olds strongly rejected degree modification. This shows that younger children have some difficulties in inferring the gradability entailed in these two predicates, *sangha* 'sour' and *ppichi* 'sullen'.

Figure 50 below presents children's results for individual predicates by age groups in the achievement condition.

Figure 50. GJT: Results for individual predicates on the acceptance of degree modification in the ACH condition by age groups



In the achievement condition, overall, all the predicates were correctly identified as change-of-state verbs describing punctual or instantaneous changes in their meaning, by children across age groups. Children generally judged the test sentences containing achievements with degree modifiers as ungrammatical. With three achievement predicates (i.e. *tteleci* 'fall (down)', *cwuk* 'die', *tochakha* 'arrive'), children across age groups correctly rejected degree modification, as expected. The other predicates (i.e. *theci* 'burst, *ttena* 'leave', *iki* 'win') were also correctly rejected by 6-year-olds. However, a few 4- and most 5-year-olds (i.e. 2 to 3 out of 10 children in each age group) incorrectly accepted modification by degree adverbials.

To summarize, the by-item breakdown results showed that children generally know that degree inchoative states can freely combine with degree modifiers, while achievements cannot. We have seen that with four degree inchoative state predicates (i.e. *cichi* 'tired', *kincangha* 'nervous', *cec* 'moist', *talm* 'alike') and three achievements (i.e. *tteleci* 'fall (down)', *cwuk* 'die', *tochakha* 'arrive'), all children have an adult-like performance. However, there are some degree inchoative state predicates (i.e. *sangha* 'sour', *ppichi* 'sullen') with which some younger children have difficulties in identifying them as gradable change-of-state verbs; as a result, they incorrectly rejected these predicates in combination with degree modifiers. Likewise, there are some achievement predicates (i.e. *theci* 'burst', *ttena* 'leave', *iki* 'win') with which a few younger

children have difficulties in identifying as punctual change-of-state verbs; as a result, they incorrectly accepted degree modification with these predicates.

Overall the results showed that, although at age four and five, Korean children seem to understand the distinction between degree inchoative states and achievements, children in this age range still commit some errors with these predicates. However, by age six, children seem to converge on the adult grammar as far as knowledge of the relevant properties of the two classes of change-of-state verbs under discussion.

6.3.4 Discussion

So far, we have examined the results of the grammaticality judgment task investigating whether degree inchoative states and achievements can be distinguished with respect to degree adverbial modification in Korean child language. The overall results showed that most of our child participants have target-like knowledge of the relevant properties of degree inchoative states and achievements, respectively. More specifically, they know that a degree inchoative state is associated with gradability − that is, it makes reference to gradable change on a scale related to the described property, whereas an achievement is not associated with gradability − that is, it describes punctual or instantaneous change. Hence, most of the children, even 4-year-olds, correctly accepted the occurrence of degree modifiers with degree inchoative states, while they rejected it with achievements.

Importantly, when children rejected the test sentences involving achievements with degree modifiers, they correctly identified the source of the ungrammaticality/oddness of the test sentences. That is, children volunteered other appropriate adverbials such as *ilccik* 'early' (12b) or onomatopoeic words such as *pheng* 'pop' (11b), which in Korean felicitously modify achievements. Examples of the test sentences volunteered with achievements are given in (11-12).

(11) a. *Sentence proposed by the puppet*:

Pwungseon-i	**maywu**	tteci-ess-eyo.
balloon-NOM	very	burst-PFCT-DEC

*'A/the balloon burst very.'

b. *Sentence volunteered by children*:

Pwungseon-i **pheng** theci-ess-eyo.

balloon-NOM pop burst-PFCT-DEC

literally: 'A/the balloon burst pop.'

(12) a. *Sentence proposed by the puppet*:

Peynci-ka **maywu** tochakha-ess-eyo.'

letter-NOM very arrive-PFCT-DEC

*'A/The letter arrived very.'

b. *Sentence volunteered by children*:

Peynci-ka **ilccik** tochakha-ess-eyo.'

letter-NOM early arrive-PFCT-DEC

*'A/The letter arrived early.'

In (11a-b), children know that the achievement predicate *theci* 'burst' describes an eventuality of change that instantaneously takes place. So, they correctly pointed out that the degree adverbial *maywu* 'very' cannot co-occur with the achievement predicate, and volunteered the onomatopoeic word *pheng* 'pop' instead. Likewise, in (12a-b), children correctly identified the predicate *tochakha* 'arrive' as achievement describing a punctual eventuality which is not associated with the gradability. Accordingly, they rejected modification by the degree adverbial *maywu* 'very' with this predicate and to rescue the test sentence, they volunteered another adverbial *ilccik* 'early' which is compatible with the given predicate. Thus, children's follow-up justifications tell us that they provided *no*-responses to the test sentences containing achievements with degree modifiers for expected reasons. That is, they correctly know that the combination between achievements and degree adverbials is illicit, since achievements do not describe eventualities that exhibit gradability and rather, describe "non-extended eventualities of change" (Rothstein 2004).

On the basis of the results of our experiment, we conclude that Korean children know that degree inchoative states do not belong to the class of achievements, and they can draw a significant distinction between degree inchoative states and achievements, especially in terms of gradability of the change involved, as we claimed in Chapter 3 (cf. Section 3.2.2). Given the high rate of target-

like performance of 4-year-olds (73.33% of acceptance of degree inchoative states co-occurring with degree modifiers and 86.67% of rejection of achievements co-occurring with degree modifiers), we particularly conclude that this distinction between degree inchoative states and achievements is acquired very early and its accuracy improves with age.

6.4 Summary

In this chapter, we have investigated Korean children's ability to make a distinction between degree inchoative states and achievements which we assumed a BECOME event that contributes a change of state in their representation (cf. Section 3, Chapter 3). We argued that degree inchoative states do not belong to the class of achievements since they do not have the same predicate representation. Specifically, a degree inchoative state describes eventualities that can be gradably realized, while an achievement describes punctual eventualities that cannot be partially or gradably realized.

We have provided experimental evidence from Korean child language to substantiate this theoretical claim. Our experimental results with 4, 5 and 6-year old children revealed that even younger children (4-year-olds) are able to draw a significant distinction between degree inchoative states and achievements in terms of gradability, though the acquisition of individual predicates is not fully settled at this age. However, by age 6, Korean children have adult-like knowledge of the semantic properties associated with degree inchoative states and achievements respectively.

6.5 Appendix 3

Condition 1: Degree inchoative states (DegINS)+degree modifiers → Expected answer: Yes

INS1: 'Thokki-ka maywu cichi-ess-eyo.'
rabbit-NOM very tired-PFCT-DEC
'A/The rabbit got very tired.'

INS2: 'Wuywu-ka cokum sangha-ess-eyo.'
milk-NOM a.little sour-PFCT-DEC
'The milk is a little sour.'

INS3: 'Kom-i cokum ppichi-ess-eyo.'
bear-NOM a.little sullen-PFCT-DEC
'A/The bear got a little sullen.'

INS4: 'kepwuki-ka maywu kincangha-ess-eyo.'
turtle-NOM very nerveous-PFCT-DEC
'A/The turtle is very nervous.'

INS5: 'Yangmal-i cokum cec-ess-eyo.'
socks-NOM a.little wet-PFCT-DEC
'Socks got a little wet.'

INS6: 'Aki-ka emma-lul maywu talm-ass-eyo.'
baby-NOM mom-ACC very alike-PFCT-DEC
'A/The baby looks very like his(her) mom.'

Condition 2: Achievements (ACH)+ degree modifiers → Expected answer: No

ACH1: 'Pwungsen-i maywu theci-ess-eyo.'
balloon-NOM very burst-PFCT-DEC
*'A/The balloon very popped.'

ACH2: ‘Phani-ka yehayng-ul cokum ttena-ss-eyo.’
P-NOM trip-ACC a.little leave-PFCT-DEC
*‘Phangi left on a trip a little.’

ACH3: ‘Koyangi-ka chimday-eyse maywu tteleci-ess-eyo.’
cat-NOM bed-from very fall.down-PFCT-DEC
*‘A/The caat fell down very from the bed.’

ACH4: ‘Mwulkoki-han-mali-ka cokum cwuk-ess-yo.’
Fish-one-CL-NOM a.little die-PFCT-DEC
*‘A fish died a little.’

