Comprehension and Production of Grammatical Aspect in Child Spanish: Semantics vs. Pragmatics

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1. Introduction

According to the Imperfective Paradox, perfective (PF) and imperfective (IPF) aspect morphemes with telic predicates differ in that PF entails completion while IPF does not (Kazanina & Phillips, 2007). Therefore, telic PF predicates can be related only to complete versions of events, while IPF telic predicates can refer to complete and incomplete events. However, when these forms are used to convey new information, IPF can be pragmatically enriched generating the Scalar Implicature that completion has not been reached.

Studies on language acquisition have shown that grammatical aspect morphemes are used productively from really early on and, according to some studies, they are understood adult-like for children as old as three (Weist et al., 1984, 1991; Vinnitskaya & Wexler, 2001). However, some other studies have also documented that children, unlike adults, tend to relate IPF telic predicates to complete events (van Hout, 2005, 2007; Kazanina & Phillips, 2007). Additionally, elicited production studies report that five year-old children, unlike adults, tend to produce IPFs to describe complete versions of events corresponding to telic predicates (Vinnitskaya & Wexler, 2001; Hogdson, 2003).

We hypothesize that divergences of children and adults' results in the different tasks could be due to the fact that the tasks used for testing aspect involve different kinds of reasoning: truth-value judgment tasks induce logic reasoning while picture-selection tasks and elicited production tasks involve pragmatic reasoning. In this study two experiments testing 5 year-old's comprehension and production of grammatical aspect morphemes in Spanish will be presented: a truth-value judgment task and an elicited production task. The aim of the study is to test if there are differences between adults and children among the different tasks.

The article is structured as follows. Section 2 is devoted to explain the basic concepts of lexical and grammatical aspect and their semantic meaning and pragmatic uses. Section 3 includes an overview of the most relevant findings on the acquisition of grammatical aspect. The experiments presented in Section 4 are followed by the results in Section 5 and their discussion in Section 6. Finally, Section 7 summarizes the main conclusions of the study.

2. Lexical and grammatical aspect

Two main levels of aspect have been described in the literature: predicational aspect and grammatical aspect. Predicational aspect (also known as "lexical aspect", "inner aspect" or "aktionsart") is mainly determined by the verb and its arguments. One of the properties distinguishing predicates at the level of predicational aspect is telicity, often defined in terms of completedness (Comrie, 1976; Vendler, 1967): *telic* predicates refer to events conceptualized as having intrinsic endpoints; *atelic*

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predicates, on the contrary, refer to predicates that don't involve any goal or intrinsic endpoint. Grammatical aspect (or "viewpoint aspect" or "outer aspect") is mainly determined by verb inflectional morphology and particles. The main distinction at this aspectual level is the oposition between PF and IPF. PF looks at the complete event, presenting the situation "from outside", whereas, IPF views an event "from inside", presenting the event as "ongoing" (Comrie, 1976; Smith, 1991). According to perspective-based theories of grammatical aspect (Klein, 1994; Demirdache & Uribe-Etxebarria, 2005, a.o.), grammatical aspect reflects the speaker's commitment to the existence of certain parts of the eventuality. Under this view, PF focuses on the whole event: it means that the interval for which the speaker makes assertion, the Reference Time (RefT) includes the Event Time (EvT). In contrast, IPF takes an 'inside perspective': it focuses on a narrow temporal interval of the event that excludes its endpoints; it establishes an inclusion relation of the RefT in the EvT.

The use of PF and IPF aspect marking gives rise to different entailments when they are combined with telic predicates. See some examples of Spanish (1):

(1) a. El payaso ha   construi-do un puente $\longrightarrow$ El puente está terminado
       The clown have$_{PRES}$ build-$_{PF}$ a bridge   ENTAILS   The bridge is done
    b. El payaso estaba   construy-endo un puente $\longrightarrow\!\!/\!\!\rightarrow$ El puente está terminado
       The clown be$_{PAST}$ build-$_{IPF}$ a bridge   DOES NOT ENTAIL   The bridge is done

Telic predicates combined with PF aspect entail completion, as indicated by the arrow in (1a). Completion in this case is an entailment because it is not cancellable as shown by the contradiction in (2):

(2) ?El payaso   ha   construi-do   un puente, pero no lo ha terminado.
     ?The clown   have$_{PRES}$ build-$_{PP}$ a bridge,   but has not finished it.