ACH5: ‘Peynci-ka maywu tochakha-ess-eyo.’
letter-NOM very arrive-PFCT-DEC
*‘A/The letter very arrived.’

ACH6: ‘Phangi-ka kyeim-eyse cokum iki-ess-eyo.’
P-NOM game-in a.little win-PFCT-DEC
*‘Phangi won a little a/the game.’

Chapter 7 Conclusion

This chapter summarizes my proposals concerning the meaning of (degree) inchoative states in Korean as well as the results of the experimental studies investigating Korean children's knowledge of the meaning of (degree) inchoative states. I conclude with some remaining issues for future research.

7.1 Summary of my proposals

In Chapters 2 & 3, I investigated the meaning of "inchoative states" in Korean. Specifically, I proposed the following characteristics underlying inchoative states in Korean:

a. An inchoative state describes an eventuality which has temporal duration, like a pure state.
b. An inchoative state also makes reference to a change of state, like an achievement.
c. An inchoative state does not associate the eventualities it describes with an endpoint (i.e. a final boundary), unlike an achievement.
d. However, an inchoative state does make reference to an *onset* (i.e. an initial boundary), unlike a pure state.

To account for the properties (a-d), building on Bar-el (2005), I proposed the following representation for basic inchoative states in Korean.

(1) Inchoative states in Korean: $\lambda e.\exists e_1 \exists e_2.\ e = e_1 \oplus e_2$ and e_2 immediately follows e_1 and $[[\text{BECOME P}]](e_1) = 1$ and $[[P]](e_2) = 1$.

According to (1), an inchoative state in Korean is a semantically complex predicate describing eventualities that are made up of two sub-events: a BECOME event (e_1) which is a change of state − an eventuality of the kind an achievement could describe −, immediately followed by a simple P-event (e_2) − an eventuality of the kind a typical state could describe. I demonstrated that different

temporal adverbials can modify different parts of the complex predicate. Crucially, the BECOME event itself constitutes the *onset* of the durative eventuality (i.e. the simple P-event). An inchoative state in Korean thus describes eventualities that are made up of a durative eventuality together with the prior change that brings this eventuality about. This is the basic meaning of inchoative states in Korean.

In addition, I established two sub-classes of inchoative states in Korean: verbal inchoative states vs. deadjectival inchoative states. The property which distinguishes both classes is gradability.

- Deadjectival inchoative states which are derived from adjectival roots [$_{\text{Adj}^\circ}$ *state*] via zero affixation of a null inchoative morpheme BECOME. These predicates give rise to the gradability effects since they are derived from (gradable) adjectives.

- Verbal inchoative states do not exhibit gradability.

I demonstrated that both deadjectival inchoative states and verbal inchoative states show variable telicity. Verbal inchoative states modified by *in/for x time* adverbials yield two readings: (i) a change of state reading where at the end of x time, the change of state eventuality described by an inchoative state predicate occurs and (ii) a resultant state reading where throughout a period of x time, the durative eventuality described by an inchoative state predicate holds. Deadjectival inchoative states modified by *in/for x time* adverbials yield three different readings: (i) a change of state reading; (ii) a resultant state reading and (iii) a process of iterated changes reading (unlike verbal inchoative states) where throughout a period of x time, iterated changes of the property described by the deadjectival inchoative state predicate take place. Hence, I qualified deadjectival inchoative states as "degree inchoative states", as opposed to (regular) inchoative states which are verbal inchoative states. The three different readings of degree inchoative states are shown in (2).

(2) a. Juno-ka **il-nyen-maney** saljji-ess-ta.
Juno-NOM one-year-in fat-PFCT-DEC
'Juno got fat in a year.' [change of state]

b. Juno-ka **il-nyen-tongan** saljji-essess-ta.
Juno-NOM one-year-for fat-PAST-DEC
'Juno had got fat and was fat for a year.' [resultant state]

c. Juno-ka **il-nyen-tongan** saljji-ess-ta.
Juno-NOM one-year-for fat-PFCT-DEC
'Juno got fatter and fatter for a year.' [process of iterated changes]

To account for the readings shown in (2a-c), I argued that a degree inchoative state can alternate between two senses: 'become S' or 'become S-*er*', thus making a parallel with degree achievements which show a similar pattern, on Abusch (1986) and Kearns (2007)'s analysis. I argued that degree inchoative states differ from degree achievements in two respects:

a. On their telic reading, degree inchoative states are associated with a scale that has a lower-bound − that is, a *minimal* value of the relevant property −, unlike degree achievements which are associated with an upper-bound scale corresponding to a maximal value. In other words, the change of state described by a degree inchoative state is the change that leads to the attainment of a *minimal* value of the relevant property which can be seen as the *onset* of the described state. Accordingly, a telic degree inchoative states is interpreted as 'become (minimally) S' (*standard telos*; Kearns 2007), unlike a telic degree achievement which is interpreted as 'become maximally S' (*maximal telos*; Hay et al. 1999).

b. Both degree inchoative states and degree achievements show variable telicity. However, when modified by *for x time* adverbials, degree inchoative states allow two atelic readings, i.e. a resultant state reading and a process of iterated changes reading, while degree achievements allow only one, i.e. the process of iterated changes reading.

The proposal given in (a) cross-linguistically supports Kearns (2007)'s analysis according to which a lower-bound scale of the relevant property constitutes a *standard telos*.

Assuming that sentences containing degree inchoative states should be evaluated with respect to a degree parameter that constitutes a minimal value of the relevant gradable property, I accounted for the readings shown in (2a-c) of degree inchoative states induced by *in/for x time* adverbials, as follows.

The degree inchoative state in (2a) is interpreted as 'become S' and allows modification by the *in a year* adverbial measuring the time it takes to attain (at least) a minimal degree of the relevant gradable property. The semantic value for the change of state reading of the degree inchoative state in (2a) is as in (3).

(3) The VP of (2a):
$[[VP]]^d = \lambda e.\exists e_1 \exists e_2.\ e=e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 contains an event of Juno's becoming fat to degree *d* as its final part and e_1 has a temporal duration of one year and e_2 is an event of Juno's being fat to degree *d*.

The degree inchoative state in (2b) interpreted as 'become S' also allows modification by the *for a year* adverbial measuring the duration of an eventuality of Juno's being fat. The semantic value for the resultant state reading of the degree inchoative state in (2b) is as in (4).

(4) The VP of (2b):
$[[VP]]^d = \lambda e.\exists e_1 \exists e_2.\ e=e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 is an event of Juno's becoming fat to degree *d* and e_2 is an event of Juno's being fat to degree *d* and e_2 has a temporal duration of one year.

The degree inchoative state in (2c) is interpreted as 'become S-*er*'. Specifically, it describes iterated changes of the associated property – progressions to new degrees of the associated property − that occur during the interval given by *for x time* adverbials. We accounted for this 'become S-*er*' reading of the degree inchoative state in (2c), by assuming a TO SOME DEGREE operator which has the effect of brining us to degrees other than the standard degree. We suggested that in theses cases, we apply a REPEATEDLY operator to the degree inchoative state obtained after performing the TO SOME DEGREE operation. The result is a predicate that holds of a sequence of eventualties that are each made up of a BECOME event and a simple P-event. Then, the *for a year* adverbial

modifies this predicate in (2c). The semantic value for the process of iterated changes reading of the degree inchoative state in (2c) is as in (5).

(5) The VP of (2c)
$[[VP]]^d$ = λe. e is made up of a sequence of events in {e': There is some degree d' such that, for some e_1, e_2, e' = $e_1 \oplus e_2$ and e_2 immediately follows e_1 and e_1 is an event of Juno becoming fat to degree d' and e_2 is an event of Juno being fat to degree d'} and e has a temporal duration of one year.

As such, we provided an account for the three different readings of degree inchoative states in Korean induced by *in/for x time* adverbials, with the basic semantics of inchoative states proposed in (1).

7.2 Summary of the experimental studies

This dissertation also presented a series of experimental studies investigating Korean children's knowledge of the meaning of (degree) inchoative states.

Preference task

In Chapter 4, we examined Korean children's knowledge of the distinction between (deadjectival) inchoative states and pure states in terms of the inherent inchoativity of (deadjectival) inchoative states. In particular, we took the different behavior of (deadjectival) inchoative states and pure states with respect to the distribution of the overt inchoative marker *-e ci* adding a BECOME operator to the meaning of a predicate. The idea was that a pure state describes a durative eventuality without referring to the transition into that eventuality and as such, obligatorily combines with *-e ci* to express inchoativity (PS+*-e ci*). In contrast, a (deadjectival) inchoative state describes a durative eventuality with the change (i.e. BECOME event) into that eventuality and as such, is lexically specified to express inchoativity (INS+-*Ø*). The morphologically-derived form for (deadjectival) inchoative states (INS+*-e ci*) cannot be generated due to morphological blocking (cf. Aronoff 1976, Andrews 1990).

Our results of the task revealed a typical development pattern for pure states and interestingly a U-shaped development pattern (cf. Pinker 1984, Marcus et al. 1992) for (deadjectival) inchoative

states. That is, the target-like preference for the morphologically-derived form with pure states improves with age. However, while most 4-year-olds correctly preferred the lexically-specified form for (deadjectival) inchoative states over the morphologically-derived form, more than half of 5-year-olds and some 6-year-olds incorrectly preferred the morphologically-derived form. The results suggest that

a. by about 5 years of age, children have acquired the morphological rule of *-e ci* deriving an inchoative meaning. The acquisition of this new morphological rule makes children at this age to be adult-like with pure states, but to overregularize the rule of *-e ci* to (deadjectival) inchoative states, violating the principle of morphological blocking.

b. by about 6 years of age, Korean children (i) know that a pure state lacks a BECOME event in its semantics, while a (deadjectival) inchoative state contains the BECOME event giving rise to inchoativity in its representation; (ii) know the morphological rule of *-e ci* deriving an inchoative meaning of a predicate and as such, can generate the morphologically-derived form for pure states which, by hypothesis, are lexically stative; (iii) are aware of the morphological blocking principle and as such, can generate the lexically-specified form for (deadjectival) inchoative states which, by hypothesis, are lexically inchoative.

However, the results did not allow us to conclude whether younger children have the adult-like meaning of (deadjectival) inchoative states since the target form for (deadjectival) inchoative states in the inchoativity paradigm was the bare form itself in this task. To understand younger children's relevant knowledge of (deadjectival) inchoative states, we carried out another experiment presented in Chapter 5.

Truth Value Judgment task

In Chapter 5, we further investigated whether children can distinguish (deadjectival) inchoative states from pure states in assigning different temporal readings to these two classes of states combined with the perfect marker *-ess*. The target property of the task was that the perfect marker *-ess* crucially yields different temporal readings when it combines with these two types of states:

with a pure state (PS), *-ess* yields an anterior (ANT) reading where the described eventuality is construed as having occurred prior to the utterance time, and no longer holds at the utterance time. In contrast, with a (deadjectival) inchoative state (INS), *-ess* yields a simultaneous (SIM) reading where the described eventuality holds at the utterance time. Recall that telic predicates which we assume the BECOME event in their predicate representation also yield a simultaneous reading like (deadjectival) inchoative states.

We found the following generalizations emerged as regard to Korean children's relevant knowledge:

a. by about 4 years of age, Korean children have adult-like knowledge of the temporal interpretation of pure states, in that they correctly interpreted (and produced) *-ess* in the anterior context and the bare form (*-Ø*) in the simultaneous context.

b. At this age, they can distinguish the two types of states combined with *-ess* at least in the simultaneous context, like adults, in that they interpreted (and produced) *-ess* with (deadjectival) inchoative states, but not with pure states.

Two patterns of errors were identified: (i) most of the children (53.33%) unexpectedly accepted and produced *-ess* affixed to inchoative states in the anterior context. The complex reduplicant *-essess* which is the target form for an anterior interpretation of (deadjectival) inchoative states is absent from these children's grammar. For these children's non-target-like use of *-ess* affixed to (deadjectival) inchoative states in the anterior context, I have suggested a number of possible explanations:

i. These children would understand the meaning of *-ess* and *-essess*, but just they have a problem of the relevant size of the reference time (adopting Cable (2015)'s analysis of generating cessation inferences of the discontinuous past).

ii. These children have acquired the semantic distinction between *-ess* from *-essess* (the reduplicant of *-ess*), but they have not acquired the morpho-phonological distinction between *-ess* and *-essess*.

iii. These children have not acquired either the morphological form -*essess* or the semantic distinction between -*ess* and -*essess*;

Second, some younger children (three 4-year-olds and two 5-year-olds) accepted and volunteered -*ess* affixed to pure states and (deadjectival) inchoative states across the anterior and the simultaneous contexts. The generalization is that these children do not distinguish the two classes of states and treat the two classes of states as typical stative predicates. I accounted for their infelicitous use of -*ess* in the simultaneous context as follows: Adopting A & S's proposal of cessation implicatures of a past tensed stative clause, I hypothesized that these children interpreted the weaker statement (with -*ess*) as felicitous and volunteered it in the simultaneous context where the stronger statement (with -*Ø*) is more felicitous. I thus suggested that they understand the meaning of -*ess* affixed to a stative predicate, but they have difficulty with the cessation implicatures associated with -*ess* affixed to a stative predicate.

Grammaticality Judgment task

In Chapter 6, we examined children's ability to distinguish degree inchoative states from achievements in terms of gradability, one of the underlying properties of degree inchoative states. We took the obvious contrast between degree inchoative states and achievements with respect to degree adverbial modification, as the target property of the task: degree inchoative states describe eventualities that involve the property of gradability, thus allowing modification by degree adverbials, while achievements describe punctual eventualities that cannot be gradably or partially realized and as such, do not allow degree adverbial modification.

Our experimental results revealed the following generalization:

a. Even younger children (4-year-olds) can infer gradability associated with degree inchoative states and thus, can draw a significant distinction between degree inchoative states and achievements with respect to degree adverbial modification (though the acquisition of individual predicate meanings is not fully settled at this age).

Taken together, the results of the experimental studies show that, by about 4 years of age, Korean children can generally distinguish (degree) inchoative states from pure states as well as

from achievements. The experimental studies thus provide us novel and experimental evidence from Korean child language for the claim that (degree) inchoative states constitute a distinct class of predicates from the other aspectual classes.

7.3 Conclusion and remaining issues

In this dissertation, I gave an in-depth discussion about the meaning of (degree) inchoative states in Korean as well as children's relevant knowledge of (degree) inchoative states. I hope that this dissertation provided novel and experimental insights on the class of (degree) inchoative states, which can extend to other languages that have (degree) inchoative states. I conclude this dissertation with some remaining issues for future research:

Acquisition of the distinction between pure states vs. (deajdectival) inchoative states

The experimental studies which were presented in this dissertation showed that Korean children aged from 4 to 6 can generally distinguish (deadjectival) inchoative states from typical stative predicates. Then, this leads us to raise a more general question: how do Korean children acquire the meaning of (deadjectival) inchoative states? As discussed in the present study, apparently, both pure states and (deadjectival) inchoative states appear to describe certain properties of individuals or objects. For instance, there are two predicates both describing an eventuality of being thin, *nalssinha* 'thin' vs. *malu* 'thin. These two predicates share the property of gradability and durativity, as shown in (6-7).

(6) a. Sue-ka **maywu/cokum** nalssinha-ta.
Sue-NOM very/slightly thin-DEC
'Sue is very/slightly thin.' [pure state]

b. Sue-ka **maywu/cokum** malu-ess-ta.
Sue-NOM very/slightly thin-PFCT-DEC
'Sue got/is very/slightly thin.' [deadjectival inchoative state]

In (6a-b), both the pure state predicate *nalssinha* 'thin' and the inchoative state predicate *malu* 'thin' allow modification by degree modifiers such as *maywu* 'very' intensifying the described eventuality, or *cokum* 'slightly' making reference to a lower-bound scale of the described property.

(7) a. Sue-ka **hantongan** nalssinha-essess-ta.
Sue-NOM for.a.while thin-PAST.PFCT-DEC
'Sue was thin for a while.' [pure state]

b. Sue-ka **hantongan** malu-essess-ta.
Sue-NOM for.a.while thin-PAST.PFCT-DEC
'Sue was thin for a while.' [deadjectival inchoative state]

In (7a-b), both the pure state *nalssinha* 'thin' and the inchoative state *malu* 'thin' can be modified by the durative adverbial *hantongan* 'for a while', showing that both of them describe eventualities that have temporal duration.