When combined with IPF, telic predicates do not entail completion, as indicated by the crossed out arrow in (1b). The use of IPF asserts that the event was ongoing in the past, but the completion of the event is not asserted or entailed. Therefore, IPF telic predicates can be followed by the assertion or the negation of the result without creating a contradiction (3):

(3) El payaso estaba   construy-endo   un puente, pero no lo ha terminado/y lo ha terminado.
     The clown be$_{PAST}$ build-IPF   a bridge , but he has not finished it/ and he has finished it.

Thus, crosslinguistically telic predicates can refer to complete and incomplete events when combined with IPF, but only to complete events when combined with PF. In addition to the periphrastic forms in (1), the Spanish verb paradigm also contains simple past forms that are marked for PF and IPF such as the simple perfective construyó 'built' and the simple IPF construía 'built/ was building'. Such pair or PF/IPF forms behave alike to the forms in (1) with respect to the completion entailments (5). See García del Real & Ezeizabarrena (2012) for a more detailed description of these forms and their comprehension by children.

(5) a. ?El payaso construyó   un puente,   pero no lo ha terminado.
       The clown build$_{PAST-PF}$ a bridge,   but he has not finished it
    b. El payaso construía un puente,   pero no lo ha terminado.
       The clown build$_{PAST-IPF}$ a bridge,   but he has not finished it.

Although logically speaking, IPF can refer both to complete and incomplete events, it is often related only to incomplete events as a result of pragmatic enrichment: the use of IPF instead of PF generates a scalar implicature by which IPF implies lack of completion (Smith 1991; Olsen 1997).

3. The acquisition of grammatical aspect

Verbal morphology is used productively by children as young as two according to longitudinal studies (for English: De Villiers & de Villiers, 1976; for Spanish: Hernandez Pina, 1984; Ezeizabarrena, 1996). However, early instances of tense and aspectual morphology tend to appear only in certain combinations: past and perfective morphology is initially attached only to telic predicates while atelic predicates tend to appear in present and imperfective morphology. This tendency is very robust crosslinguistically (for English: Bloom, Lifter & Hafitz, 1980; Shirai & Andersen, 1995; for French: Bronckart & Sinclair, 1973; for Italian: Antinucci & Miller 1976; for Polish: Weist et. al., 1984; for Spanish: Jackson-Maldonado & Maldonado, 2001; etc).

There is something natural in the associations of tense and aspectual morphology and the different kinds of predicates, as suggested by the fact that these associations also occur in L2 language acquisition (Andersen & Shirai, 1996), adult production data (Shirai & Andersen, 1995), creole formation (Bickerton, 1981) and language change (Bybee, Perkins & Pagliucca, 1994). Two different lines of explanation of the naturalness of these combinations have been proposed (Wagner, 2013). On the one hand, these combinations are argued to correspond to the simplest combinations at the linguistic domain, being more grammaticalized, more salient, less marked or less semantically complex (Bickerton 1981; van Hout, 2005; van Hout et al., 2010a). On the other hand, over-extensions are claimed to be easier at the cognitive level because they are the most frequent in the input (Shirai & Andersen 1995) or because tense and aspect classes reflect the semantic combinations with the lowest information processing demands (Wiest et al, 1991, 1997; van Hout, 2005; Kazanina & Philips, 2007).

In contrast to spontaneous production data, in elicited production studies, children as young as three are able to produce non-prototypical combinations of past IPF morphology with telic verbs (Vinnitskaya & Wexler, 2001; for Spanish: Hodgson, 2003). Additionally, comprehension studies reveal that children as young as three can interpret tense independently of the telicity of the predicate (Grinstead et al. 2009) and that they comprehend non-prototypical combinations of telicity and past imperfective morphology (for Polish and English: Weist et al., 1991; Weist et al., 1984; for English: Wagner, 2001; for Russian: Vinnitskaya & Wexler, 2001; Kazanina & Phillips, 2007). These results suggest that even if they don't use all the possible combinations of tense and aspect morphology with the different kind of predicates in their spontaneous production, children at age 3 can treat tense, grammatical aspect and predicational aspect compositionally.

However, for grammatical aspect morphology, there is some evidence suggesting that there are differences between adults and children in the comprehension of non-prototypical telic-IPF aspect combinations. Some comprehension studies have shown that children as old as five tend to relate past IPF telic predicates only to complete events (Kazanina & Phillips, 2007, experiments 1 & 2) or both to complete and incomplete events in situations where adults relate IPF exclusively to incomplete events (for Polish and Dutch: van Hout, 2005, 2007, 2008; for Russian: Kazanina & Phillips, 2007; for English: Wagner, 2001). Additionally, differences have been found between adults and children in elicited production: five year old children tend to over-use IPF telic predicates for describing complete events, a situation for which mainly PF forms are produced by adults (Vinnitskaya & Wexler, 2001; for Spanish: Hodgson, 2003).

Non adult-like behavior in elicited production tasks and in some comprehension tasks could be attributed to the pragmatic requirements of the tasks. In fact, there are crucial differences in the tasks used for testing IPF and in what is considered to be a correct response or an adult-like response. In truth-value judgement tasks IPF is acceptable both for complete and incomplete situations. On the contrary, in (forced-choice) picture selection tasks and sentence-to-situation/scene matching tasks, the correct response for the IPF is the match of such form with an incomplete or ongoing version of the event. Similarly, adult-like responses on elicited production tasks are those in which IPF is related to incomplete events and not to complete events. Crucially, while in truth-value judgement tasks children´s responses to the IPF tend to be adult-like, children's response on the sentence-to-scene matching tasks and on elicited production tasks are not always adult-like, as it can be seen in the following Table 1:

TASK	TARGET RESPONSE	ADULT -LIKE?	REFERENCES
COMPREHESION: Truth-value judgement	Complete & incomplete	Yes	Kazanina & Phillips (2007)
COMPREHENSION: Sentence-to-scene/ picture matching taks	Incomplete	No	Wagner (2001) van Hout (2005, 2007, 2008)
		Yes	Weist et al. (1984) Vinnitskaya & Wexler, (2001)
ELICITED PRODUCTIION	Incomplete	No	Vinnitskaya & Wexler (2001) Hodgson (2003)

Table 1: Tasks and target responses for IPF across studies

The tasks and their corresponding target responses differ in the kind of reasoning they impose. In truth-value judgement tasks (TVJT), forms are evaluated individually as to whether they are proper descriptions of complete and incomplete situations. On the contrary, in sentence-to-scene or picture matching tasks, two forms are given, the PF and the IPF, and these forms have to be matched one by one to two versions of the events: a complete and an incomplete version of the event respectively. Similarly, in elicited production tasks, the two forms have to be compared to determine which is the most appropriate to describe the situation. IPF could in principle be related to complete and incomplete events, as shown in (3), similarly to what adults do when the forms are evaluated individually, as in TVJTs. However, in tasks where the forms have to be contrasted, PF and IPF form an informative scale in which the PF is more informative than the IPF, because the PF entails completion while IPF does not. Therefore IPF may generate the scalar implicature[1] (SI) that completion does not take place (Smith, 1991; Olsen, 1997). Consequently, although logically speaking, IPF can be related both to complete and incomplete events, IPF is related only to incomplete events by pragmatic enrichment in those tasks. Therefore, we argue that the different tasks involve different kinds of reasoning: TVJTs involve logic reasoning while picture-selection tasks and elicited production tasks induce pragmatic reasoning.

Interestingly, late acquisition of scalar implicatures are reported in other domains of language, such as quantifiers, numerals, definite and indefinite articles, etc. (Noveck, 2000; Pouscoulous et al., 2007; van Hout et al., 2010b) and even for aspectual verbs (Papafragou & Musolino, 2003). Therefore, non adult-like responses by children are not so unexpected in the tasks that impose the raising of scalar implicatures, as sentence-to-scene/ picture matching tasks and elicited production tasks.