Crucially, however, one predicate is a (deadjectival) inchoative state predicate (i.e. *malu* 'thin') that contains a BECOME event giving rise to an inchoative meaning, while the other one is a pure state predicate (i.e. *nalssinha* 'thin') yielding a stative meaning. Then, the question arises as to how children learn the difference between a (deadjectival) inchoative state and a pure state in a minimal pair of predicates. The hypothesis is that pure states are adjectives, while (deadjectival) inchoative states are verbs. So, the morphological distinction would allow children to distinguish the two classes of states. For instance, (deadjectival) inchoative states take the overt non-past/present marker *-nun* like other verbal predicates, while pure states do not take it (cf. Section 2.2.2, Chapter 2). At this stage, the question remains open.

Cross-linguistic investigation of degree inchoative states

The main theoretical contribution of this dissertation was to argue for the existence of two classes of inchoative states: (regular) inchoative states which are verbal predicates vs. degree inchoative states which are deadjectival predicates. The property which distinguishes both classes is gradability. This dissertation was mainly concerned with degree inchoative states in Korean. As mentioned in Chapter 1, many previous studies have argued for the existence of inchoative states

cross-linguistically (Huang et al. 2000, Chang 2003, Bar-el 2005, Chung 2005, Marín & McNally 2005, 2011, Lee 2006, Kiyota 2008, Choi 2010, Davis 2012, Matthewson 2013, 2014). In some senses, degree inchoative states are the mirror image of degree achievements in that, on the telic reading, a degree inchoative state is associated with the minimal scale value of the relevant property, while a degree achievement is associated with the maximal scale value. Though it is logically possible, to our knowledge, no such distinction between two sub-classes of inchoative states (i.e. (regular) inchoative states vs. degree inchoative states) has not been made. The extent to which the class of inchoative states identified in the literature correspond to (regular) inchoative states vs. degree inchoative states is a question that remains open for cross-linguistic investigation.

Experimental investigation of degree inchoative states vs. degree achievements

I claimed that degree inchoative states are the mirror image of degree achievements in that, on the telic reading, a degree inchoative state is associated with the minimal scale value of the relevant property, while a degree achievement is associated with the maximal scale value. As such, I argued that, on their telic reading, a degree inchoative state is interpreted as 'become (minimally) S' (i.e. *standard telos*), unlike a degree ahicevement which is interpreted as 'become maximally S' (i.e. *maximal telos*). We have positive evidence that degree inchoative states are associated with a lower boud scale. According to the results of the grammaticality judgment task reported in Chapter 6, Korean children aged from 4 to 6 and adults correctly accepted degree inchoative states co-occurring with the degree adverbial *cokum* 'slightly' that can only modify gradable adjectives associated with lower-bound scales. However, we do not have experimental evidence that degree inchoative states lack an upper-bound scale. Hence, we would like to design an experiment investigating specifically whether Korean children distinguish degree inchoative states from degree achievements with respect to the nature of the telos (*minimal* vs. *maximal telos*).

A possible diagnostic that can be used as the target property of an experiment is the inference pattern for a minimal vs. maximal standard (cf. Section 3.4.4.2, Chapter 3). The relevant examples are repeated in (8).

(8) a. X is emptier than Y. ⇒ Y is not empty. [maximal standard]
b. X is dirtier than Y. ⇒ X is dirty. [minimal standard]

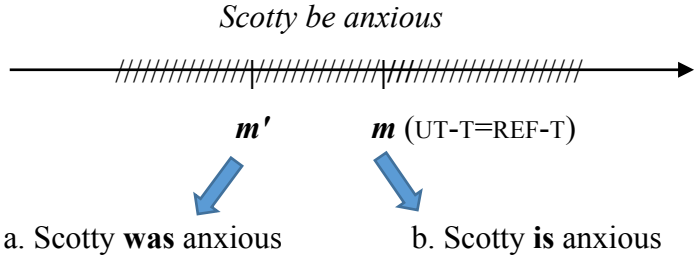
In (8a), the standard for the adjective *empty* involves the maximal degree of the scale: to say that something is empty is to say that it is empty to the maximal degree. Thus, since the comparative in (8a) entails that *Y*'s property of emptiness does not reach the maximal degree, we can infer from this comparative that *Y* is not empty. Conversely, in (8b), the standard for the adjective *dirty* corresponds to a minimal degree just above the zero point of the scale. Since the comparative in (8b) entails that *X*'s property of dirtiness exceeds the zero point, we can infer that *X* counts as dirty.

This issue deserves to be experimentally investigated to understand whether Korean children can detect the presence of a minimal scale value of the relevant property for degree inchoative states and that of a maximal scale value for degree achievements.

Experimental investigation of cessation implicatures in English

In Chapter 5, I briefly presented Altshuler & Schwarschild (2013, 2014)' proposal of cessation implicatures arising in past tensed stative clauses. The idea was that, for a stative clause φ, the utterance of PAST-φ triggers a cessation implicature (i.e. no state of the kind described currently holds), when there is a pragmatic competition between PAST-φ and PRES-φ sharing a common reference time span, as shown in (9).

(9)



Crucially, A & S argue that PRES-φ in (9b) asymmetrically entails PAST-φ in (9a) and as such, cessation implicatures of PAST-φ are generated as a result of Gricean reasoning. If A & S's proposal that PAST-φ is pragmatically weaker than PRES-φ, thus triggering cessation implicatures is right, then the question arises with respsect to language acquisition: Can children draw cessation implicatures of a past tensed sentence?

As mentioned in Section 5.4.5.2.2, Chapter 5, several experimental studies on children's interpretation of scalar terms such as <*all*, *some*> have shown that children tend to accept the weaker statement as true in a given context where the stronger statement would be more felicitous

(Smith 1980, Chierchia et al. 2001, Noveck 2001, Musolino & Lidz 2002, Papafragou & Musolino 2003, Musolino 2004, Noveck et al. 2007a, Noveck & Sperber 2007b among many others). In particular, Noveck (2001: 165) concludes that "younger children initially treat a relatively weak term logically before becoming aware of its pragmatic potential". If this conclusion is right, then we expect that children will have a difficulty in calculating cessation implicatures of a past tensed sentence. In other words, children would understand the meaning of a past tensed sentence (PAST-φ), but they cannot draw cessation implicatures associated with the past tense. Accordingly, children will judge the weaker statement (PAST-φ) as felicitous in a situation where the stronger statement (PRES-φ) is more felicitous.

It will be worth examining experimentally children's ability to draw cessation implicatures associated with a past tense sentence in temporal contexts. This investigation will provide further evidence about children's interpretation of scalar implicatures.

Theoretical and experimental investigations of the meaning of *-ess* vs. *-essess* in Korean

The results of the truth-value judgment task and the following production data showed that 53.33% of children accepted and produced the simple perfect *-ess* affixed to (deadjectival) inchoative states in both the anterior and the simultaneous contexts. They infelicitously used *-ess* for an anterior interpretation of (deadjectival) inchoative states, instead of the complex reduplicant *-essess* which is the target form. Even some adults (2 out of 20) showed a similar pattern of behavior.

In the light of Cable (2015)'s account of cessation implicatures associated with the discontinuous past, I briefly sketched a plausible explanation of their infelicitous use of *-ess* affixed to (deadjectival) inchoative states in the anterior context: *-ess* is the non-future (since it allows both a past and a present interpretations) entailing an interval that contains both past time t' and the utterance time t, and *-essess* is the discontinuous past (cf. Nam 1978, 1996, C. Lee 1985) entailing an interval of past time t'.

(i) When the utterance time is contained within the reference time (by applying a pragmatic principle of maximizing the reference time), the discontinuous past *-essess* triggers cessation implicatures, i.e., the past eventuality in question does not extent into the present.

(ii) When the utterance time is not contained within the reference time, the discontinuous past -*essess* does not trigger cessation imlicatures and is identical to the non-future -*ess* (i.e. both of them describe a past eventuality).

On this proposal, I conjectured that some adults (2 out of 20) allowed -*ess* affixed to inchoative states in the anterior context where the the described eventuality held prior to the utterance time because they did not maximize the reference time, i.e., the latter does not include the utterance time. In this case, the discontinuous past does not trigger cessation implicatures. That is, both the non-future sentence and the discontinuous past sentence are identical in that they just describe the past eventuality in question. It could be the case that these adults accepted and produced -*ess* just because it is the morpho-phonologically simple form, instead of the complex reduplicant -*essess*.