However, adult-like behavior in the case of aspect has been reported in some studies using sentence-to-scene/ picture matching tasks (see Table 1). Children's adult-like responses in some of these studies (Weist et. al. 1984, 1991; Vinnitskaya & Wexler, 2001; Wagner, 2009) can be related to the fact that the pragmatic nature of the task was reinforced by the experiment procedure. Crucially, in those experiments, the requirement to contrast both forms was emphasized by the fact that, before hearing the test sentence, participants were exposed to both the PF and the IPF versions of the predicate and they were told that each of the sentences corresponded to one picture. Children's improvement in raising Scalar Implicatures with facilitating experimental procedure has been attested in the literature. 5 year-old children are reported to correctly pick the most informative statement, thus raising the scalar implicature, if they are given a choice between the different alternatives in a study with connectives *or* and *and* (Chierchia et al. 2001) and they are capable of computing scalar implicatures if the task demands are clear and the informativeness expectations salient (Papafragou & Musolino, 2003).

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[1] There are two different approaches to the phenomenon of SI. The Neo-Gricean approach to SI (Horn, 1989; Levinson, 2000) presumes that both speaker and hearer follow the maxims of conversation (Grice, 1989): when the speaker chooses to utter a sentence with the weak term –the IPF– the hearer may infer that the speaker has no evidence to use the stronger element in the scale –the PF. Thus, by pragmatic enrichment the use of the weak term –IPF– is automatically interpreted as the negation of the strong term –PF–, implying the lack of completion. Under Relevance Theory (Sperber & Wilson, 1994), SIs are not derived automatically, but are drawn by hearers in order to satisfy their expectations of relevance, in an effort to make an utterance more informative and more relevant. Drawing SI does not depend on the meaning of the forms, but on the contexts of the utterance.

The present study is aimed to investigate Spanish 5 year-olds' comprehension and production of PF and IPF and to compare the results obtained with two tasks that imply different cognitive demands. At this age, children should have already acquired the semantics of aspect, but may still have problems with the pragmatic dimension of these forms. Therefore, the comparison between a truth-value judgment task and a sentence completion task will allow us to check if there are asymmetries in the results depending on the tasks and the different kinds of reasoning these tasks involve. If it is true that TVJTs induce logic reasoning and elicited production tasks involve pragmatic reasoning, adult-like responses are expected in the former but not in the latter by 5 year-old children.

4. The experiment

Twenty one monolingual Spanish children (mean age: 5;08; range: 5;03-5;11; 8 males & 13 females) of middle-high socioeconomic status participated in the study. Ten adults were also tested as control group.

Two tasks were designed[2] to test comprehension and production of Spanish grammatical aspect morphemes. The first task consisted on a truth-value judgment test (Crain & McKee, 1986) that explored the comprehension of PF and IPF morphemes. The task was to evaluate the acceptability of telic predicates combined with PF and IPF morphology when referring to complete and incomplete events, to check if children are aware of the rise or cancelation of completion entailments with telic predicates. The second task was dedicated to test production of aspectual forms; it was a sentence completion task in which participants completed sentences describing complete and incomplete actions depicted in videos.

The truth value judgment task and the production task were based on six short video films. In each of them a clown was performing an action, while background music was playing. Previous acquisition studies (Kazanina & Phillips, 2007) established that an explicit temporal interval of reference in the discourse could favor an adult-like performance when evaluating IPF aspect. This was the reason for including a background music in the experiment: to delimit a temporal frame to be used as RefT that could be made linguistically explicit by a 'while' clause.

In the experiment, it was established that the clown was playing the statue game so that when the music stopped, the clown stopped performing the action. When the music stopped, two different situations could arise: either the clown had already finished the action (complete situation) or the clown had not finished the action yet (incomplete situation):

(6)   Schemas for the complete and incomplete situation:
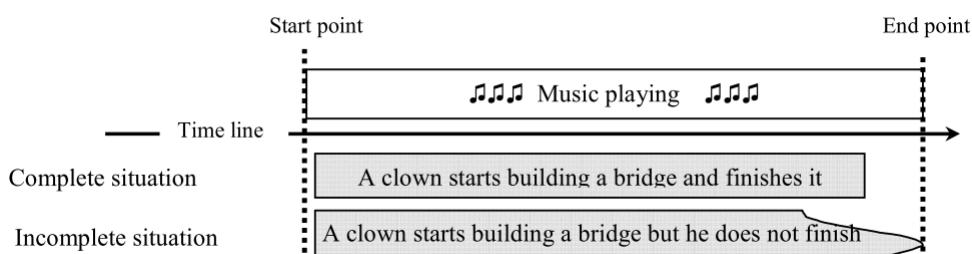
In the comprehension task, a blinded puppet tried to guess what happened in the video. For doing so, the puppet uttered an interrogative sentence with PF or IPF morphology and the participants had to judge whether the statement was true or false:

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(7)   *Puppet*: "Mientras sonaba la música,
                 "While the music was playing,
            a.   ... ¿el payaso ha construido el puente?"
                    … has the clown built the bridge (PF)?"
            b.   ... ¿el payaso estaba construyendo el puente?"
                    … was the clown building the bridge (IPF)?"
        Participant: YES or NO

The design thus involved two factors: grammatical aspect (PF or IPF) and situation (complete or incomplete action), yielding the four conditions and target answers shown in Table 2.

SITUATION	GRAMMATICAL ASPECT	EXPECTED ANSWER
Complete	PF	Yes
	IPF	Yes
Incomplete	PF	No
	IPF	Yes

Table 2: Design and target responses for experiment 2

Following the properties of the Imperfective Paradox and given that the predicates used were all telic, acceptance was expected for telic predicates marked with IPF morphology, regardless of their reference to a complete or to an uncompleted event. Acceptance was also expected for PF marked predicates when referring to a completed event. In contrast, rejection was expected for PF marked telic predicates which refer to an incomplete event.

For elicitation, two extra items were shown for each video and verb: one complete and one incomplete event. This time, children were asked to help the blind-eyed puppet to describe what the video had shown by completing a sentence:

(8)   *Puppet:*   While the music was playing, the clown…
        Participant: ...build-PF/IPF a bridge

No PF forms were expected to be produced for the incomplete situation. For the incomplete situation both PF and IPF forms were expected. In order to favor the use of the target PF and IPF verb forms, participants were instructed to avoid the use of infinitives (*construir* 'to build'), negated predicates (<u>*no construyó*</u> 'does not build') and adverbial or modal expressions "attenuating" or "reinforcing" the expression of completeness (*construyó,* <u>*pero no del todo*</u> 'built, but not completely', *construyó* <u>*medio*</u> *puente* 'built half a bridge', <u>*intentó/trató de/quería*</u> *construir* 'intended/tried/wanted to build', or <u>*terminó de construir*</u> 'finished to build').

Six verbs were tested: *construir* 'to build', *dibujar* 'to draw', *hacer* 'to make', *abrir* 'to open', *cerrar* 'to close' and *apagar* 'to blow out'. Each verb was related to a short video in which the action was performed with six different objects (eg. subsequent building events: building a bridge, a pyramid, a house and a fence). Half of the actions were completed and half were incomplete. The four first events were used as comprehension test queries: one for each of the four testing conditions in table 2. The last two events were used as production test queries, one for the complete situation and one for the incomplete situation. Therefore, there were 24 items for comprehension and 12 for production.

The test was administered in two sessions for children, testing three videos in each session. A training item was introduced before the first session, consisting on a video with three different actions and similar questions as the testing videos. Additionally, one control and distracter was introduced in the experiment before each of the testing sentences. These fillers and distracters were questions about objects on the video or about the final outcome of the event. Two sets of questions were designed in which the order of the items and the value of the test queries for each of the actions were counterbalanced.

The PF and IPF forms used for the experiment were the Present Perfect and the Past Progressive:

(9)   Present Perfect form (PF)
       El payaso   ha   dibuja-do   una flor
       The clown   have.PRES draw-PF   a   flower
       'The clown has drawn a flower'

(10)   Past Progressive form (IPF)
       El payaso   esta-ba   dibuja-ndo   una   flor
       The clown   be-past.IPF   draw-IPF   a   flower
       'The clown was drawing a flower'

5. Results

Figure 1 summarizes the results of the comprehension experiment. Both adults and children accepted IPF in reference to complete and incomplete events. As for the PF, both adults and children accepted PF in reference to complete events but rejected the use of PF to describe incomplete situations, showing that they are aware of the completion entailment of the PF.
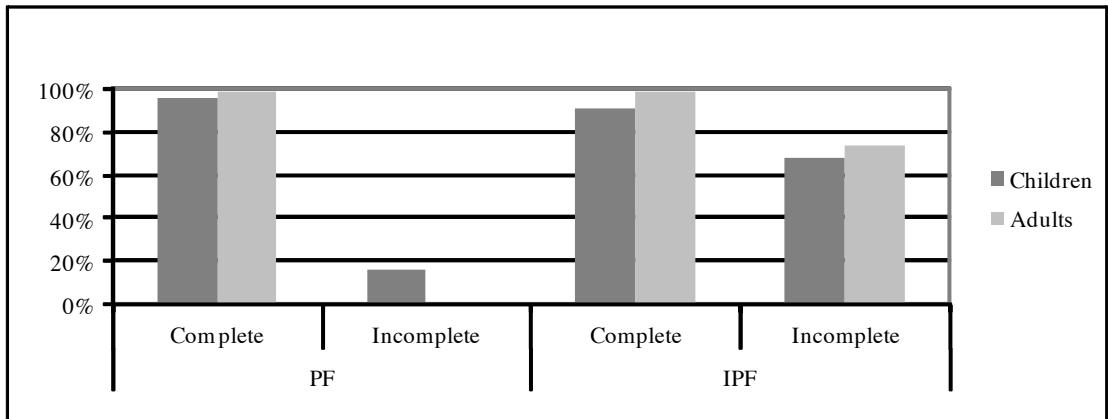
Figure 1: Acceptance (%) of PF and IPF per situation and age group

An ANOVA was performed on the comprehension results, analyzing the number of yes-no answers with aspect (PF vs. IPF) and situation (complete vs. incomplete) as within-group variables and age (adults vs. children) and the order of sets as between-group variables. Since the two randomized orders of test items did not differ significantly $F(1, 27)=.741$; $p>.05$, this factor was excluded from further analyses. The analyses show that aspect $F(1, 27)= 98.887$; $p<.001$, situation $F(1, 27)= 465.762$; $p<.001$) and the interaction of aspect*situation $F(1, 27)= 294.773$; $p<.001$) are significant. There was no main effect of age $F(1, 27)= .660$; $p>.05$, nor were any other interactions significant. Thus, all subjects treat each of the grammatical aspect forms differently, depending on the situation (complete vs. incomplete). Furthermore, no differences are found between adults and children in the comprehension task.

CATEGORY / CLASSIFICATION	FORMS		% OF PRODUCTION	
			ADULTS	CHILDREN
PF	Present Perfect Past Perfect Pretérito Indefinido	*ha dibujado* 'has drawn' *había dibujado* 'had drawn' *dibujó* 'drew'	44,2%	19.4%
IPF	Pretérito Imperfecto Past Progressive	*dibujaba* 'was drawing' *estaba dibujando* 'was drawing'	47.5%	29.8%
Other Responses	finish to V manage to V did not V didn't finish to V tried to V wanted to V atelic V	*terminó de dibujar* ' *consiguió dibujar* ' *no dibujó* ' *no terminó de dibujar* *intentó dibujar* ' *quería dibujar* *soplar* 'blow' instead of *apagar* 'blow out'	8.3%	47.2%
Non-valid	Infinitive Wrong temporal value (present or future) No answers		0%	3.6 %

Table 3: Classification and percentage of forms produced per age group.

A comparison of the choice of PF, IPF, Other Responses and non-valid answers in each of the conditions revealed that adults and children behaved differently both in the complete $\chi2$ (1)= 64.079, p<.001 and in the incomplete $\chi2$ (1) = 36.176, p<.001 condition. These differences between adults and children might be due to the fact that children provide a wider range of responses, specially, Other Responses.