Then, how do we account for the children who infelicitously used -*ess* affixed to inchoative states in the anterior context, just like adults? There are three possibilities: (i) these children would understand the meaning of -*ess* and -*essess*, but just they have the reference time containing only past time and do not maximize it. So, it could be that they made the same kind of mistakes as adults; (ii) these children do not distinguish the non-future -*ess* from the discontinuous past -*essess* or (iii) these children know the distinction between -*ess* and -*essess*, but they do not spell out the discontinuous past -*essess* by reduplicating the non-future -*ess*. We do not have crucial evidence to bear these three alternatives.

At this stage, further studies of the meaning of the suffixes -*ess* and -*essess* are needed. More precisely, the issue of whether there is indeed a competition between -*ess* and -*essess* in terms of cessation implicatures in adult grammar needs to be further investigated. Then, we would like to experimentally examine (i) whether Korean children distinguish the non-future -*ess* from the discontinuous past -*essess*; (ii) whether children morphologically distinguish -*ess* from -*essess*; (iii) whether children have a problem of maximizing the reference time.

REFERENCES

Abusch, Dorit. 1986. *Verbs of change, causation and time*. Technical report CSLI-86-50, Center for the Study of Language and Information, Stanford University.

Altshuler, Daniel and Roger Schwarzschild. 2013. Moment of Change, Cessation Implicatures, and Simultaneous Readings. In: Chemla, E., V. Homer, and G. Winterstein (eds.), *Proceedings of Sinn und Bedeutung 17*, pages 45-62. ENS Paris.

Altshuler, Daniel and Roger Schwarzschild. 2014. Correlating Cessation with Double Access. In: Aloni, M., M. Franke, and F. Roelofsen (eds.), *Proceedings of the 19th Amsterdam Colloquium*, pages 43-50. Amsterdam: Institute for Language, Logic and Computation.

An, Dong-Hwan. 1980. *Semantics of Korean Tense Markers*. PhD dissertation, Georgetown University.

Andrews, Avery D. 1990. Unification and morphological blocking. *Natural Language & Linguistic Theory 8(4)*: 507-557.

Aronoff, Mark. 1976. *Word formation in generative grammar*. Cambridge, MA: MIT Press.

Bach, Emmon. 1981. On Time, Tense and Aspect: An Essay in English Metaphysics. In: Peter Cole (ed.), *Radical Pragmatics*, pages 63-81. New York: Academic Press.

Bach, Emmon. 1986. The Algebra of Events. *Linguistics and Philosophy 9*:5-16.

Baek, Eung-Jin. 1986. Tense and Aspect in Korean and Mongolian. *Korean Linguistics 4*: 61-74.

Bar-el, Leora. 2005. *Aspectual Distinctions in SKWXWU7MESH*. PhD dissertation, University of British Columbia.

Bauer, Georg. 1970. The English "perfect" Reconsidered. *Journal of Linguistics* 6:189-198.

Beavers, John. 2008. Scalar complexity and the structure of events. In: J. Dölling, T. Heyde-Zybatow & M. Schäfer (eds.), *Event Structures in Linguistic Form and Interpretation*, pages 245-265. Berlin: Mouton de Gruyter.

Bennett, Michael and Barbara Partee. 1978. *Toward the Logic of Tense and Aspect in English*. Bloomington: Indiana University Linguistics Club.

Berko, Jean. 1958. The child's learning of English morphology. *Word 14*, 150-177.

Borik, Olga. 2002. *Aspect and reference time*. PhD dissertation, University of Utrecht.

Borik, Olga and Tanya Reinhart. 2004. Telicity and perfectivity: Two independent systems. Paper presented at the *LOLA8*.

Bowerman, M. 1978. Systemizing semantic knowledge: Changes over time in the child's organization of word meaning. *Child Development 49*: 977-987.

Bowerman, M. 1982. Evaluating competing linguistic models with language acquisition data: Implications of developmental errors with causative verbs. *Quaderni di Semantica 3*: 5-66.

Bowerman, M. 1988. The 'no negative evidence' problem: How do children avoid constructing an overgeneral grammr? In: J. A. Hawkinds (ed.), *Explaining language universals*, pages 73-101. Oxford: Blackwells.

Brugger, Gerhard. 1996. *The representations of present perfect types*. Ms., University of California, Los Angeles.

Bybee, Joan L. and Dan I. Slobin. 1982. Rules and schemas in the development and use of the English past tense. *Language 58*(2): 265-289.

Cable, Seth. 2015. *The Tlingit Decessive and 'Discontinuous Past': The Curious Implicatures of Optional Past Tense*. Manuscript. University of Massachusetts, Amherst.

Carlson, Laurie. 1981. Aspect and Quantification. In: Philip Tedeschi and Annie Zaenen (eds.) *Syntax and Semantics Vol. 14: Tense and Aspect*, pages 31-64. New York: Academic Press.

Caudal, Patrick. 2005. Degree scales and Aspect. In: *Cahiers Chronos 13*, pages 103-118.

Caudal, Patrick and David Nicolas. 2005. Types of degree and types of event structure. In: Maienborn, C. & Wollstein, A., *Event Arguments: Foundations and Applications*. Niemeyer.

Chang, Jung-Hsing. 2003. State Eventualities and Aspect marker *le* in Chinese. *Taiwan Journal of Linguistic* Vol. 1.1: 97-110.

Chen, Yi-Hsun. 2011. On the (A)Telicity of Verb-Adjective Compounds in Mandarin. In: *Proceedings of the NCL* 12.

Chierchia, Gennaro. 1995. Individual-level predicates as inherent generics. In: Gregory N. Carlson & F. Jeffry Pelletier (eds.), *The generic book*, pages 176-223. Chicago: University of Chicago Press.

Chierchia, G., Crain, M.T., Gualmini, A. and Meroni, L. 2001. The acquisition of disjunction: evidence for a grammatical view of scalar implicatures. In: A. H.-J. Do, L. Dominguez & A. Johansen (eds.), *Proceedings of the 25th Boston University Conference on Language Development*, pages 157-168. Somerville, MA: Cascadilla Press.

Choe, Hyun-Bae, 1977. *Uli Mal Bon* (Korean Grammar). Seoul: Chongumsa.

Choi, Hyunbai. 1971. *Wuli malpon* (Our Grammar). Seoul: Cengumsa.

Choi-Jonin, Injoo. 2006. Résultatif et accompli en coréen. *Cahiers de Grammaire 30 « Spécial Anniversaire »*, pages 63-73.

Choi, Jiyoung. 2009. *Acquisition du passé en coréen (langue première)*. MA thesis, Université de Nantes.

Choi, Jiyoung. 2010. On the acquisition of tense in Korean L1: the case of the perfect marker *-ess*. Paper presented at the *Journée d'études Temptypac (Temporalité: typologie et acquisition)*, CNRS-Pouchet/Université de Paris 8.

Choi, Jiyoung and Hamida Demirdache. 2014. Reassessing the Typology of States. Evidence from Korean (Degree) Inchoative States. Paper presented at the *Journée d'études Ontologie et Typologie des États,* CNRS-Pouchet/Université de Paris 8, October 6th 2015.

Choi, Jiyoung. 2015. On the universality of aspectual classes: Inchoative states in Korean. In: E. Labeau and Q. Zhang (eds.) *Cahiers Chronos 27: Taming the TAME systems*, pages 123-135. Amsterdam/New York: Rodopi.

Chung, Kyung-Sook. 1999. *Deictic and anaphoric tense in Korean: a two-tiered approach*. MA thesis, Simon Fraser University.

Chung, Kyung-Sook. 2005. *Space in Tense: The interpretation of Tense, Aspect, Evidentiality and Speech Act in Korean*. PhD dissertation, Simon Fraser University.

Comrie, Bernard. 1976. Aspect: *An Introduction to the Study of Verbal Aspect and Related Problems*. Cambridge: Cambridge University Press.

Copley, Bridget. 2002. *The Semantics of the Future*. PhD dissertation, MIT.

Crain, Stephen and Thornton Rosalind. 1998. *Investigations in Universal Grammar: A Guide to Experiments on the Acquisition of Syntax and Semantics*. Cambridge, MA: MIT Press.