Taking into account only the PF and IPF responses, the pattern of use of each of these forms varies with respect to the situation. As Figure 2 shows, both children and adults use mainly PF for the complete situation and, crucially, none of the groups uses PF to describe incomplete situations, showing once again that both adults and children are aware of the completion entailments that rise from the use of PF with telic predicates. However, there is a difference in the use of IPF between adults and children. While adults use imperfectives almost exclusively for incomplete situations, children use IPF both for complete and incomplete situations.
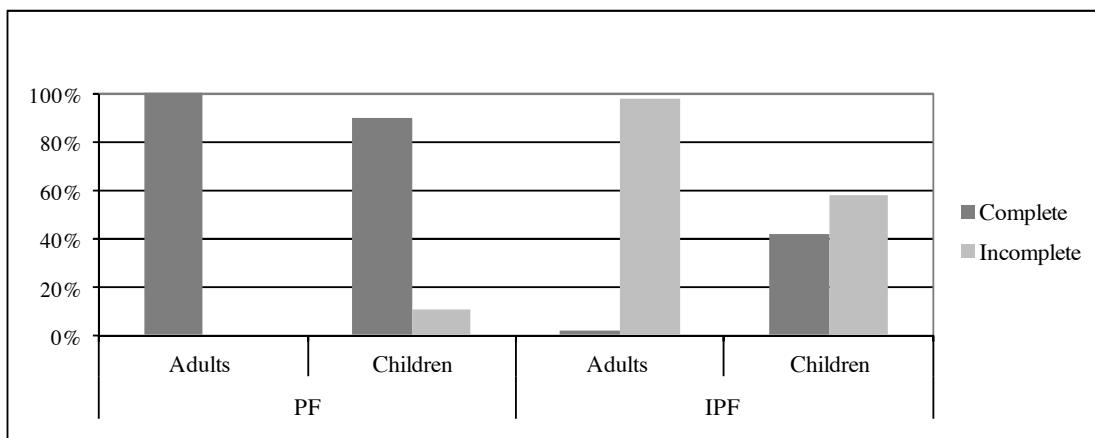

Figure 2: Use (%) of PF and IPF forms per situation and age group

An ANOVA test was performed comparing the amount of PF and IPF responses produced for each of the situations with age as between-subjects variable. Results show that the interaction aspect*situation is significant F(1, 29)= 180.735; p<.001, which means that use of PF or IPF depends on whether the action was completed or not. However, the use of PF and IPF varies with age as both

age F(1, 29)= 34.948; p<.001 and the interaction aspect*age F(1, 29)= 99,637; p<.001 are significant. The interaction between age*situation*aspect is also significant F(1, 29)= 99,637; p<.001, which is probably due to the fact that children produce more IPF with the complete forms than adults do.

6. Discussion

The aim of the two experiments presented in this paper was to test whether 5 year-old children comprehend and produce grammatical aspect morphemes adult-like across tasks. The results show that children's comprehension of PF and IPF aspect is adult-like: children relate IPF telic predicates to complete and incomplete events, while PF telic predicates are only related to complete events because PF with telic predicates gives rise to completion entailments. However, children and adults differ in production. On the one hand, children tend to produce a wider range of forms apart from PF and IPF. On the other hand, children tend to mark telic predicates with IPF to describe both complete and incomplete events, while adults used PF for complete situations and IPF exclusively for the incomplete situations.

Children's non adult-like use of IPF marking to refer to complete events cannot be attributed to any semantic or grammatical deficit or immaturity. Children's use of IPF is not ungrammatical or semantically incorrect, given that IPF can refer both to complete and incomplete events, as it is shown in the comprehension task, where both adults and children accepted IPF for complete and incomplete events. Although IPF predicates could, in principle, be used to describe complete events, adults tend to produce IPF only to refer to incomplete events and they use exclusively PF to refer to complete events. This adult behavior could be due to the fact that PF entails completion while IPF does not. Therefore, the PF is more informative than the IPF to describe complete events. PF forms are produced by adults instead of PF because they are the best, clearest and most informative description of the event; however, children tend to produce both PF and IPF forms for the complete situation, not paying attention to which form is more informative.

The results obtained are compatible with the idea that each task involve different cognitive processes: the comprehension task involves only semantic reasoning (judging the truth of a description), while the production task also involves pragmatic reasoning (producing the form that is more informative in the context). On the one hand, adult responses, and thus target responses, are different depending on the task: in truth-value judgment tasks (TVJT) adults accept the IPF for both complete and incomplete situations, while in the production task IPF is exclusively related to incomplete events. Crucially, these target responses correspond to the logic and pragmatically enriched use of the IPF. On the other hand, 5 year-olds are claimed to fail to derive Scalar Implicatures in other domains of language, such as quantifiers, numerals, definite and indefinite articles, etc. (Noveck, 2000; Pouscoulous et al., 2007; van Hout et al., 2010b). The fact that they produce PF and IPF forms and not exclusively PF forms for the complete situation in the elicited production task can be related to this well documented phenomenon in language acquisition, by analyzing the differences between adults and children's production as another case of children's failure to derive Scalar Implicatures .