Croft, Wiliam. 1991. Syntactic Categories and Grammatical Relations. Chicago: The University of Chicago Press.

Cuza, Alejandro and Joshua Frank. 2011. Transfer Effects at the Syntax-Semantics Interface: The Case of Doubl-*que* Questions in Heritage Spanish. *Heritage Language Journal*, 8(2): 66-89.

Davidson, Donald. 1967. The logical form of action sentences. In: Nicholas Rescher (ed.), *The logic of decision and action*, pages 81-98. Pittsburgh, PA: University of Pittsburgh.

Davis, Henry. 2012. *A Teaching Grammar of Upper St'át'imcets*. Ms., University of British Columbia.

Demirdache, Hamida and Myriam Uribe-Etxebarria. 2007. The syntax of time arguments. *Lingua: International Review of General Linguistics Vol. 117.2*: 330-366. Oxford, United Kingdom: Elsevier.

Dowty, R. David. 1979. *Word meaning and Montague Grammar*. Dordrecht: Reidel.

Ellis, Rod. 1990. Grammaticality judgments and learner variability. In: H. Burmeister & P. Rounds (eds.), *Proceedings of the 10th Second Language Research Forum Vol. 1*, pages 25-60. Eugene, OR: University of Oregon.

Ellis, Rod. 1994. *The study of second language acquisition*. Oxford: Oxford University Press.

Filip, Hana and Susan Rothstein. 2006. Telicity as a semantic parameter. In: J. Lavine, S. Franks, Tasseva-Kurktchieva and H. Filip (eds.), *Formal Approaches to Slavic Linguistics 14 (The Princeton Meeting)*, pages 139-156. Michigan Slavic Publications: Ann Arbor.

Fleischhauer, Jens. 2013. Interaction of Telicity and Degree Gradation in Change of State Verbs. In: B. Arsenijević, B. Gehrke & R. Marín (eds.), *Studies in the Composition and Decomposition of Event Predicates (Studies in linguistics and philosophy Vol. (93)*, pages 125-152. Dordrecht: Springer.

Gagliardi, Annie, Tara M. Mease and Jeffrey Lidz. 2014. *U-shaped development in the acquisition of filler-gap dependencies: Evidence from 15- and 20-month-olds*. Article submitted for publication.

Geeslin, Kimberly, and Pedro Guijarro-Fuentes. 2006. Second language acquisition of variable structures in Spanish by Portuguese speakers. *Language Learning*, *56(1)*: 53–107.

Gim, Cha-Kyun. 1985. -*Ass*-kwa -*ess*-uy yumiwa sang (On the meaning of tense morphemes, -*ass* and -*ess*; and the relations between tense and aspect). *Hun-Geul 188*:3-63.

Givón, Talmy. 2001. *Syntax: An introduction*. Amsterdam: J. Benjamins.

Gleitman, Henry and Lila Gleitman. 1979. Language Use and Language Judgment. In: C. Fillmore, D. Kempler & W. Wang (eds.), *Individual Differences in Language Ability and Language Behavior*, pages 103-126. New York: Academic Press.

Golinkoff, R.M., Hirsh-Pasek, K., Mervis, C. B., Frawley, W. and Parillo, M. 1995. Lexical principles can be extended to the acquisition of verbs. In: M. Tomasello & W. Merriman (eds.), *Beyond names for things: Young children's acquisition of verbs,* pages 185-222. Hillsdale, NJ: Lawrence Erlbaum Associates.

Goss, N., Zhang, Y.-H. and Lantolf, J. P. 1994. Two heads may be better than one: Mental activity in second-language grammaticality judgments. In: E. E. Tarone, S. M. Gass & A. D. Cohen (eds.), *Research methodology in second language acquisition*, pages 263-286. Hillsdale, NJ: Lawrence Erlbaum Associates.

Grice, Paul. 1975. Logic and conversation. In: Cole, P. & Morgan, J. L. (eds.), *Syntax and Semantics 3: Speech Acts*, pages 41-58. New York, Academic Press.

Grice, Paul. 1989. *Studies in the way of words*. Cambridge, MA: Harvard University Press.

Hackl, Martin. 2000. *Comparative quantifiers*. PhD dissertation, MIT.

Han Dong-Wan. 1996. *Kwukeuy sicey yenkwu* (A study on Korean tense). Seoul: Kwukehakhoy Taehaksa.

Han, Y. 2000. Grammaticality judgment tests: How reliable are they?. *Applied Language Learning 11(1)*: 177-204.

Hay, Jennifer. 1998. The non-uniformity of degree achievements. Paper presented to the *LSA*, January 1998.

Hay, Jennifer, Christopher Kennedy and Beth Levin. 1999. Scalar structure underlies telicity in "degree achievements". *The Proceedings of SALT IX*, pages 127-144. Cornell University.

Heim, Irene. 1991. Artikel und Definitheit. In: von Stechow, A. & D. Wunderlich (eds.), *Semantics: An International Handbook of Contemporary Research*, pages 487-535. Berlin: de Gruyter.

Heim, Irene and Angelika Kratzer. 1998. *Semantics in Generative Grammar*. Oxford.

Heim, Irene. 2000. Degree Operators and Scope. *Proceedings of SALT 10*, pages 40-64.

Heim, Irene. 2006. Little. *Proceedings of SALT 16*. Ithaca, NY: CLC Publications.

van Hout, Angeliek. 1996. *Event semantics of verb frame alternations. A case study of Dutch and its acquisition*. Tilburg: Tilburg University. Tilburg Dissertation in Language Studies.

van Hout, Angeliek. 2000. Projection based on event structure. In: Coopmans, P., M. Everaert and J. Grimshaw (eds.), *Lexical specification and insertion*, pages 397-422. Amsterdam: John Benjamins.

Huang, C-R., Kathleen Ahrens, Li-Li Chang, Keh-Jiann Chen, Mei-Chun Liu and Mei-Chih Tsai. 2000. The module-attribute representation of verbal semantics: From semantics to argument structure. *Computational Linguistics and Chinese Language Processing Vol. 5.1*: 19-46.

Joo, Hye Ri. 2008. *Agentivity of passives and inchoatives in second language learners of English and Korean*. PhD dissertation, University of Hawaii.

Kamp, Hans. 1975. Two theories of adjectives. In: Edward Keenan (ed) *Formal semantics of natural language*, pages 123-155. Cambridge: Cambridge University Press.

Kamp, Hans and Uwe Reyle. 1993. *From Discourse to Logic*. Dordrecht: Kluwer Academic Press.

Kang, Jungmin. 2014. *On the lack of TP and its consequences: Evidence from Korean*. PhD dissertation, University of Connecticut.

Kearns, Kate. 2000. *Semantics*. New York: St. Martin's Press.

Kearns, Kate. 2003. Durative achievements and individual-level predicates on events. *Linguistics and Philosophy 26*: 595-635.

Kearns, Kate. 2007. Telic senses of deadjectival verbs. *Lingua 117*: 26-66.

Kennedy, Christopher and Louise McNally. 2005. Scale structure, degree modification, and the semantics of gradable predicates. *Languages*, pages 345-381.

Kennedy, Christopher. 2007. Vagueness and Grammar: The Semantics of Relative and Absolute Gradable Adjectives. *Linguistics and Philosophy Vol. 30.1*: 1-45.

Kennedy, Christopher and Beth Levin. 2008. Measure of Change: The adjectival core of degree achievements. In: L. McNally and C. Kennedy (eds.) *Adjectives and Adverbs: Syntax, Semantics and Discourse*, pages 156-182. Oxford: Oxford University Press.

Kennedy, Christopher. 2007. Vagueness and Grammar: The semantics of Relative and Absolute Gradable Adjectives. *Linguistics and Philosophy 30(1)*: 1-45.

Kim, Nam-Kil. 1975. The double past in Korean. *Foundations of Language 12*: 529-536.

Kim, Min-Joo. 2002. Does Korean have adjectives? In: T. Ionin, H. Ko & A. Nevins (eds.) *MIT Working Papers 43: Proceedings of HUMIT 2001*, pages 71-89. Cambridge, MA.

Kiyota, Masaru. 2008. *Situation aspect and viewpoint aspect from Salish to Japanese*. Ph. D. dissertation, University of British Columbia.

Klein, Wolfgang. 1994. *Time in language*. London: Routledge.

Klein, Wolfgang. 1995. A Time-Relational Analysis of Russian Aspect. *Language 71(4)*: 669-695.

Koontz-Garboden, Andrew. 2005. On the typology of state/change of state alternations. *Yearbook of Morphology 2005*, pages 83-117.

Kratzer, Angelica. 1995. Stage-level and individual-level predicates. In: Gregory N. Carlson & F. Jeffry Pelletier (eds.), *The generic book*, pages 125-175. Chicago: University of Chicago Press.

Kratzer, Angelica. 1996. Severing the external argument from its verb. In: Johann Rooryck & Laurie Zaring (eds.), *Phrase structure and the lexicon*, pages 109-137. Dordrecht: Kluwer.

Krifka, Manfred. 1992. Thematic relations as links between nominal reference and temporal constitution. In: I. Sag and A. Szabolsci (eds.) *Lexical Matters*. Stanford, CA: CSLI Publications.

Krifka, Manfred. 1998. The origins of telicity. In: S. Rothstein (ed.) *Events and Grammar*. Dordrecht: Kluwer.

Landman, Fred. 1992. The progressive. *Natural Language Semantics Vol. 1*: 1-32.

Landman, Fred. 2000. *Events and Plurality. The Jerusalem Lectures*. Dordrecht: Kluwer.

Landman, Fred. 2004. *1066: On the differences between the tense-perspective-aspect system in English and Dutch*. Ms. Tel Aviv University.

Landman, Fred. 2008. On the difference between the tense-perspective-aspect systems of English and Dutch. In: S. Rothstein (ed.) *Theoretical and Crosslinguistic Approaches to the Semantics and Event Structure*, pages 107-166. Amsterdam: John Benjamins.

Larson, Richard and Gabriel Segal. 1995. *Knowledge of Meaning*. Cambridge, MA: MIT Press.

Lasersohn, Peter. 1992. Generalized conjunction and temporal modification. *Linguistics and Philosophy 15*: 381-410.

Lehrer, Adrienne. 1985. Markedness and Antonymy. *Journal of Linguistics 21*: 397-429.

Lee, Chungmin. 1985. Temporal expressions in Korean. In: Jeff Verchueren & Marcellar Bertuccelli (eds.), *Selected papers from the First International Pragmatics Conference*, pages 405-447. Amsterdam: John Benjamins.

Lee, EunHee. 2006. Stative progressives in Korean and English. *Journal of Pragmatics 38*: 695-717.

Lee, Hyo-Sang. 1991. *Tense, aspect and modality: A discourse-pragmatic analysis of verbal affixes in Korean from a typological perspective*. PhD dissertation, University of California.

Lee, Hyo-Sang. 1993. Cognitive constraints on expressing newly perceived information: With reference to epistemic modal suffixes in Korean. *Cognitive Linguistics 4*:135-167.

Lee, Jungmee. 2011. *Evidentiality and its Interaction with Tense: Evidence from Korean*. PhD dissertation, The Ohio State University.

Lee, Younghee and Byong-Rae, Ryu. 2010. A Comparative Study on the Aspectual Class of Korean and Japanese Verbs in Relation to '-ess-' '-essess-' in Korean and 'sudeni' in

Japanese. *Proceedings of the 24th Pacific Asia Conference on Language, Information and Computation* (PACLIC), pages 471-479.

Levin, Beth. 2000. Aspect, lexical semantic representation, and argument expression. In: *Proceedings of the Berkeley Linguistic Society 26* (BLS 26).

Lidz, Jeffrey and Annie Gagliardi. 2010. Morphosyntactic cues impact filler-gap dependency resolution in 20- and 30-month-olds. Paper presented at *the 2010 Boston University Conference on Language Development*.

Lim, Dong Sik. 2010. The syntax of inchoatives: *-e ci*, event structure and scalarity. In: J. Yeon and J. Kiaer (eds.) *Selected papers from the 2nd European conference on Korean linguistics*. Munchen: Lincom Europa.

Lin, Jimmy. 2004. Are degree achievements really achievements? In: S.F. Huang (ed.), *Proceedings of the 9th International Symposium on Chinese Languages and Linguistics*. Taipei: Graduate Institute of Linguistics, National Taiwan University.

Lungu, Oana. 2012. *Tense in embedded contexts: the view from (French) child*. PhD dissertation, Université de Nantes.

McCawley, James D. 1971. Tense and time in English. In: Charles J. Fillmore and D. Terence Langendoen (eds.), *Studies in linguistic semantics*, pages 96-113. New York: Holt, Rinehart and Winston.

Matthewson, Lisa. 2004. On the methodology of semantic fieldwork. *International Journal of American Linguistics 70*:369-415.

Matthewson, Lisa. 2013. The building blocks of gramma4cal aspect: Evidence from Austronesian and Salish perfects. Paper presented at the *Workshop on Semantic Variation*, Univerisity of Chicago.

Matthewson, Lisa. 2014. Inchoativity meets the perfect time span: The Niuean perfect. Paper presented at the *Leiden-Nantes Workshop on Tense, Aspect and Modality*, Leiden University.

Maling, Joan and Soowon Kim. 1998. Case assignment in the *siphta*-construction. In: Ross King (ed), *Description and Explanation in Korean Linguistics*. Ithaca, NY: East Asia Program, Cornell University.

Marcus, G., Pinker, S., Ullman, M., Hollander, M., Rosen, T. and Xu, F. 1992. Overregularization in language acquisition. *Monographs of the Society for Research in Child Development 57*: 1-178.

Marín, Rafael and Louise McNally. 2005. The Aktionsart of Spanish reflexive psychological verbs. In: E. Maier, C. Bary & J. Huitink (eds.) *Proceedings of SuB9*, pages 212-225.

Marín, Rafael and Louise McNally. 2011. Inchoativity, change of state, and telicity: Evidence from Spanish reflexive psychological verbs. *Natural Language and Linguistics Theory 29*: 467-502.

Matthewson, Lisa. 2013. The building blocks of gramm4cal aspect: Evidence from Austronesian and Salish perfects. Paper presented at the *Workshop on Semantic Variation*, University of Chicago.

Matthewson, Lisa. 2014. Inchoativity meets the perfect time span: The Niuean perfect. Paper presented at *Leiden-Nantes Workshop on Tense, Aspect and Modality*, Universiteit Leiden.

Miguel, Eelena de. 1999. El aspecto léxico. In : I Bosque & V. Demonte (eds.), *Gramática descriptive de la lengua española*, vol 2, pages 2977–3060. Madrid: Espasa Calpe.

Miller, K., Schmitt, C., Chang, H. and Munn, A. 2005. Young children understand some implicatures. *Proceedings of the 29th Annual Boston University Conference on Language Development*, pages 289-400.

Mittwoch, Anita. 1991. In defense of Vendler's Achievements. *Belgian Journal of Linguistics 6: Perspectives on aspect and aktionsart*.

Montrul, S. 1998. The L2 acquisition of dative experiencer subjects. *Second Language Research, 14*: 27–61.

Musolino, J. and Lidz, J. 2002. Preschool logic: truth and felicity in the acquisition of quantification. In: B. Skarabela, S. Fish & A. H.-J. Do (eds.), *Proceedings of the 26th Boston University Conference on Language Development*, pages 406-416. Somerville, MA: Cascadilla Press.

Na, Jin-Suk. 1971. *Wulimaluy ttaymakim yenkwu (A study of tenses in Korean)*. Seoul: Kwahaksa.

Nam, Ki-Shim. 1978. *Kwuke mwunpepuy sicemwunceyey kwanhan yenkwu (A study of Korean tense phenomena)*. Seoul: Top Press.

Nam, Ki-Shim. 1996. *Kwuke mwunpepui tamkwu I: Kwuke thongsalonuy mwuncey (A quest for Korean grammar I: Problems in Korean syntax)*. Seoul: Taehaksa.

Noveck, Ira. 2001. When children are more logical than adults. Experimental investigations of scalar implicatures. *Cognition 78*:165-188.

Noveck, I., Pouscoulous, N., Politzer, G. and Bastide, A. 2007a. A developmental investigation of processing costs in implicature production. *Language Acquisition 14(4)*: 347-375.