We are aware that the idea that TVJT test semantics and not pragmatics is controversial. In fact many authors used this method to test scalar implicatures. However, it is worthy to note that some of the scalar implicature experiments using a TVJT ask whether the utterance is appropriate, 'good or bad' and not whether it is true or false. This requirement has been reinforced in some experiments by saying that the character uttering the test sentences is learning the language. In such cases, the test constitutes a felicity-judgment task rather than TVJT, also called *utterance-judgment task* (Katsos & Bishop, 2011). The task in our experiment was, however, a pure truth-value judgment task. Additionally, the appropriateness of TVJTs to test scalar implicatures is controversial. Zondervan (2010) argues that TVJTs go against the way in which scalar implicatures arise 'in the wild', where hearers do not know what happened and draw conclusions based on what the speaker said. Contrarily, in a TVJT the hearer has to evaluate what the speaker said on the basis of his own knowledge of the situation, which is just the opposite situation to the natural setting of implicatures. Additionally, TVJTs test whether a statement is rejectable or not, while other tasks such as picture-selection or sentence-to-situation matching tasks test which interpretation is more appropriate (van Hout et al., 2010b).

If the two tasks involve different cognitive demands –TVJT inquires about logic reasoning and production triggers pragmatic skills– children's adult-like responses in the comprehension task on PF/IPF marking show that children have already acquired the semantics of aspect. Conversely, the fact that children use IPF to refer to complete situations (as well as for referring to incomplete situations) can be interpreted as a failure to derive the scalar implicature associated with the IPF. This conclusion would be in accordance with what has been found in the literature: a late acquisition of scalar implicatures for quantifiers, numerals, definite and indefinite articles (Noveck, 2000; Pouscoulous et al., 2007; van Hout et al., 2010b) and even for aspectual verbs (Papafragou & Musolino, 2003).

7. Conclusion

The present study was aimed to test if Spanish 5-year-old children have acquired the meanings of PF and IPF aspect with telic predicates, using a truth-value judgment task and a sentence completion task. We argue that the two tasks involve different cognitive demands: logic reasoning in the TVJT and pragmatic reasoning in the elicited production task. In the TVJT, sentences with PF and IPF marking had to be evaluated as proper descriptions of complete and incomplete events. Given that IPF morphology is logically compatible with complete and incomplete events, acceptance of IPF was expected for complete and incomplete events. In the elicited production task, complete situations were expected to be described with PF morphology, and incomplete situations with IPF. In this task the use of IPF as matching exclusively to incomplete events reflects the pragmatic use of IPF and the fact that in certain contexts IPF precludes completion through a scalar implicature.

Children's performance was different in the two tasks: while in the TVJT children performed adult-like, their performance on the production task was different from adults.

Children's success in the TVJT shows that children have indeed acquired the semantics of aspect by five years of age. With respect to the PF, the children are aware of the completion entailments that arise when telic predicates are marked with PF: in the comprehension task they rejected the PF for incomplete events, and in the production task they never used PF to describe incomplete events. Additionally, children are aware of the cancelation of the completion entailment when telic predicates are marked with IPF aspect: they accepted IPF telic predicates to refer to complete and incomplete events both in comprehension and in production.

However, although children's comprehension is completely adult-like, their production is different from adults: while adults tended to describe complete events with the PF and incomplete events exclusively with the IPF, children described complete events both with the PF and the IPF. If, as we argue, elicited production tasks involve pragmatic reasoning, children's use of IPF to describe complete events could be explained as further evidence of children's failures to derive scalar implicatures.

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Selected Proceedings of the 5th Conference on Generative Approaches to Language Acquisition North America (GALANA 2012)

edited by Chia-Ying Chu,
Caitlin E. Coughlin, Beatriz Lopez Prego,
Utako Minai, and Annie Tremblay