Noveck, I. and Sperber, D. 2007b. The why and how of experimental pragmatics. The case of 'scalar inferences'. *Pragmatics*: 184-212.

Olsen, Mari. 1997. *A Semantic and Pragmatic Model of Lexical and Grammatical Aspect*. New York: Garland.

Papafragou, Anna and Julien Musolino. 2003. Scalar implicatures. Experiments at the semantics-pragmatics interface. *Cognition 86*:253-282.

Parsons, Terence. 1985. Underlying events in the logical analysis of English. In: E. LePore & B. McLaughlin (eds.), *Actions and events: Perspectives on the philosophy of Donald Davidson*, pages 235-267. London: Basil Blackwell.

Parsons, Terence. 1990. *Events in the Semantics of English: A Study in Subatomic Semantics*. Cambridge, MA: MIT Press.

Percus, Orin. 2006. Antipresuppositions. In: Ueyama, A. (ed.), *Theoretical and Empirical Studies of Reference and Anaphora*. Fukuoka/Yokohama: Kyushu University/Japan Society for the Promotion of Science.

Pinker, Steven. 1984. *Language Learnability and Language Development*. Cambridge, MA: Harvard University Press.

Pinker, Steven. 1989. *Learnability and Cognition: The Acquisition of Argument Structure*. Paper presented at the Cambridge, Cambridge: The MIT Press.

Pinker, Steven. 1991. Rules of Language. *Science 253*: 530-535.

Piñón, Christopher. 1997. Achievements in an event semantics. In: Lawson, A. (ed.) *Proceedings from Semantics and Linguistic Theory VII (SALT VII)*, pages 276-293. Cornell University, Ithaca, NY.

Piñón, Christopher. 1999. Durative adverbials for result states. In: Bird, S., Carnie, A., Haugen, J., Norquest, P. (eds.), *WCCFL 18*, pages 420-433. Cascadilla Press, Somerville, MA.

Portner, Paul. 2003. The temporal semantics and modal pragmatics of the perfect. *Linguistics and Philosophy 26*: 459-510.

Reichenbach, Hans. 1947. *Elements of symbolic logic*. New York: The Free Press.

Reis Silva, Amélia and Lisa Matthewson. 2007. An Instantaneous Present Tense in Blackfoot. *Semantics of Under-Represented Languages in the Americas 4*. Amherst, MA: GLSA.

Rett, Jessica. 2008. *Degree modification in natural language*. PhD dissertation, University of New Jersey.

Rothstein, Susan. 2008a. Two puzzles for a theory of lexical aspect: semelfactives and degree achievements. In: J. Dölling, T. Heyde-Zybatow and M. Schäfer (eds.) *Event structure in linguistic from and interpretation*, pages 175-198. Berlin: Mouton-De Gruyter.

Rothstein, Susan. 2008b. Telicity, atomicity and the Vendler classification of verbs. In: S. Rothstein (ed.) *Theoretical and Crosslinguistic Approaches to the Semantics of Aspects*, pages 43-78. Amsterdam: John Benjamins.

Rothstein, Susan. 2004. *Structuring Events: A study in the semantics of aspect*. Oxford: Wiley-Blackwell.

Rotstein, Carmen and Yoad Winter. 2004. Total adjectives vs. partial adjectives: Scale structure and higher-order modifiers. *Natural Language Semantics 12(3)*: 259-288.

Schlenker, Philippe. 2012. Maximize Presupposition and Gricean Reasoning. *Natural Language Semantics 20*: 391-429.

Shin, Kyung Sook. 2005. The Acquisition of Tense and Aspect in Child Korean. In: A. Brugos & M.R. Clark-Cotton (eds.) *BUCLD 29 Proceedings*, pages 528-539.

Singh, Raj. 2011. Maximize Presupposition and Local Contexts. *Natural Language Semantics 19*: 149-168.

Smith, Carlota. 1997. *The Parameter of Aspect*. Dordrecht: Kluwer Academic Press.

Soh, Hooi Ling and Hiroki Nomoto. 2015. Degree achievements, telicity and the verbal prefix *meN-* in Malay. *Journal of Linguistics* 51(1): 147-183.

Sohn, Ho-Min. 1994. *Korean.* London: Rout ledge.

Sohn, Sung-Ock. 1995. *Tense and aspect in Korean*. Honolulu, Hawaii: University of Hawaii Press.

Solt. Stephanie. 2006. Why a few? And why not *a many?. *Proceedings of Sinn und Bedeutung 10. Zas Working Papers in Linguistics 44(6)*: 333-346.

Song, Mean-Young, 1999. *The Semantics of Tense and Propositional Attitudes*. PhD dissertation, Georgetown University.

Song, Mean-Young. 2003. Predicate types and the tense marker *-ess* in Korean. Dongguk University. <www.semanticsarchive.net>.

Sorace, Antonella. 1996. The use of acceptability judgments in second language acquisition research. In: W. C. Ritchie & T. K. Bhatia (eds.), *Handbook of second language acquisition*, pages 375-409. Sand Diego, CA: Academic.

Stechow, Arnim von. 2002. Temporal prepositional phrases with quantifiers: Some additions to Pratt and Francez (2001). *Linguistics and Philosophy 25*:755-800.

Stringer, D., Burghardt, B., Seo, H.K. and Wang, Y-T. 2011. Straight on through to Universal Grammar: Spatial modifiers in second language acquisition. *Second Language Research*, 27(3): 289-311.

Suh, Cheong-Soo. 1996. *Kwuke mwunpep (A Korean grammar)*. Seoul: Hanyang University Press.

Sun, Hongyuan. *2014. Temporal Construals of Bare Predicates in Mandarin Chinese*. PhD dissertation, Université de Nantes & Universiteit Leiden.

Taylor, B. 1977. Tense and continuity. *Linguistics and Philosophy 1(2)*: 199-220.

Terry, J. Michael. 2004. *On the Articulation of Aspectual Meaning in African-American English*. PhD dissertation, University of Massachusetts, Amherst.

Theakston, Anna L. 2004. The role of entrenchment in children's and adults' performance on grammaticality judgment task. *Cognitive Development 19*: 15-34.

Toledo, Assaf and Galit W. Sassoon. 2011. Absolute vs. Relative Adjectives - Variance Within vs. Between Individuals. *Proceedings of SALT* 21: 135-154.

Tribushinina, Elena. 2011. Piecemeal acquisition of boundedness: Degree modifiers of adjectives in Dutch child language. In: G. Bochner, P. De Brabanter, M. Kissine & D. Rossi (eds.), *Cognitive and Empirical Pragmatics: Issues and Perspectives*, pages 93-116. Amsterdam: John Benjamins.

Tribushinina, Elena. 2014. Comprehension of degree modifiers by pre-school children: What does it mean to be 'a bit cold'?. *Folia linguistica 48(1)*: 255-276.

Tsujimura, Natsuko. 2001. Degree words and scalar structure in Japanese. *Lingua 111*: 29-52.

Vendler, Zeno. 1967. *Linguistics in philosophy*. Ithaca, NY: Cornell University Press.

Verkuyl, Henk. 1989. Aspectual Classes and aspectual opposition. *Linguistics and Philosophy* 12: 39-94.

Verkuyl, Henk. 1993. *A Theory of Aspectuality: The Interaction between Temporal and Atemporal Structure*. Cambridge: Cambridge University Press.

Wagner, Laura. 1998. *The Semantics and Acquisition of Time in Language*. PhD dissertation, University of Pennsylvania.

Wagner, Laura. 2006. Aspectual bootstrapping in language acquisition: Telicity and transitivity. *Language learning and development 2(1)*: 51-76.

Yang, Byong-seon. 1994. *Morphosyntactic phenomena of Korean in role and reference grammar: psych-verb constructions, inflectional verb morphemes, complex sentences, and relative clauses*. PhD dissertation, State University of New York at Buffalo.

Yoon, Jae-Hak, 1996. Interpretation of relative tenses in Korean time adverbials. In: Yoon, Jae-Hak and Andreas Kathol (eds.), *Papers in Semantics*, no. 49 in Ohio State University Working Papers in Linguistics, pages 159–177. Columbus: The Ohio State University Department of Linguistics.

Yu, Hyen-Kyeng. 1998. *A Study on Korean Adjectives*. PhD dissertation, Yensei University, Seoul: Korean.